

TENDER SPECIFICATION FOR FABRICATION AND ERECTION OF FOUR POLE TRESTLE SUPPORTS AND BRIDGES AT PPPU / THIRUMAYAM, BHEL.

PART- I

I. Technical cum qualification bid

a. Notice inviting Tender

01	Name of work	a) Fabrication and Erection of Four Pole Trestle supports and Bridges at PPPU/ THIRUMAYAM b) Fabrication and installation of miscellaneous steel structures at PPPU/ THIRUMAYAM
02	Location of work	PPPU THIRUMAYAM, BHEL
03	Estimated Value	Rs. 8.92 Lacs
04	Earnest Money Deposit	Rs. 20,000/-
05	Delivery	THREE (3) MONTHS for item (a) and FIVE (5) MONTHS for item (b) - from the date of commencement of the work which will be reckoned from the date handing over the site to the contractor.
06	Last Date for Receipt of Tenders	26-11-2011 / 03:00 PM
07	Date of Technical cum Qualification Bid Opening	26-11-2011 / 03:30 PM
08	Date of RA/Price Bid Opening	Will be intimated separately to those who are qualified.
09	Guarantee Period for workmanship	(Twelve) Months from the date of actual completion of the entire work and handed over to Bharat Heavy Electricals Limited.

The Tender documents can be down loaded from BHEL website / govt. website at free of cost.

- b. The Contractors must submit their Tenders as required in TWO parts in separate sealed covers prominently super scribed as PART-I TECHNICAL CUM QUALIFICATION BID and PART-II PRICE BID and also indicating on each of the covers, The tender reference No. and due date and time as mentioned in the tender notice
- c. A separate EMD cover should also be submitted. PART-I, PART-II and EMD covers shall be placed in a common cover super scribing Name of work, Tender reference No. and due date
- d. Tenders may be finalised through TWO PART System or BY REVERSE AUCTION.

Clarifications on the tender specification if any may be sought by the bidders so as to reach this office at least seven days before the tender due date .

CONTRACTOR'S SIGNATURE

ISSUING OFFICER

II. Declaration by the bidders

2.1) Declaration by bidder’s authorized signatory

Ref no: ----- Date: -----

I, hereby certify that all the information and data furnished by me with regard to this tender specification are true and complete to the best of my knowledge. I have gone through the specifications, conditions and stipulations in detail and agree to comply with the requirements and intent of the specification. I further certify that i am duly authorised representative of the under mentioned bidder and a valid power of attorney to this effect is also enclosed.

Date:

Signature of authorized signatory
with seal

2.2) Certificate of no-deviation

Ref no: ----- date-----

We, M/s

hereby certify that notwithstanding any contrary indications/ conditions elsewhere in our offer documents, i/we have neither set any terms and conditions nor there is any deviation taken from the conditions of BHEL’s tender specifications, either technical or commercial, and i/we agree to all the terms and conditions mentioned in BHEL’s tender specification with associated amendments and clarifications.

Date:

Signature of the bidder

CONTRACTOR’S SIGNATURE

2.3) Format for e – payment

FORMAT TO RECEIVE E-PAYMENT THROUGH EXISTING ACCOUNT WITH NEFT/SEFT/RTGS ENABLED BANK BRANCH

Sub: E-payments vide NEFT/SEFT/RTGS - Reg.

VENDOR CODE AS PER BHEL	:	
VENDOR NAME AS PER BANK RECORDS	:	
ACCOUNT TYPE	:	
BANK ACCOUNT NUMBER	:	
NAME & ADDRESS OF THE BANK	:	
BRANCH CODE	:	
BRANCH RTGS CODE	:	
BRANCH MICR CODE	:	
NAME OF THE AUTHORISED SIGNAROTY	:	

I/we confirm that I/We will bear the charges, if any levied by my/our bank for the credit of SEFT/RTGS amounts in our account.

For.....

SIGNATURE
(Authorized signatory)

We confirm that we are enabled for receiving NEFT/SEFT/RTGS credits and we further confirm that the account number, the signature of the authorized signatory, branch code, RTGS code and MICR code of our branch mentioned above are correct.

BANK VERIFICATION
(Manger's/Officer's signature under bank stamp)

Note: The above format duly filled and signed by the Contractor and the Bank authorities shall be enclosed along with offer so as to return the EMD amount through Electronic media.

CONTRACTOR'S SIGNATURE

III. Tender qualifying criteria:

Bidder must fulfil the following qualifying criteria concurrently for BHEL to accept the offer on Techno-Commercial ground and if any condition was not met by any vendor the offer may liable for rejection.

- a. Contractor must have minimum TWO Years of Experience in the field of structural fabrication and erection.
- b. The proof for the above experience stated in (a) should be provided in the form of Work order copies for the work executed in the past 5 years from the date of tender opening
- c. The above work order Value should be minimum Rs 3.00 lacs from APRIL 2009
- d. Financial Status:
 - i. Audited balance sheet for two years to be provided. (Financial years 2008-09 & 2009-10)
 - ii. Copies of the income tax return for previous two years to be provided. (Financial years 2008-09 & 2009-10)
 - iii. The Vendor should produce solvency certificate from a schedule bank for a value of 5 lacs.
- e. Offer should be submitted along with EMD of Rs. 20,000/-

CONTRACTOR'S SIGNATURE

IV. SCOPE OF WORK

1) OUTLINE

FABRICATION AND ERECTION OF FOUR POLE TRESTLES AND BRIDGES AT PPPU / THIRUMAYAM, BHEL.

2) QUANTUM OF WORK

Item no: 10

Fabrication and erection of Trestle for Pipe line (Four pole post DRG NO.2M-20B13-04897 and Trestle Bridge Drg. NO. 3M-20B13-12242 at Thirumayam PPPU Campus and erected over the foundations already laid by BHEL.

Note: Wherever required, other than the above two major items, the following items (Trestle / Trestle bridge) may be fabricated and used for erection.

Drg No.3M 20B 1314569
DRG NO.3M 20B 1314568
DRG NO.3M 20B 1314567
DRG NO.3M 20B 1314555
Drg No.3M 20B 1312280
Drg.No.2M 20B 1304896

- Total weight: 40 TON

The rate should be quoted for fabrication and erection of trestles in tonnage basis.

Item no: 20

Fabrication and painting of miscellaneous steel structural items as per BHEL requirements.

- Total weight: 20 TON

The rate should be quoted for fabrication in tonnage basis.

3. ISSUE OF MATERIALS / CONSUMABLES:

It will be in the scope of contractor to move the required materials from BHEL Thirumayam Stores to the erection spot for execution of work. The contractor shall arrange his own

CONTRACTOR'S SIGNATURE

Trolleys for material shifting, Crane with Lifting Tackles and required Manpower for the movement of materials from BHEL (Thirumayam) stores to the erection spot within plant.

3.1 SCOPE OF BHEL:

BHEL will supply the following materials **free of cost** at PPPU, Thirumayam plant stores.

- a) All the structural steel raw materials required for fabrication.
- b) Consumables like Electric Power and Water at a Single Location in the Site free of cost. (Electrical Point will be provided at a location within 200m in circumference from work site, it will be in the contractor's scope to make arrangements for necessary cabling).
- c) Welding electrodes and paint for the entire work.

3.2 SCOPE OF CONTRACTOR:

- a. The contractor should bring in their own tools and lifting tackles including three phase welding machine with electrode holder, cutting torch, Welding cable, oxy-acetylene regulators with rubber hoses, wire brushes, paint brushes and ladders for the execution of the work.
- b. The contractor should bring their own Gases for welding and cutting and all type of fasteners (Metric Thread Nickel Coated; Make: TVS / Unbrako / Unifrax) required for the execution of above works.
- c. Portable Compressor for air requirement if any should be brought by the contractor.
- d. The Contractor should make their own arrangements for the requirement of mobile crane facility and vehicle required for the movement of material and the execution of the work within the plant.
- e. The Contractor should bring all the necessary personal protective equipments like safety shoes, hand gloves, goggles, welding shield, mask, safety belts, etc and it is the responsibility of the contractor to ensure the usage of all the PPEs by their work force.

4 GENERAL NOTE:

1. Attendance register should be maintained.
2. The contractor shall maintain proper house-keeping during execution and dispose off the waste and scrap materials generated immediately at the identified places as per the instruction of area supervisor.
3. Erection is to be carried out at the outdoor locations spread across the factory premises. Erection of trestle shall be done over the Concrete casted Pedestal available in the yard as per the layout. Levelling to be done to the Pipe line to maintain horizontality. Suitable "U" - Clamps shall be prepared by the contractor and to be fastened with cap plate of the column. It may be noted that there will not be road access to some of the erection locations and it will be in scope of the contractor, to ensure the erection with necessary planning.

CONTRACTOR'S SIGNATURE

4. All fit up and sub assembly are to be offered to BHEL supervisor for clearing the stage inspection. Also final inspection will be carried out by BHEL supervisor.
5. One coat of red oxide paint and two coats of enamel paint (grey colour) are to be applied on the finished jobs after final inspection.
6. The contractor should engage a qualified supervisor to plan and co-ordinate the entire activities.
7. The contractor should engage sufficient skilled man power so as to complete the work in scheduled time without delay. An activity PERT chart to be submitted before starting the work and the same to be followed and reviewed.
8. The contractor shall provide one year warranty for workmanship.
9. Contractor should meet PF and ESI as statutory requirements for their employees. Copies of PF and ESI codes certificate should be submitted along with offer.
10. The contractor may visit the site, check details of work and sketches before quoting the rate.

5. EMD:

- a. **EMD: Rs 20,000/- (Twenty Thousand Rupees Only) should be submitted along with the offer.**
- b. Bidders who have already deposited One Time EMD of Rs. 2.00 lacs with BHEL are exempted from submission of EMD for this tender. However a copy of 'One Time EMD' at BHEL Trichy submitted shall be enclosed along with the Offer.
- c. EMD is to be paid in the form of Pay order or Demand Draft in favour of Bharat Heavy Electricals Limited, Tiruchirapalli and payable at Tiruchirapalli. No. other form of EMD remittance shall be acceptable to BHEL.
- d. In the case of unsuccessful bidders, the Earnest Money will be refunded to them after acceptance of tender by successful bidder. EMD shall not carry any Interest.

6. SECURITY DEPOSIT

SD should be remitted by the successful tendered as below before starting the work.

Upto Rs.10 Lacs: 10% of the Order Value.

50% of the SD should be remitted before start of the work.

The remitted EMD can be converted as SD and the balance amount should be remitted before start of the work.

The remaining 50% of SD will be recovered in the running bills @ 10%.

- a. The security Deposit should be remitted before start of the work by the contractor either as Pay Order or Demand Draft in favour of BHEL.
- b. Local cheques of scheduled banks, subject to realization. Securities available from Post Offices such as National Savings Certificates, Kisan Vikas Patras etc. (Certificates should be held in the name of Contractor furnishing the security and duly pledged in favour of BHEL and discharged on the back).

CONTRACTOR'S SIGNATURE

- c . Fixed Deposit Receipt issued by Scheduled Banks / Public Financial Institutions as defined in the Companies Act. The FDR should be in the name of the contractor, A/C BHEL, duly discharged on the back.
- d . Security deposit can also be recovered at the rate of 10% from the running bills. However in such cases at least 50% of the Security Deposit should be remitted (either by cash/DD or Security deposit for maximum 50% of total SD) before start of the work and the balance 50% may be recovered from the running bills.
- e . EMD of the successful bidder shall be converted and adjusted against the Security Deposit, excepting for such bidder who has remitted One Time EMD.
- f . The Security Deposit shall not carry any interest.

7. REGULAR WORKING HOURS:

Contract work should be carried out from 8AM to 6PM every day including Sundays and holidays.

Work should be carried out even in night shift in case of emergency to expedite the work.

8. DELIVERY

For item (1): The contractor has to complete the entire **work within 90 days** from the date of commencement of work.

For item (2): The period of contract is for 5 months from the date of commencement of work.

9. PAYMENT TERMS

100% payment will be made after completion of erection of the trestles in tonnage basis in pro-rata basis.

10. TERMS AND CONDITIONS:

Contractor should meet PF and ESI as statutory requirements for their employees. Copies of PF and ESI codes certificate should be submitted along with offer.

11. RETURN OF SECURITY DEPOSIT

If the contractor fully performs and completes the works in all respect to the entire satisfaction of BHEL, Security Deposit will be released to the contractor after deducting all costs of expenses of other amounts that are to be paid to BHEL.

CONTRACTOR'S SIGNATURE

12. INSURANCE COVER FOR MEN & MATERIALS

The Contractor shall arrange necessary Insurance cover with appropriate Third Party Liability cover Personal Accident Policy as applicable for the workmen crew. If any accident/injury/loss occurs while erection of the crane, to any other persons/ public and the properties of BHEL/client/other agencies/third party, the contractor shall have to pay necessary compensation and other expense, so decided by the appropriate authorities.

13. ACCOMMODATION & LOCAL CONVEYANCE

Contractor has to make their own arrangement for accommodation, local transport and other amenities for their workmen.

14. SAFETY OF MEN, EQUIPMENT, MATERIAL AND ENVIRONMENT

- a. PPEs shall be provided by the contractor as per attachment with appropriate trade job has to be ensured by the contractor at the job site at all times as per BHEL procedure. List of PPE is enclosed in ANNEXURE-A
- b. Safe work permits should be obtained by the contractor for Work at height before starting the work. The Format is enclosed herewith .ANNEXURE-B
- c. The Contractor shall abide by the Safety Regulations applicable for the Site/Project. Contractors are also to ensure that their employees and workmen use safety equipments as stipulated in the Factories Act (Latest Revision) during the execution of the work. Failure to use safety equipment as required by BHEL Engineer will be a sufficient reason for issuance of memo, which shall become part of Safety evaluation of the contractor at the end of the Project. Also all site work may be suspended if it is found that the workmen are employing unsafe working practice and all the costs/losses incurred due to suspension of work shall be borne by contractor.
- d. The contractor shall submit report of all accidents, fires and property damage, dangerous occurrences to the authorized BHEL official immediately after such occurrence but in any case not later than twelve hours of the occurrence. Such report shall be furnished in the manner prescribed by BHEL and also to meet statutory requirement. Any injury sustained by any of the contractor's employees within the Project premises must be reported to BHEL supervisor and FIRST AID should be immediately administered. The Contractor shall be responsible for keeping and maintaining proper records of Accidents to his personnel. According to the Factory Act and the Employees state Insurance Act & regulation, any person sustaining any injury within the project premises and absenting himself from work for more than 46 hours, his accident report has to be sent to the respective Government Authorities. Therefore contractor shall inform the owner's representative such matter immediately for their needful action.

CONTRACTOR'S SIGNATURE

15. REVERSE AUCTION

BHEL reserves the right to go for a Reverse Auction (RA) or Opening the submitted Part-I Qualification cum Technical bid, which will be decided after technical evaluation.

16. GENERAL TERMS AND CONDITIONS OF RA. I.E. ON LINE BIDDING THROUGH THE INTERNET FOR THE PROPOSED REVERSE AUCTION,

- a. BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on internet.
- b. BHEL will inform the vendor in writing in case of reverse auction, the details of Service Provider to enable them to contact & get trained.
- c. Business rules like event date, time, and Start price, bid decrement, extensions etc. also will be communicated through service provider for compliance.
- d. Vendors have to fax the Compliance form in the prescribed format (provided by Service provider) before start of Reverse auction. Without this, the vendor will not be eligible to participate in the event.
- e. BHEL will provide the calculation sheet (e.g., EXCEL sheet) which will help to arrive at “Total Cost to BHEL” like Mobilisation Charge, Demobilisation charge, Hiring Charges, Service Tax for Services and loading factors (for non-compliance to BHEL standard Commercial terms & conditions) for each of the vendor to enable them to fill-in the price and keep it ready for keying in during the Auction.
- f. Reverse auction will be conducted on scheduled date & time.
- g. At the end of Reverse Auction event, the lowest bidder value will be known on the network.
- h. The lowest bidder has to Fax the duly signed Filled-in prescribed format as provided on case-to-case basis to BHEL through Service provider within 24 hours of Auction without fail.
- i. Any variation between the on-line bid value and the signed document will be considered as sabotaging the tender process and will invite disqualification of vendor to conduct business with BHEL as per prevailing procedure.
- j. In case BHEL decides not to go for Reverse Auction procedure for this tender enquiry, the Price bids and price impacts, if any, already submitted and available with BHEL shall be opened as per BHEL’s standard practice.

For any queries / clarifications the bidders may contact us through FAX NO. +91 431 2521416 or through e-mail: esalai@bheltry.co.in

CONTRACTOR’S SIGNATURE

ANNEXURE “A”**I. Personal Protective Equipment Recommended for Pipe Line Fabrication and Erection Work**

Sl. No.	Job/Trade	PPE Recommended
1.	Arc welder	Leather gloves Leather apron Spectacle goggles Hand shield Filter lens 11-14 Leather leg guard Safety boots slip in type
2.	Gas welder Gas	welding goggles Leather gloves Safety shoes
3.	Painter	PVC gloves Light fume respirator Safety shoes Barrier cream Spectacle goggles
4.	Fitter / General	Leather gloves Safety shoes Spectacle goggles
5.	Crane operator	Safety shoes Canvas gloves Spectacle goggles
6.	Rigger	Leather gloves Safety helmet Safety shoes Spectacle goggles
7.	Unskilled / semi skilled	Leather gloves Worker Safety shoes Spectacle goggles Plastic face shield
8.	Other Employees	Safety shoes Spectacle goggles

CONTRACTOR'S SIGNATURE


II. Personal Protective Equipment Recommended for Hazardous Operations

Sl. No.	Job/Trade	PPE Recommended
1.	High Noise Area	Ear Plug / Ear Muff
2.	Work at height	Gloves Safety Belt Helmet Safety Shoes

Note: Contract Workers, Engineers, Supervisors and proprietors should wear Pant & Shoes while entering the factory premises.

CONTRACTOR'S SIGNATURE

ANNEXURE-B – SAFE WORK PERMIT

 310-015/A	<h2 style="margin: 0;">SAFE WORK PERMIT</h2> <p style="margin: 0;">(WORK AT HEIGHT INCLUDING ROOF LIGHT MAINTENANCE & FURNACE WORK)</p>		
PERMIT INITIATION			
M & S Control No.		Date	
Description of Work			
Area of Work			
Period of Work	From	To	
Time	From	To	
	AM/PM	AM/PM	
Name of Executing Agency / Contractor Reference			
Name of the persons engaged :			
Date:	Signature of Initiating area's Executive	Name Seal	
PERMIT CLEARANCE			
PRODUCTION DEPARTMENT SHUT DOWN / INTIMATION			
Date:	Signature	Name Seal	
CRANES / M& S DEPARTMENT			
Date:	Signature	Name Seal	
SAFETY MANAGEMENT			
Date:	Signature	Name Seal	

CONTRACTOR'S SIGNATURE

PERMIT WITHDRAWAL		
EXECUTING DEPARTMENT		
The work has been completed. Men and materials withdrawn. Intimation given to production.		
Date:	Signature of Executive	Name Seal
CRANES/M & S DEPARTMENT		
Withdrawal of permit is acceptable.		
Date:	Signature	Name Seal
SAFETY MANAGEMENT		
Withdrawal of permit is acceptable		
Date:	Signature	Name Seal
<p>SAFETY INSTRUCTIONS:</p> <ul style="list-style-type: none"> ❖ Use appropriate PPE (Safety belts, Helmets, Goggles etc.) ❖ Post a 'Look-out man' with red flag and whistle. ❖ Provide safe access ❖ Provide warning ❖ All loose materials / tools to be taken out. ❖ Permit will be valid for only one week (Monday to Saturday ; Separate Permit to be obtained for Sunday). 		
<u>TO BE ENSURED BY THE INITIATING DEPARTMENT (Put tick mark in the relevant box)</u>		
	ENSURED	NOT REQD
1. Necessary FIRE PREVENTION measures taken	<input type="checkbox"/>	<input type="checkbox"/>
2. Informed FIRE SERVICE	<input type="checkbox"/>	<input type="checkbox"/>
3. Alert other employees in the nearby area	<input type="checkbox"/>	<input type="checkbox"/>
4. Safe Access available / Provided	<input type="checkbox"/>	<input type="checkbox"/>
5. Use of SAFETY BELT	<input type="checkbox"/>	<input type="checkbox"/>
6. Wearing of HELMET	<input type="checkbox"/>	<input type="checkbox"/>
7. Use of SAFETY GOGGLES	<input type="checkbox"/>	<input type="checkbox"/>
8. Use of RESPIRATOR	<input type="checkbox"/>	<input type="checkbox"/>
9. 'LOOK-OUT' man	<input type="checkbox"/>	<input type="checkbox"/>

CONTRACTOR'S SIGNATURE

PART- II**PRICE BID**

Name of work: FABRICATION AND ERECTION OF FOUR POLE TRESTLE SUPPORTS AND BRIDGES AT PPPU / THIRUMAYAM, BHEL.

Schedule of Rate

Sl. No.	Work	Quantity	Unit	Rate Per Ton	Total Value
01	Fabrication of Four Pole & Two pole Trestle	40	Ton		
02	Miscellaneous fabrication work	20	Ton		

Contractors should fill the rate in the above format only, sign & seal and place in a Sealed Cover separately by super scribing as PART-II/PRICE BID with Name of work, Tender ref no., due date on the Cover.

Note:

- 1. Rates shall be quoted without any Tax.**
- 2. Applicable Service Tax, if any shall be separately mentioned in the offer.**

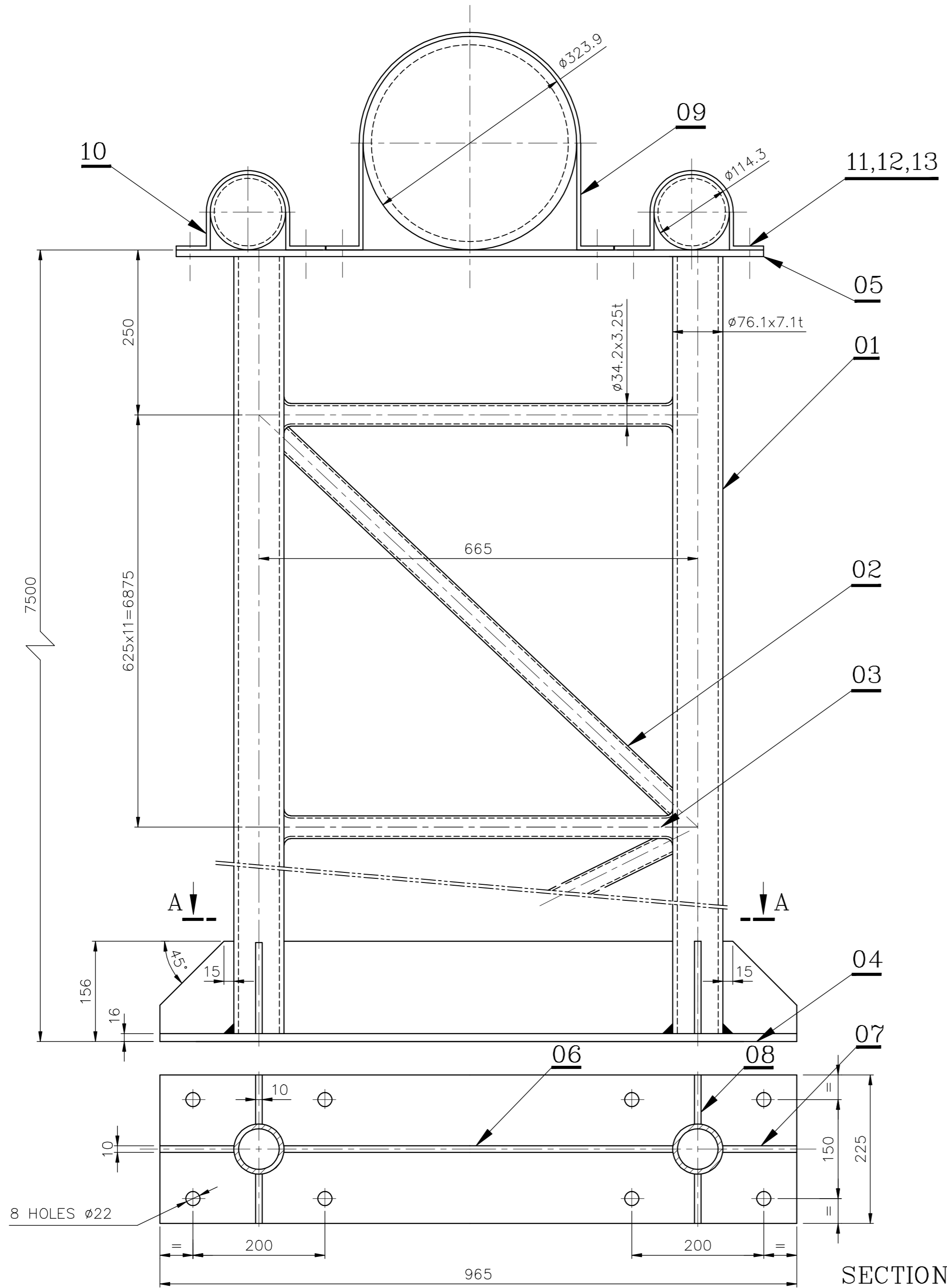
Contract will be given to the technically qualified, individual L1 contractor for each items.

-----ooo00ooo-----

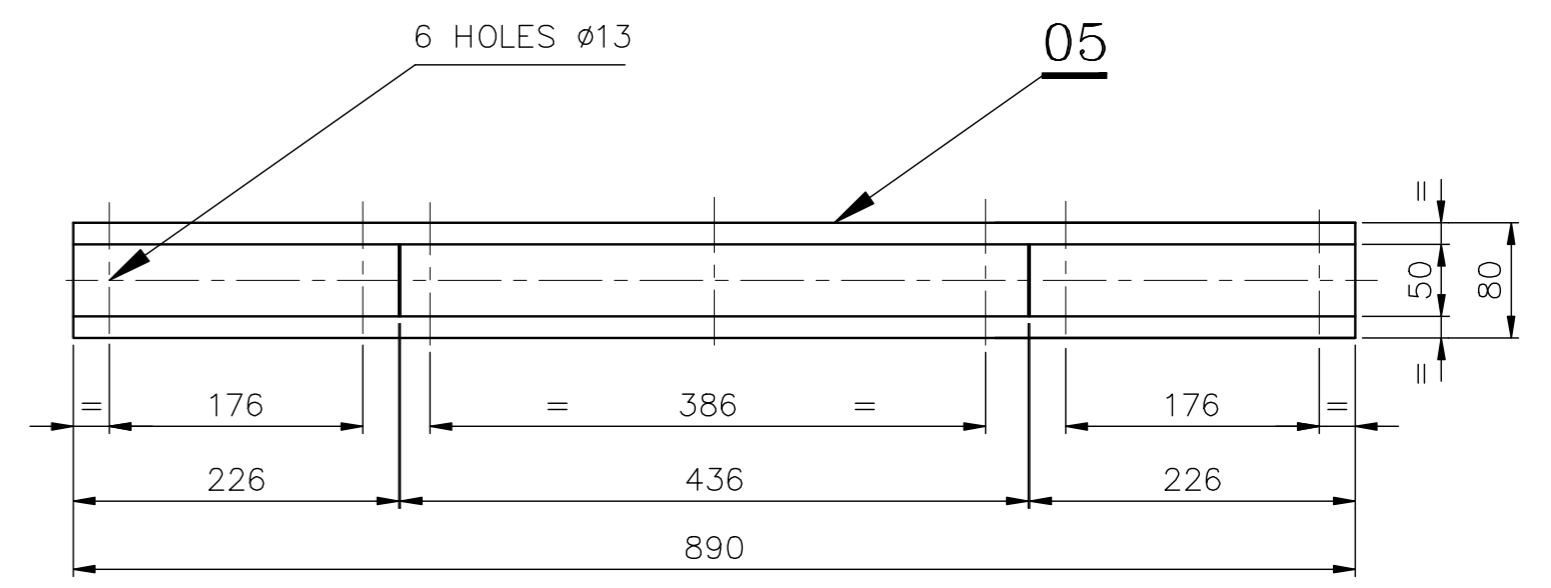
CONTRACTOR'S SIGNATURE

CAUTION: THIS DRAWING IS OUR SOLE PROPERTY AND SHOULD NOT BE USED IN ANY FORM FOR ANY PURPOSE WITHOUT THE WRITTEN PERMISSION OF BHARAT HEAVY ELECTRICALS LIMITED TRICHIRAPPALLI - 620 014.

ALL DIMENSIONS ARE IN MM



SECTION-AA



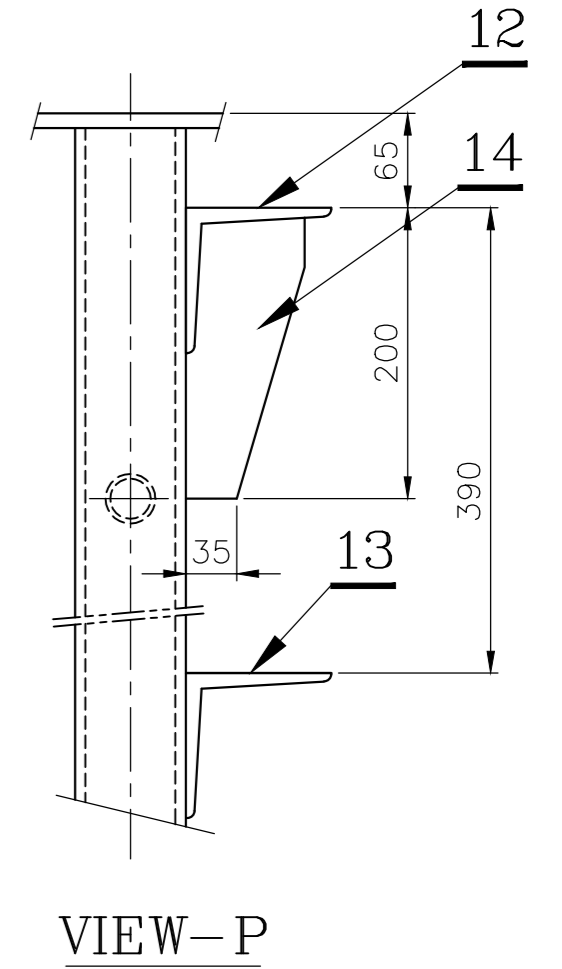
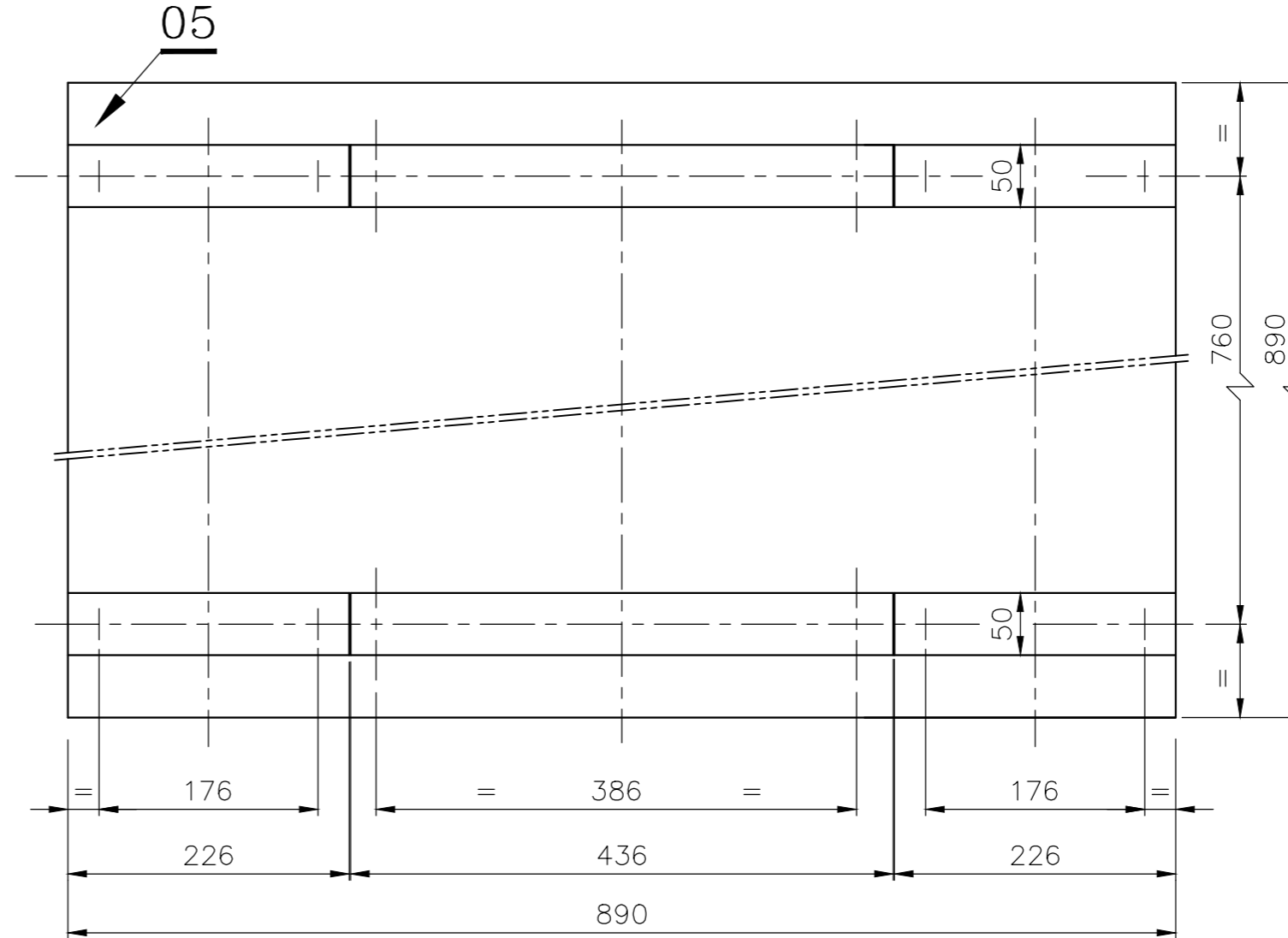
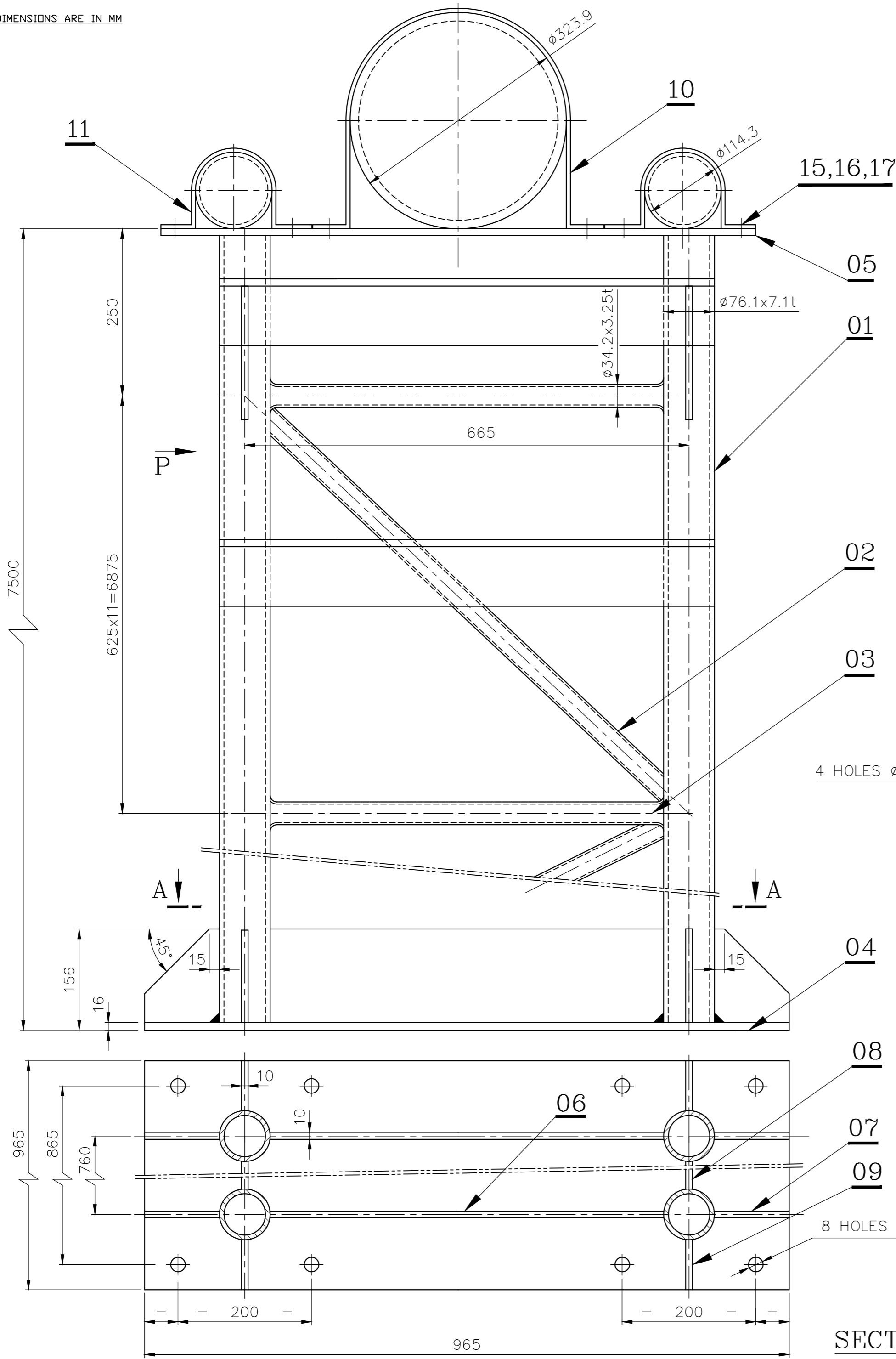
CAP PLATE

NOTE: -
ALL WELDED CONSTRUCTION

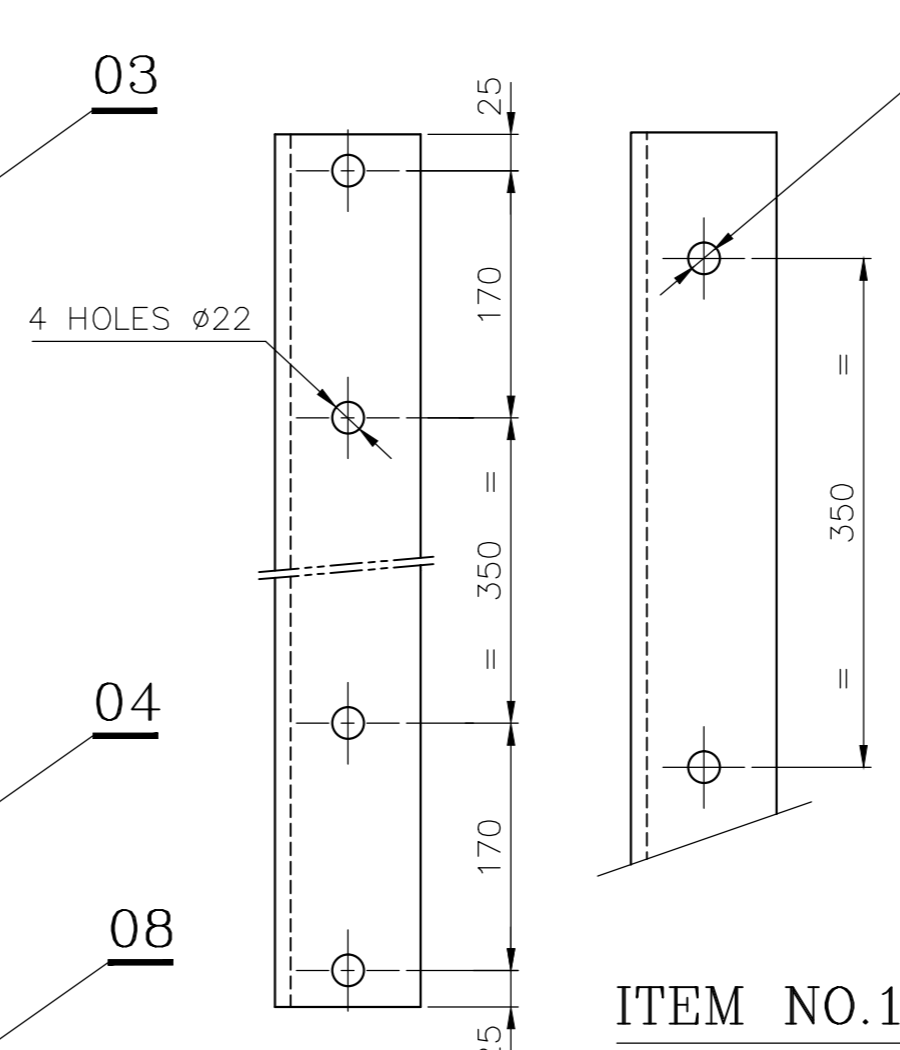
6	PUNCHED WASHER-A16	BPS: 41408	IS: 2016			13
6	HEX.NUT M16	BPS: 41321	IS: 1367 (PART-2)			12
6	HEX.BOLT.M16x30L	BPS: 41221	IS: 1367 (PART-2)			11
2	Pl.6tx50x402	Fe410WA	IS: 2062	1.90		10
1	Pl.6tx50x942	Fe410WA	IS: 2062	2.22		09
4	Pl.10tx140x75	Fe410WA	IS: 2062	3.29		08
2	Pl.10tx140x112	Fe410WA	IS: 2062	2.46		07
1	Pl.10tx140x589	Fe410WA	IS: 2062	6.47		06
1	Pl.12tx80x890	Fe410WA	IS: 2062	6.70		05
1	Pl.16tx225x965	Fe410WA	IS: 2062	27.27		04
12	PIPE ϕ 34.2x3.25t-589L	ERW	IS: 1239	17.24		03
11	PIPE ϕ 34.2x3.25t-834L	ERW	IS: 1239	22.38		02
2	PIPE ϕ 76.1x7.1t-7472L	ERW	IS: 1239	203.40		01
				293.33		
No. of Pieces	DESCRIPTION	MATERIAL	STANDARD	NET.WT.IN KGS.	DRAWING No.	ITEM No.
	REFERENCE:		ALTERATIONS:	DCN REF	DATE	SIGN.
SCALE	DRAWN	S.Selvamanickam				
1:5	CHECKED					
	APPROVED					
	DATE	06.09.10'				
MACHINE: AIR PIPE LINE				TYPE: 4514:01		
TITLE: TRESTLE FOR PIPE LINE (UNIT-II)				DRAWING No:		REV.
				2M20B1304896		
				Sheet No:		No. of Sheets:

CAUTION: THIS DRAWING IS OUR SOLE PROPERTY AND SHOULD NOT BE USED IN ANY FORM FOR ANY PURPOSE WITHOUT THE WRITTEN PERMISSION OF BHARAT HEAVY ELECTRICALS LIMITED, TRICHIRAPPALLI - 620 014.

ALL DIMENSIONS ARE IN MM



NOTE: - ALL WELDED CONSTRUCTION



CAP PLATE

2 HOLES Ø22

12	PUNCHED WASHER-A16	BPS: 41408	IS: 2016			17
12	HEX.NUT M16	BPS: 41321	IS: 1367 (PART-2)			16
12	HEX.BOLT.M16x30L	BPS: 41221	IS: 1367 (PART-2)			15
2	PI.10tx90x200	Fe410WA	IS: 2062	2.80		14
1	ISA 100x100x10t-740L	Fe410WA	IS: 2062	11.02		13
1	ISA 100x100x10t-740L	Fe410WA	IS: 2062	11.02		12
4	PI.6tx50x402	Fe410WA	IS: 2062	3.80		11
2	PI.6tx50x942	Fe410WA	IS: 2062	4.44		10
4	PI.10x64x140	Fe410WA	IS: 2062	2.73		09
2	PI.10tx140x684	Fe410WA	IS: 2062	15.03		08
4	PI.10tx112x140	Fe410WA	IS: 2062	4.92		07
2	PI.10tx140x589	Fe410WA	IS: 2062	12.94		06
1	PI.12tx890x890	Fe410WA	IS: 2062	74.60		05
1	PI.16tx965x965	Fe410WA	IS: 2062	116.96		04
48	PIPEØ34.2x3.25t-589L	ERW	IS: 1239	68.96		03
44	PIPEØ34.2x3.25t-834L	ERW	IS: 1239	89.40		02
4	PIPEØ76.1x7.1t-7472L	ERW	IS: 1239	406.80		01
				825.42		

No. of Pieces	DESCRIPTION	MATERIAL	STANDARD	NET.WT.IN KGS.	DRAWING No.	ITEM No.
	REFERENCE:		ALTERATIONS:	DCN REF	DATE	SIGN.
SCALE	DRAWN	S.Selvamanickam				
1:5	CHECKED					
	APPROVED					
	DATE	06.09.10'				

MACHINE: AIR PIPE LINE	TYPE: 4514:01
TITLE: TRESTLE FOR PIPE LINE ROAD CROSSING (UNIT-II)	DRAWING No: 2M20B1304897
Sheet No:	No. of Sheets:

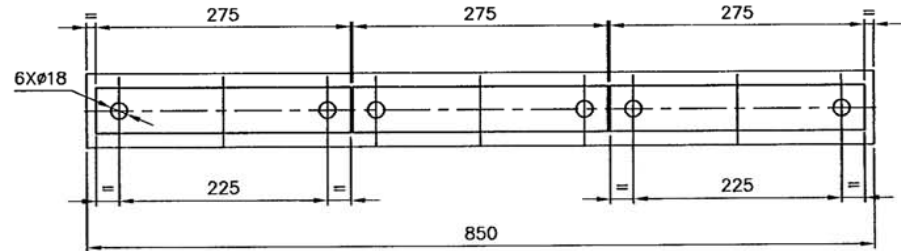
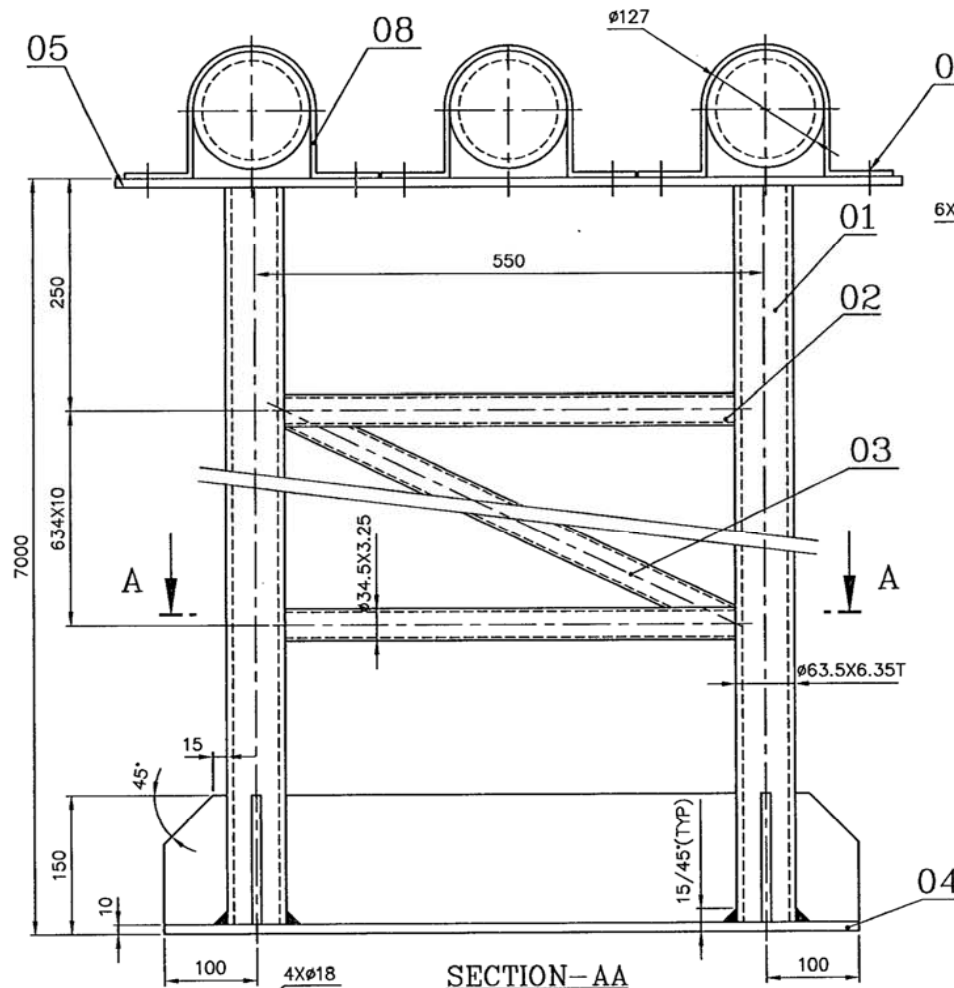
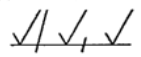
SECTION-AA

ITEM NO.13

ITEM NO.12

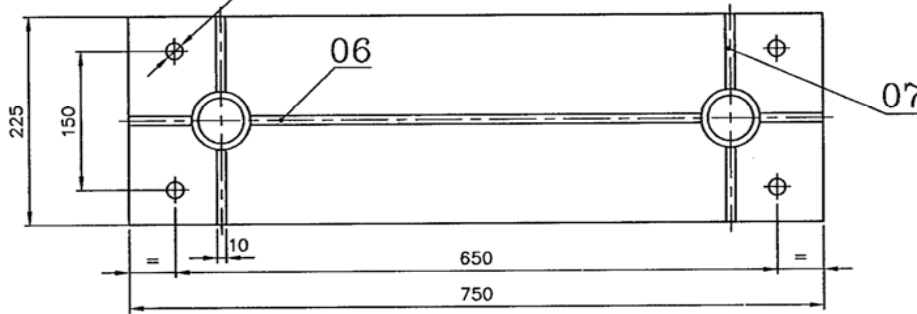
CAUTION: THIS DRAWING IS OUR SOLE PROPERTY AND SHALL NOT BE USED IN ANY FORM FOR ANY PURPOSE WITHOUT THE WRITTEN PERMISSION OF BHARAT HEAVY ELECTRICALS LIMITED TRICHIRAPPALLI - 620 014.

ALL DIMENSIONS ARE IN MM



CAP PLATE

NOTE: -
ALL WELDED CONSTRUCTION

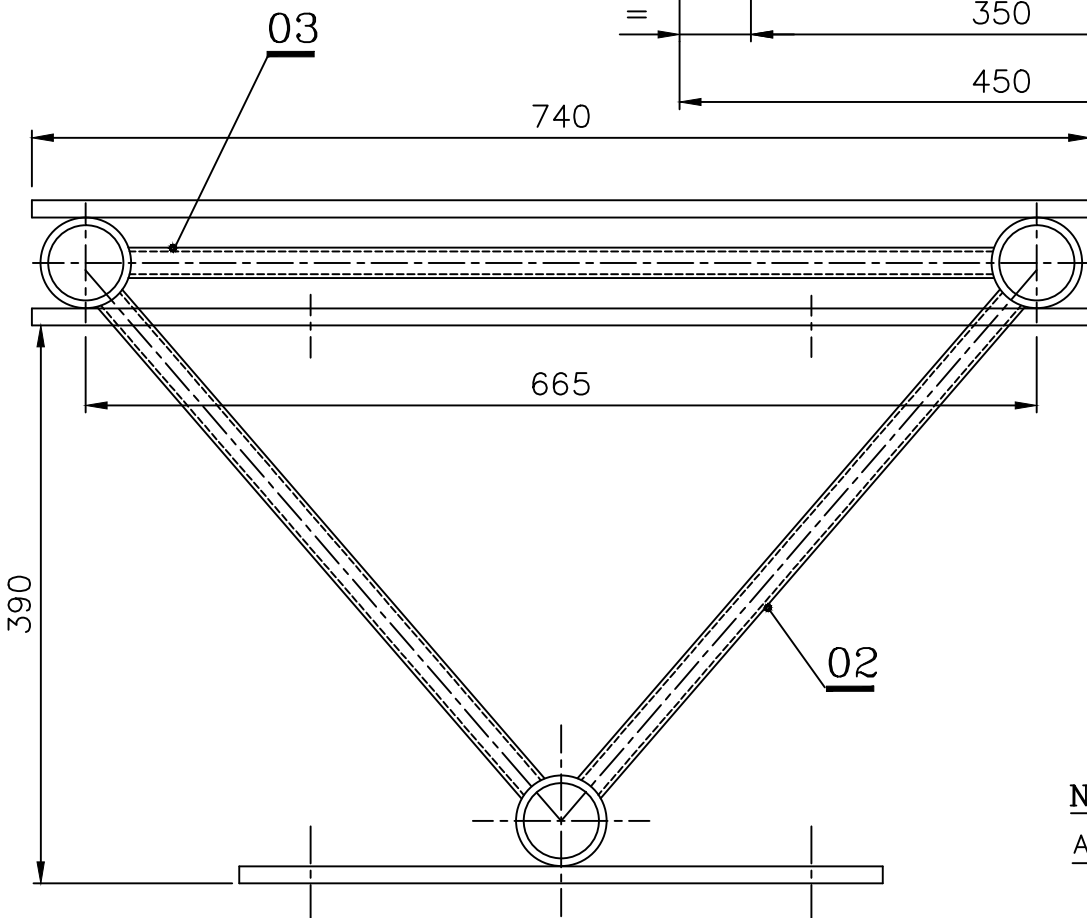
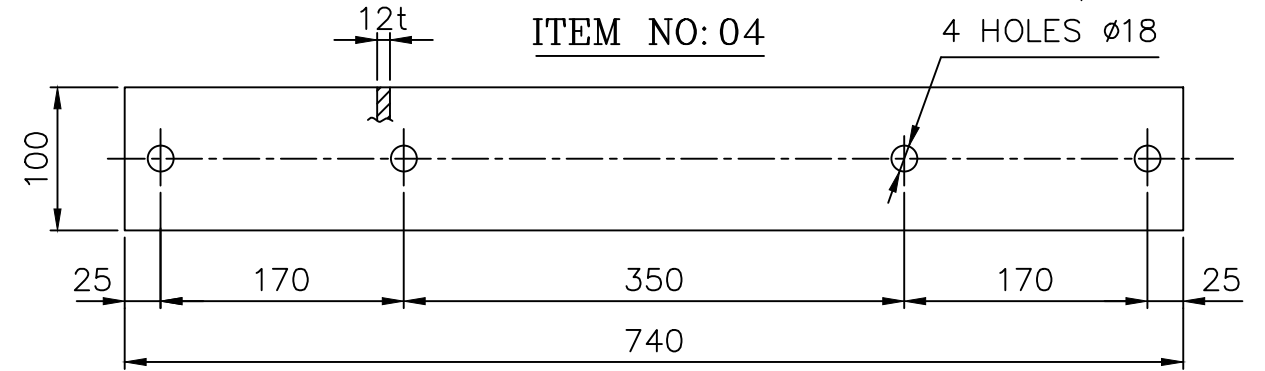
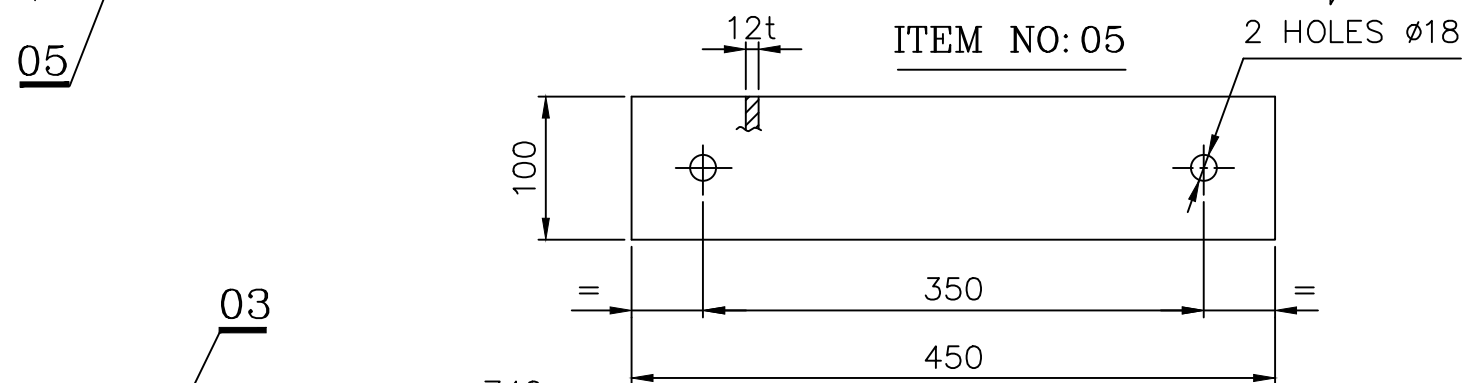
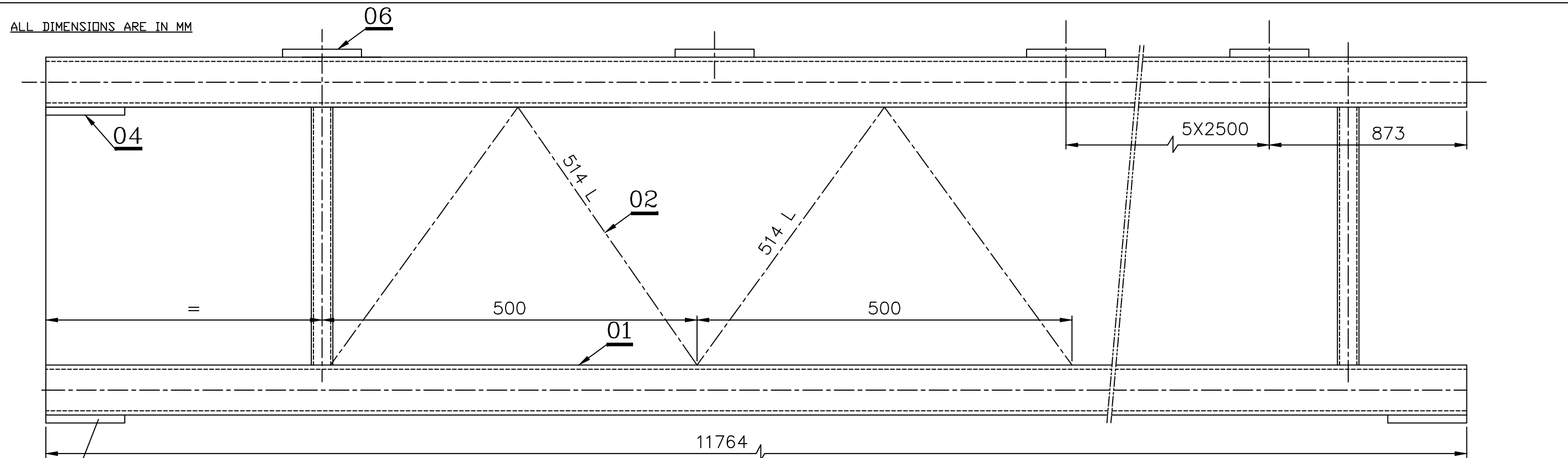


ITEM No.	DESCRIPTION	MATERIAL	STANDARD	NET.WT.IN KGS.	DRAWING No.	ITEM No.
06	PUNCHED WASHER-A16		IS: 2016 (PART-2)			11
06	HEX.NUT M16		IS: 1367 (PART-2)			10
06	HEX.BOLT M16x30L		IS: 1367			09
03	PL6tx50x435	Fe410WA	IS: 2062	3.10		08
06	PL10tx69x140	Fe410WA	IS: 2062	4.95		07
01	PL10tx140x487	Fe410WA	IS: 2062	4.38		06
01	PL12tx80x850	Fe410WA	IS: 2062	6.40		05
01	PL.10tx225x750	Fe410WA	IS: 2062	13.24		04
10	PIPE Ø34.5x3.25t.-828L	ERW	IS: 1239	20.20		03
11	PIPE Ø34.5x3.25t.-487L	ERW	IS: 1239	13.40		02
02	PIPE Ø63.5x6.3t.-6980L	SA 106Gr.B	ASME	139.50		01
				205.17		

No. of Pieces	DESCRIPTION	MATERIAL	STANDARD	NET.WT.IN KGS.	DRAWING No.	ITEM No.
	REFERENCE:		COMPONENT CODE: 00		EQUIPMENT CODE: 13	
			ALTERATIONS:	DCN REF	DATE	SIGN. INDEX
SCALE	DRAWN	<i>B. Narayanan</i>				
	CHECKED	<i>R. Ramamoorthy</i>				
1:5	APPROVED	<i>[Signature]</i>				
	DATE	06/06/03				
MACHINE: PIPE LINE			TYPE: LPG			
TITLE: TRESTLE 7M Ht. (LPG LINE)			DRAWING No: 13 3-M-20B-12280		REV.	
No. of Sheets:			Sheet No:			

CAUTION: THIS DRAWING IS OUR SOLE PROPERTY AND SHOULD NOT BE USED IN ANY FORM FOR ANY PURPOSE WITHOUT THE WRITTEN PERMISSION OF BHARAT HEAVY ELECTRICALS LIMITED TRICHIRAPPALLI - 620 014.

ALL DIMENSIONS ARE IN MM



NOTE: -
ALL WELDED CONSTRUCTION

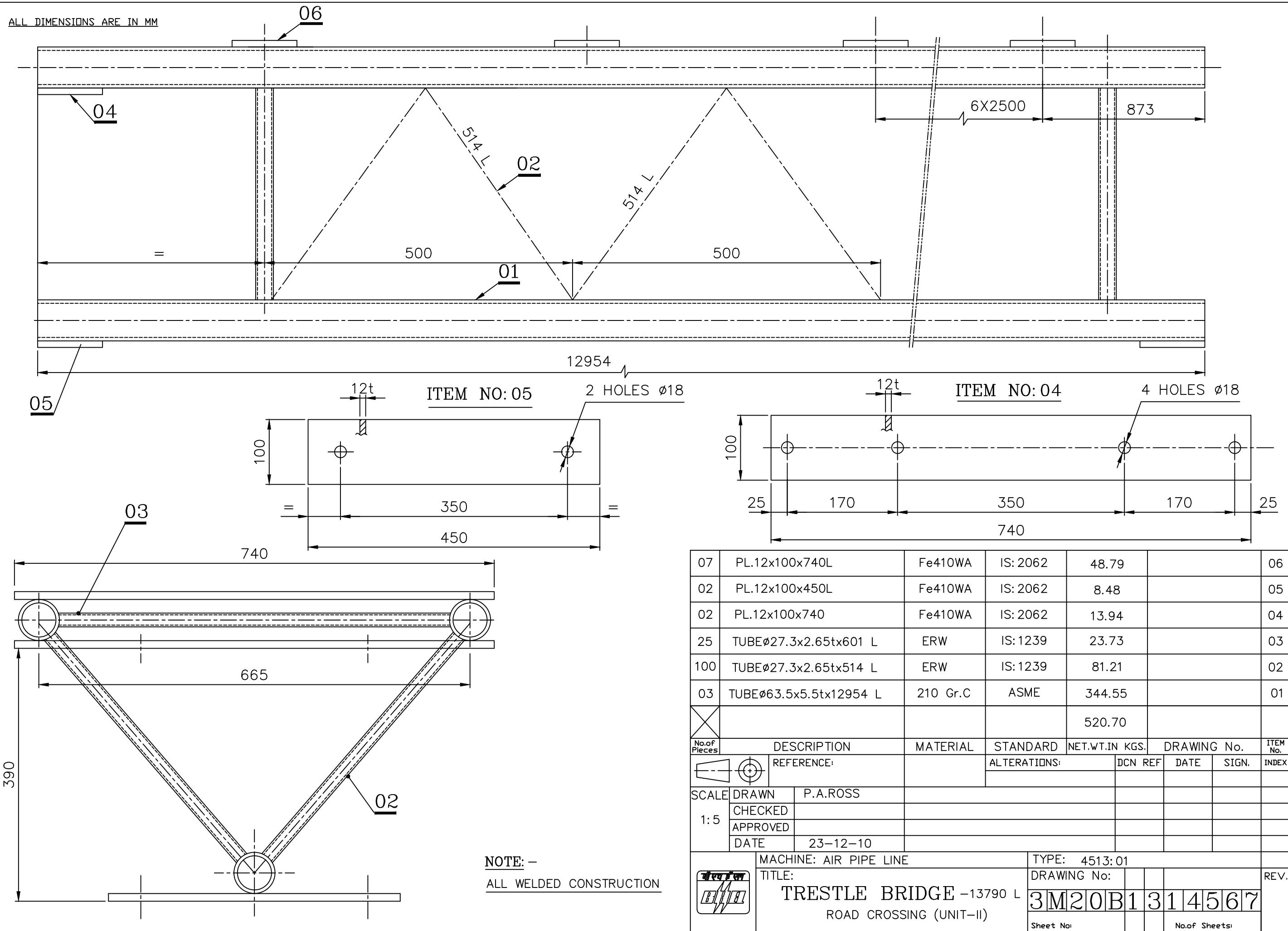
No. of Pieces	DESCRIPTION	MATERIAL	STANDARD	NET.WT.IN KGS.	DRAWING No.	ITEM No.
06	PL.12x100x740L	Fe410WA	IS: 2062	41.82		06
02	PL.12x100x450L	Fe410WA	IS: 2062	8.48		05
02	PL.12x100x740	Fe410WA	IS: 2062	13.94		04
21	TUBE ϕ 27.3x2.65tx601 L	ERW	IS: 1239	19.94		03
84	TUBE ϕ 27.3x2.65tx514 L	ERW	IS: 1239	68.22		02
03	TUBE ϕ 63.5x5.5tx11764 L	210 Gr.C	ASME	312.43		01
				465.30		

SCALE	DRAWN	S.Selvamanickam	REFERENCE:	ALTERATIONS:	DCN REF	DATE	SIGN.	INDEX
1:5	CHECKED							
	APPROVED							
	DATE	08.12.10'						

MACHINE: AIR PIPE LINE	TYPE: 4513:01
TITLE: TRESTLE BRIDGE -12600 L ROAD CROSSING (UNIT-II)	DRAWING No: 3M20B1314555
	Sheet No: No. of Sheets:

CAUTION: THIS DRAWING IS OUR SOLE PROPERTY AND SHOULD NOT BE USED IN ANY FORM FOR ANY PURPOSE WITHOUT THE WRITTEN PERMISSION OF BHARAT HEAVY ELECTRICALS LIMITED TRICHIRAPPALLI - 620 014.

ALL DIMENSIONS ARE IN MM



NOTE: -
ALL WELDED CONSTRUCTION

07	PL.12x100x740L	Fe410WA	IS: 2062	48.79	06
02	PL.12x100x450L	Fe410WA	IS: 2062	8.48	05
02	PL.12x100x740	Fe410WA	IS: 2062	13.94	04
25	TUBE ϕ 27.3x2.65tx601 L	ERW	IS: 1239	23.73	03
100	TUBE ϕ 27.3x2.65tx514 L	ERW	IS: 1239	81.21	02
03	TUBE ϕ 63.5x5.5tx12954 L	210 Gr.C	ASME	344.55	01
				520.70	

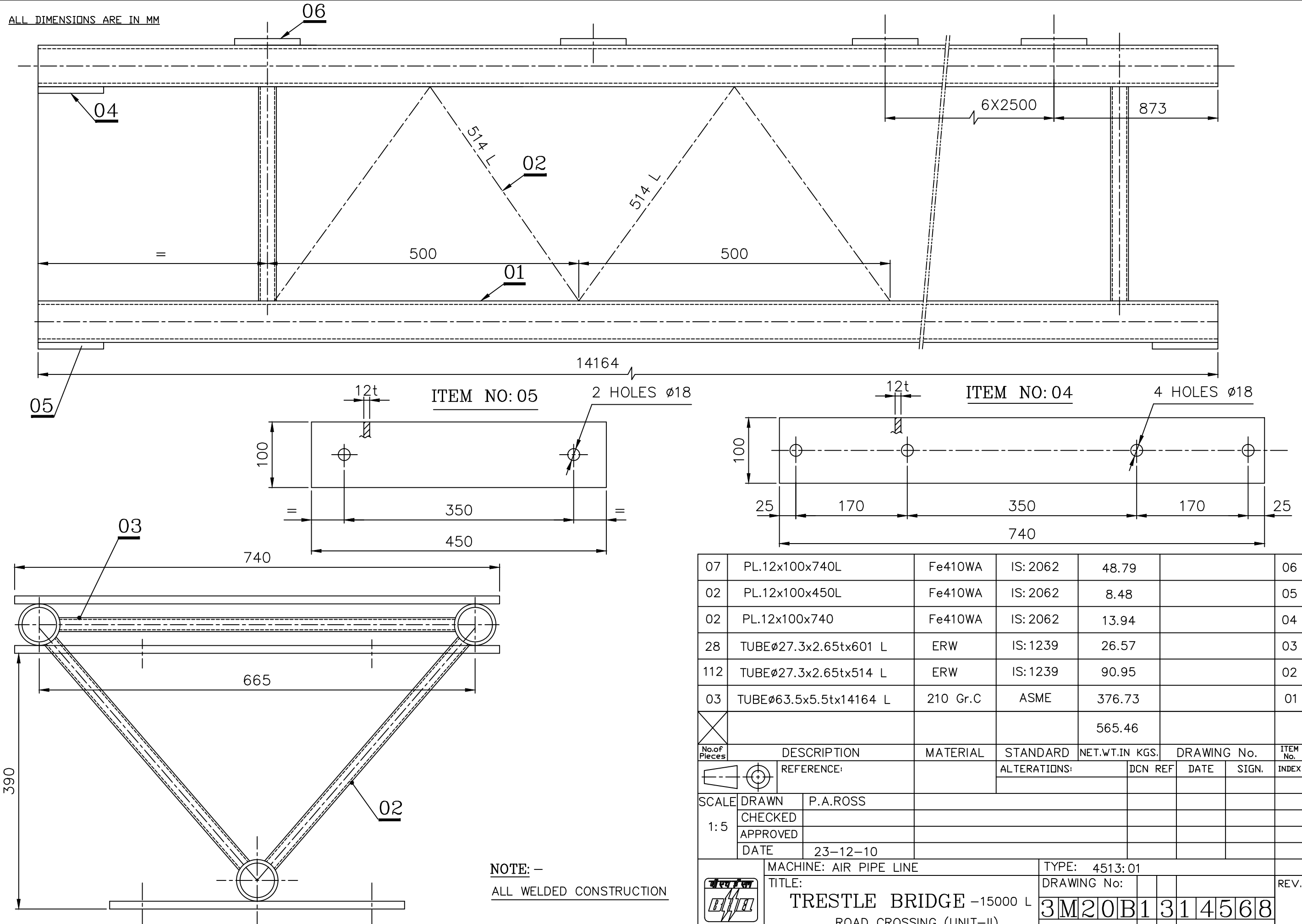
No. of Pieces	DESCRIPTION	MATERIAL	STANDARD	NET.WT.IN KGS.	DRAWING No.	ITEM No.
	REFERENCE:		ALTERATIONS:	DCN REF	DATE	SIGN.
SCALE	DRAWN	P.A.ROSS				
1:5	CHECKED					
	APPROVED					
	DATE	23-12-10				

MACHINE: AIR PIPE LINE	TYPE: 4513:01
TITLE: TRESTLE BRIDGE -13790 L	DRAWING No:
ROAD CROSSING (UNIT-II)	3M20B1 314567
Sheet No:	No. of Sheets:

REV.

CAUTION: THIS DRAWING IS OUR SOLE PROPERTY AND SHOULD NOT BE USED IN ANY FORM FOR ANY PURPOSE WITHOUT THE WRITTEN PERMISSION OF BHARAT HEAVY ELECTRICALS LIMITED TRICHIRAPPALLI - 620 014.

ALL DIMENSIONS ARE IN MM



NOTE: -
ALL WELDED CONSTRUCTION

No. of Pieces	DESCRIPTION	MATERIAL	STANDARD	NET.WT.IN KGS.	DRAWING No.	ITEM No.
07	PL.12x100x740L	Fe410WA	IS: 2062	48.79		06
02	PL.12x100x450L	Fe410WA	IS: 2062	8.48		05
02	PL.12x100x740	Fe410WA	IS: 2062	13.94		04
28	TUBEØ27.3x2.65tx601 L	ERW	IS: 1239	26.57		03
112	TUBEØ27.3x2.65tx514 L	ERW	IS: 1239	90.95		02
03	TUBEØ63.5x5.5tx14164 L	210 Gr.C	ASME	376.73		01
				565.46		

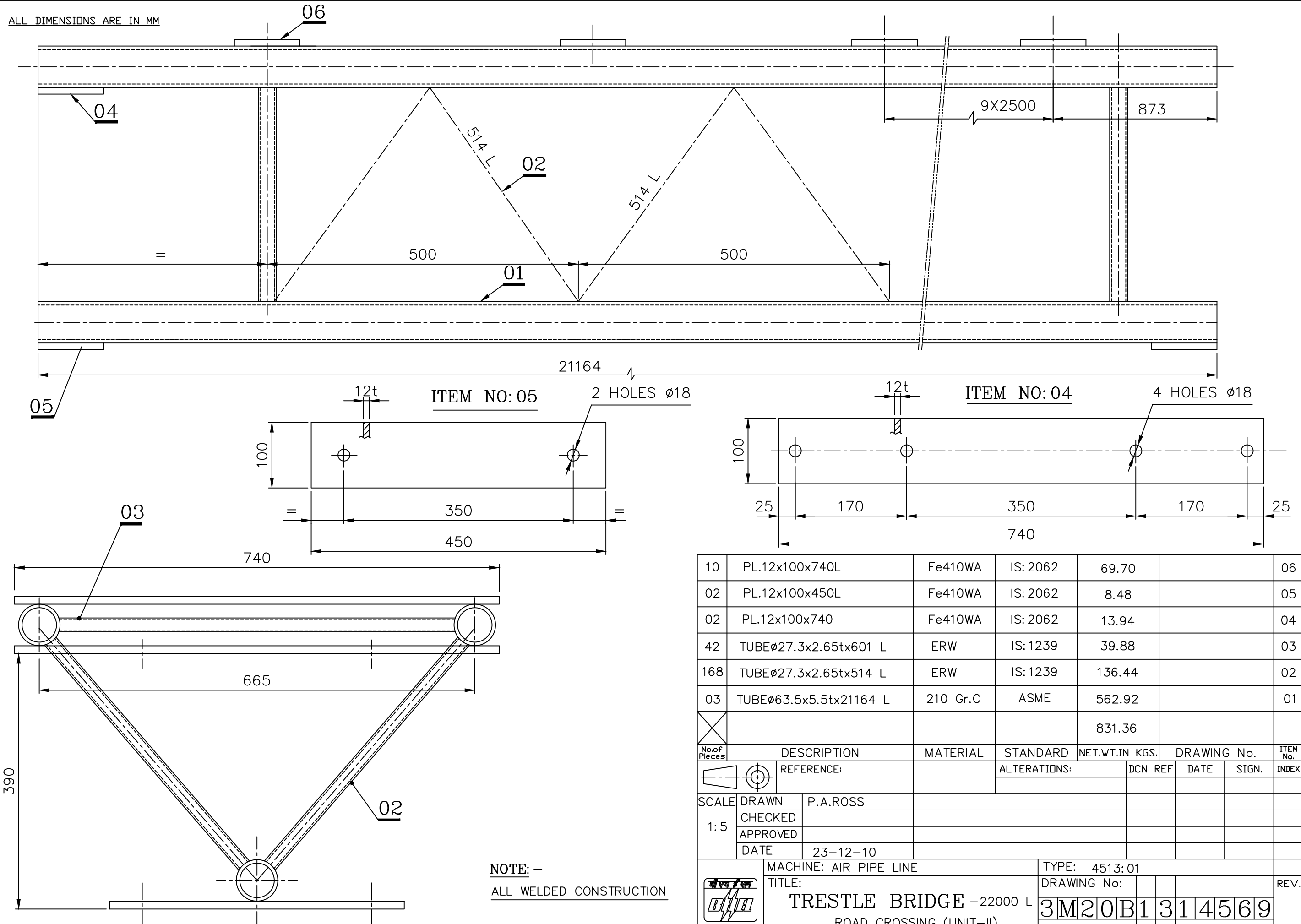
SCALE	DRAWN	P.A.ROSS	ALTERNATIONS:	DCN REF	DATE	SIGN.	INDEX
1:5	CHECKED						
	APPROVED						
	DATE	23-12-10					

MACHINE: AIR PIPE LINE	TYPE: 4513:01
TITLE: TRESTLE BRIDGE -15000 L ROAD CROSSING (UNIT-II)	DRAWING No: 3M20B1314568
	Sheet No: No. of Sheets:

REV.

CAUTION: THIS DRAWING IS OUR SOLE PROPERTY AND SHOULD NOT BE USED IN ANY FORM FOR ANY PURPOSE WITHOUT THE WRITTEN PERMISSION OF BHARAT HEAVY ELECTRICALS LIMITED TRICHIRAPPALLI - 620 014.

ALL DIMENSIONS ARE IN MM



NOTE: -
ALL WELDED CONSTRUCTION

No. of Pieces	DESCRIPTION	MATERIAL	STANDARD	NET.WT.IN KGS.	DRAWING No.	ITEM No.
10	PL.12x100x740L	Fe410WA	IS: 2062	69.70		06
02	PL.12x100x450L	Fe410WA	IS: 2062	8.48		05
02	PL.12x100x740	Fe410WA	IS: 2062	13.94		04
42	TUBE ϕ 27.3x2.65tx601 L	ERW	IS: 1239	39.88		03
168	TUBE ϕ 27.3x2.65tx514 L	ERW	IS: 1239	136.44		02
03	TUBE ϕ 63.5x5.5tx21164 L	210 Gr.C	ASME	562.92		01
				831.36		

SCALE	DRAWN	P.A.ROSS	ALTERATIONS:	DCN REF	DATE	SIGN.	INDEX
1:5	CHECKED						
	APPROVED						
	DATE	23-12-10					

MACHINE: AIR PIPE LINE	TYPE: 4513:01
TITLE: TRESTLE BRIDGE -22000 L ROAD CROSSING (UNIT-II)	DRAWING No: 3M20B1314569
	Sheet No: No. of Sheets:

REV.