



ಭಾರತ ಹೆವಿ ಎಲೆಕ್ಟ್ರಿಕಲ್ಸ್ ಲಿಮಿಟೆಡ್
भारत हेवी इलेक्ट्रिकल्स लिमिटेड
Bharat Heavy Electricals Limited

(A Government of India Undertaking)

ELECTRONICS DIVISION

P.B No. 2606, Mysore Road, Bangalore - 560 026

Phone: 080 – 26998978, Fax: 080 – 26989217 / 26989222, email id: extservices@bheledn.co.in

To,

Dear Sirs,

Sub : Tender enquiry for sub-contract work of R&M - Erection & Commissioning support for DAVR (Regulation) panels at NTPC-Kahalgaon, Unit-4 (210 MW) of Stage-I.

Tender Enquiry Number : CE/ES/2014-15/25/NTPC-KAHALGAON/RCS
Tender date : 03.03.2015
Tender due Date and Time : 26.03.2015 / 1300 Hrs.

Sealed tenders in single part are invited for taking up the subject contract work of Erection & Commissioning support of DAVR panels. The following details may be carefully studied and considered in responding to the enquiry.

1. No extension of time will be given for submission of offer under any circumstances.
2. Offer cover shall be super scribed with the "Tender Enquiry number, due date and time".
3. Offer can be sent by post/courier addressed to the **Addl. General Manager/ External Services Department, BHEL-EDN, P.B.No.2606, Mysore Road, Bangalore - 560 026** so as to reach us before the due date and time.
4. Offers will be opened at Tender opening room situated near Reception, BHEL-EDN, Bangalore on 26.03.2014 at 1330 hours in the presence of bidder who wish to be present.
5. The tender is for two nos. of DAVR (Regulation) panels in suite of 2 & 3 respectively.
6. The validity of offer shall be for 90 days from the date of opening.



7. The prices quoted shall be FIRM. No escalation in price/s will be allowed.
8. Service tax, if applicable, shall be paid extra on submission of ST registration certificate / details.
9. The bidder shall submit a copy of ESI, PF registration and Income Tax PAN Number along with the offer.
10. The tender is likely to be finalized in a very short time.
11. The bidder is advised to visit the project site to familiarize themselves with the project site conditions.
12. The total estimated value of work is Rs. 2,80,000.00 (Rupees Two Lakh eighty thousand) exclusive of service tax.
13. The estimated time for completion of work for One unit is 15-20 days or inline with NTPC-KAHALGAON program for unit shut down and re-synchronising of the unit whichever is later.
14. Advance payment and interim payment will **not** be paid to the Contractor.
15. For any clarification on this tender, Addl. General Manager / External Services may please be contacted on phone no. 080-26989080 / 9945530203, Fax no. 080-26989222 / 26989217, email id: extservices@bheledn.co.in

Enquiry comprising of following documents are issued herewith:

- a) Section 1: Special Instructions
- b) Section 2: Scope of Work
- c) Section 3: Schedule of price
- d) Section 4: List of Drawing.
- e) Section 5: Special conditions of contract.
- f) Section 6: No deviation certificate.


Kindly acknowledge receipt of this tender enquiry. In case bidder does not want to quote against this enquiry, a written communication may please be sent to the undersigned before the tender opening date and time.

BHEL reserves the right to cancel or reject the offer either partly or in full without assigning any reasons thereof.

Bidder is advised to return one set duly signed in all the pages along with the offer.

Thanking you,

Yours Faithfully,
For & On behalf of BHEL-EDN


(RAJESH C SHAH)
MANAGER / EXTERNAL SERVICES



SECTION 1
SPECIAL INSTRUCTIONS

1. The offer shall be submitted in a single part in a sealed envelope prominently super scribing the Tender Enquiry Number and due date as mentioned in the covering letter.
2. The bidder is requested to carefully and thoroughly read the instructions/ documents sent to them. For any further clarifications BHEL may be contacted.
3. The bidder is advised to visit project site to familiarize themselves with the site conditions before preparing the offer.
4. **EARNEST MONEY DEPOSIT (EMD):**
 - a. EMD for Rs. 10,000/- (Rupees Ten Thousand only) in the form of crossed Demand Draft drawn in favor of BHEL- Electronics Division Bangalore payable at Bangalore shall be sent along with the bid. EMD in any other form will not be accepted.
 - b. EMD shall not carry any interest.
 - c. EMD by the tenderer will be forfeited if after opening the tender, the tenderer revokes his tender within the validity period or increases the rates w.r.t. earlier quoted rates.
 - d. EMD by the tenderer will be forfeited if the tenderer does not commence the work within the period as per LOI/ contract.
 - e. EMD given by all unsuccessful tenderers shall be refunded normally within thirty days of acceptance of award of work by the successful tenderer
5. Security deposit @ 10% of the basic price of work order (including service tax) shall be paid by the successful bidder. The successful bidder has option to pay a minimum of 50% of the SD amount by pay order or demand draft in favour of BHEL, payable at Bangalore before start of work and balance 50% can be recovered while releasing the payment for work carried out.
6. The security deposit shall not carry any interest.
7. The Contractor will have to submit a certificate to BHEL declaring that the Contractor has complied with all the statutory provisions including and pertaining to Provident fund and ESI during the execution period of the contract.
8. Security Deposit amount will be returned after 90 days from the date of successful completion of work as per the contract after duly certified by BHEL Site Engineer and on receipt of compliance certificate (as per Sl. No. 6 above).
9. Workmanship guarantee is applicable for a period of 90 days from the date of successful completion of work. Any rectification work to be carried out during the guarantee period shall be carried out at free of cost.
10. The Contractor shall mobilize his men, materials, tools & tackles to site immediately from the date of intimation from BHEL or release of LOI / WO.



11. In addition to the local laws and regulations the bidder shall also comply with the Minimum Wages Act. The Payment of Wages Act and the rules made there under in respect of labour currently employed on or connected with the contract shall be followed.
12. A declaration indicating that there is no deviation from the conditions mentioned in tender documents should be given in the format as per section 6.
13. Bidder is issued two sets of tender documents and one set of documents should be returned with each page duly signed & stamped by them to BHEL along with their offer.
14. The work will be taken up for Unit-4 at Stage-I during First week of April (tentatively) and the work shall be completed as per the BHEL's / NTPC-KAHALGAON requirement / Shutdown schedule.
15. Payment term: 100% payment (less 50% of SD amount, as applicable if the total SD amount is not received) will be released within 30 days from the date of receipt of bill at BHEL-EDN, Bangalore on completion of work and certification by BHEL site Engineer or BHEL-Customer. Bill shall be forwarded to BHEL-EDN, Bangalore for process and release of payment will be from Bangalore.
16. Mode of payment: Payment will be made by EFT and the charges shall be borne by the Contractor. The Contractor will be required to submit required formats for EFT mode of payment along with a crossed cancelled Cheque.
17. No claim certificate to be submitted along with the invoice for payment
18. Service tax, if applicable, shall be paid extra. A copy of service tax registration certificate shall be enclosed with the offer.
19. Income tax plus surcharge as applicable will be deducted from the gross amount of each bill. Please indicate the IT PAN and a copy of PAN Card be submitted with the offer



SECTION 2

ERECTION & COMMISSIONING WORK FOR DAVR (REGULATION) PANELS AT NTPC-KAHALGAON, UNIT-4 (210 MW) OF STAGE-I.

A) SCOPE OF WORK.

1. DISMANTLING (INCLUDING DISCONNECTION OF EXISTING POWER AND CONTROL CABLES) SHIFTING OF EXISTING CUBICLES TO CUSTOMER STORE OF UNIT (MAIN GENERATOR AVR & AUX. GENERATOR AVR)
2. SHIFTING OF TWO NEW REGULATION PANEL CUBICLES (MAIN GENERATOR DAVR SUITE OF 3 AND AUXILIARY GENERATOR DAVR SUITE OF 2) FROM CUSTOMER STORES TO THE PLACE OF ERECTION AND ERECTION OF CUBICLES. MINOR CIVIL WORK FOR ERECTION OF CUBICLES, IF REQUIRED. (TOTAL CUBICLES = 5 NOS.)
3. REMOVAL OF PULSE FINAL STAGE ASSEMBLY FROM EXISTING THYRISTOR PANELS (MAIN GENERATOR 12 No's AND AUXILIARY GENERATOR 4 Nos.) AND MOUNTING OF 96 No's. PULSE TRANSFORMERS (6 Nos. IN EACH CUBICLE) IN EXISTING THYRISTOR CUBICLES (16 No's).
4. INTERCONNECTION OF ALL CABLES (POWER, CONTROL & INSTRUMENTATION) INCLUDING GLANDS, LUGS & NEW FERRULES SUPPLY AS REQUIRED, CABLE LAYING & TERMINATION WORK FOR NEW PANELS AND CABLE LAYING AND TERMINATION FOR REMOTE OPERATION BOTH REGULATION PANELS.
5. PANEL EARTHING, CONSOLE MOUNTING AT CONTROL ROOM. ALL TERMINATIONS AND CONNECTIONS REQUIRED FOR REMOTE OPERATION AND MOUNTING/REMOVAL OF LOOSE ITEMS FOR BOTH REGULATION PANELS.
6. PROVIDING MAN POWER DURING PRE-COMMISSIONING CHECKS AND COMMISSIONING CHECKS FOR A PERIOD OF ABOUT 30 DAYS FOR BOTH REGULATION PANELS
7. TOOLS FOR CABLING & ERECTION OF PANELS (FERRULE PRINTING MACHINE ETC.) & FOR TESTING (3 PH VARIAC, 2 NOS. MULTIMETERS ETC.) AS REQUIRED FOR COMPLETION OF COMMISSIONING.

B) OTHER WORKS:

- Assistance for verification of materials at site.
- Minor civil works for erection of panels including base frame fabrication/ modification as required. Fixing of foundation bolts and welding of base frame as required.
- Cable dressing / tagging etc.,
- Panel earthing including laying of cable up to Earth pit
- Removal of related debris and cleaning of area
- Any other minor work for satisfactory completion of contract



C) MAN POWER:

Supervisor, Electricians/Technicians and Helpers are to be provided to assist BHEL site engineer during testing, modifications and commissioning of DAVR (Regulation) System.

D) SUPPLY OF MATERIALS:

Consumables for cable laying & termination such as, ferrules, lugs for cables, ties, tags, clamps, etc. as per the requirement to be procured and used by the Contractor at no extra cost to BHEL.

E) All tools & tackles required for carrying out the erection and commissioning work to be arranged by the Contractor including the following instruments:

- i) Megger 0-1KV – 1no.
- ii) Digital Multimeter – 2 nos.
- iii) 3 phase Variac 5A - , 1 no.
- iv) 3 Phase Variac 15A – 1 no.
- v) Rheostat 5A – 3 nos.
- vi) Tong tester 0-20A – 1no.

Security of all the materials during erection of the equipment till the commissioning is in the scope of Contractor. Any loss due to damages and theft will be recovered from the Contractor in full.

Any other associated minor works required for the satisfactory completion of erection and commissioning of the system is in the scope of the Contractor even if it is not exclusively mentioned in the scope of work.

Being shutdown job, this work has to be completed within 15-20 days as said in point 13 (page 2 of 12) and shall be carried out during First week of April, 2015 (tentatively).

The Contractor should be able to depute required manpower as desired by BHEL Site Engineer intimation.



SECTION - 3
SCHEDULE OF PRICE

LUMP SUM AMOUNT FOR DISMANTLING OF EXISTING SEE REGULATION CUBICLE & ERECTION & COMMISSIONING WORK OF SEE SYSTEM WITH 2 NOS. REGULATION CUBICLES RETROFIT (MAIN GENERATOR DAVR SUITE OF 3 & AUX. GENERATOR DAVR SUITE OF 2) FOR NTPC KAHALGAON SUPER THERMAL POWER STATION STAGE-I AT KAHALGAON, BHAGALPUR, BIHAR

Sl. No.	Description
1	DISMANTLING (INCLUDING DISCONNECTION OF EXISTING POWER AND CONTROL CABLES) SHIFTING OF EXISTING CUBICLES TO CUSTOMER STORE OF UNIT (MAIN GENERATOR AVR & AUX. GENERATOR AVR)
2	SHIFTING OF TWO NEW REGULATION PANEL CUBICLES (MAIN GENERATOR DAVR SUITE OF 3 AND AUXILIARY GENERATOR DAVR SUITE OF 2) FROM CUSTOMER STORES TO THE PLACE OF ERECTION AND ERECTION OF CUBICLES. MINOR CIVIL WORK FOR ERECTION OF CUBICLES, IF REQUIRED. (TOTAL CUBICLES = 5 NOS.)
3	REMOVAL OF PULSE FINAL STAGE ASSEMBLY FROM EXISTING THYRISTOR PANELS (MAIN GENERATOR 12 No's AND AUXILIARY GENERATOR 4 Nos.) AND MOUNTING OF 96 No's. PULSE TRANSFORMERS (6 Nos. IN EACH CUBICLE) IN EXISTING THYRISTOR CUBICLES (16 No's).
4	INTERCONNECTION OF ALL CABLES (POWER, CONTROL & INSTRUMENTATION) INCLUDING GLANDS, LUGS & NEW FERRULES SUPPLY AS REQUIRED, CABLE LAYING & TERMINATION WORK FOR NEW PANELS AND CABLE LAYING AND TERMINATION FOR REMOTE OPERATION BOTH REGULATION PANELS.
5	PANEL EARTHING, CONSOLE MOUNTING AT CONTROL ROOM. ALL TERMINATIONS AND CONNECTIONS REQUIRED FOR REMOTE OPERATION AND MOUNTING/REMOVAL OF LOOSE ITEMS FOR BOTH REGULATION PANELS.
6	PROVIDING MAN POWER DURING PRE-COMMISSIONING CHECKS AND COMMISSIONING CHECKS FOR A PERIOD OF ABOUT 30 DAYS FOR BOTH REGULATION PANELS
7	TOOLS FOR CABLING & ERECTION OF PANELS (FERRULE PRINTING MACHINE ETC.) & FOR TESTING (3 PH VARIAC, 2 NOS. MULTIMETERS ETC.) AS REQUIRED FOR COMPLETION OF COMMISSIONING.

i) IN FIGURES:

ii) IN WORDS:

SERVICE TAX (PERCENTAGE AND AMOUNT):

TOTAL AMOUNT (INCLUDING SERVICE TAX):

(SIGNATURE WITH SEAL OF THE CONTRACTOR)



SECTION 4
LIST OF DRAWING / DOCUMENT

1. OGA OF DAVR EQUIPMENT
- DRAWING NO. 3-655-00-10492 REV. 00



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SECTION 5
SPECIAL CONDITIONS OF CONTRACT

The work is to be executed at NTPC KAHALGAON for Unit-4 (210MW) of Stage-I

1. The Contractors shall get themselves familiar with the site and nature of job in advance where the works is to be executed before quoting their rates.
2. Apart from Service tax any other govt. taxes as applicable from time to time shall be borne by the Contractor.
3. The Contractor shall arrange to obtain valid gate passes for his men and equipment's from the concerned authorities.
4. No man / material / equipment not covered by valid gate pass shall be permitted within the power station area and no material / equipment shall be permitted to be taken out of the power station unless authorized by concerned authority. The Contractor shall be held fully responsible for any delays / losses / damages that may result consequent on any lapses that may occur on the part of his employees in this regard.
5. Carrying./ striking of matches, lighters or smoking or other acts which may cause fire hazards in the restricted area of power station such as Hydrogen plants, Hydrogen storage area, fuel oil plant / storage areas etc. is strictly prohibited.
6. In the prescribed areas of power station no hot work such as welding, gas cutting etc., which may cause fire hazards shall be carried out unless valid gas safety / fire permit is obtained from the BHEL site Engineer and necessary precautions are taken to avoid any risk of fire hazards.
7. The Contractor shall compulsorily provide Personal Protective Equipment's (PPE's) to his employees & in the event of his not providing the same by date specified by Customer or as mentioned in contract, it will be provided by BHEL/NTPC-KAHALGAON at Contractor's risk and cost of the same will be recovered from the bill/s.
8. All necessary personal safety equipment as considered adequate by the BHEL site Engineer or the safety officer of NTPC-KAHALGAON should be made available at Contractor's cost for use by the persons employed at the site and be maintained in a condition suitable for immediate use. The Contractor should also give sufficient safety training and instructions to his workmen and ensure proper use of safety equipment by those concerned.
9. The Contractor shall obtain permission from appropriate authority / license if required under any applicable law regulations for engaging labours for execution of the work and observe all terms and conditions of the said authorization / license.
10. The Contractor shall comply with the provision of all applicable labour legislation / Acts pertaining to payment of wages and shall pay his workers wages not less than minimum as applicable in NTPC-KAHALGAON premises.



11. The Contractor has to make his own arrangement for T&P safety appliances and consumables required for the above job.
12. The work shall be executed as per the direction and to the satisfaction of BHEL site Engineer. Decision of BHEL site Engineer will be firm and binding on all matters.
13. Any person below the age of 18 years shall not be deployed for the work.
14. The Contractor shall be required to pay full wages to the workers as per prevailing rules.
15. If the Contractor fails to deploy required numbers of labors as per the terms of contract, then recovery @ double the minimum wages of unskilled labour shall be effected for number of labours less than the specified requirement, if not specially mentioned otherwise.
16. The Contractor has to comply with the safety requirement of the NTPC-KAHALGAON premises.
17. The Contractor shall possess "**Independent PF code & ESI code**". Contractor has to observe all formalities as per PF & ESI act or Workmen Compensation Insurance, as applicable.
18. The Contractor shall furnish a copy of Labour license from the Dy. Commissioner of Labour, if applicable.
19. The Contractor shall be liable to comply with provisions under the various labour legislations. Besides other obligations under the labour legislations he is required to ensure payment of minimum wages as per Minimum Wages Act, grant of leaves, as per the notification of Chief labour commissioner, Provident fund under the Provident Fund Act, compensation under the workmen compensation Act, Retrenchment compensation etc. The Contractor shall indemnify BHEL / NTPC-KAHALGAON against all claims, damages and compensations on account of his failure to comply with statutory provisions.
20. The Contractor shall not subcontract, transfer or assign any part or full work of this award without prior written permission from BHEL.
21. In case of any conflict amongst the various drawings and other tender documents, the decision of the BHEL site Engineer shall be final and binding.
22. If any dispute or difference of any kind whatsoever shall arise between BHEL-EDN and the Contractor arising out of the contract or with respect to its interpretation, whether during or after its completion or whether before or after its termination, abandonment or breach of the contract, it shall be referred to the sole arbitration of the Unit head of BHEL-EDN or any Officer duly authorized by him in this behalf and the decision of the Arbitrator shall be final and binding on the parties.



23. It would be the responsibility of the Contractor to give weekly off and other holidays to their employees as applicable at the place of working (NTPC-KAHALGAON).
24. As per NTPC-KAHALGAON statutory requirement, the Contractor and their workers shall follow all safety rules while working so that there should not be any accident, which may cause loss of life and damage to Customer's property. Contractor shall also take insurance cover for workmen compensation for the workers employed by him at his own cost.
25. No complaints from Contractor's workmen with regard to nature of work entrusted or place of work will be entertained.
26. The Contractor or his authorized representative shall be available at plant site daily for receiving necessary instructions from Engineer –In-Charge, BHEL and to carry out the work accordingly.
27. The Contractor should note that the labour under their contract will be working in the vicinity of running equipment's and they should give proper instructions to all the workers under their control to be careful so as to avoid any accidents.
28. The Contractor is required to carry out the work in controlled conditions so as to contain air pollution, water/land contamination within relevant legislative and statutory requirements.

Note: The term 'Company' means BHEL and Customer means NTPC-KAHALGAON.



**Sub-contract work of R&M - Erection & Commissioning support for DAVR
(Regulation) panels at NTPC-Kahalgaon, Unit-4 (210 MW) of Stage-I.**

(PREFERABLY TO BE GIVEN ON SUB CONTRACTORS LETTER HEAD)

Section 6

CERTIFICATE FOR NO DEVIATION

I/We,

.....

Of M/s.....

hereby certify that there is no deviation from the tender specifications and conditions either technical or commercial and I/We agree to all the terms and conditions mentioned in the tender specification.

Signature of the Contractor
With seal

Place :

Date :

FIRST ANGLE PROJECTION
3 655 00 10492

(ALL DIMENSIONS ARE IN MM)

OVERALL GENERAL ARRANGEMENT FOR DIGITAL AUTOMATIC VOLTAGE REGULATOR

PROJECT :- 210 MW STG FOR NTPC, KAHALGAON.

CLIENT :- NTPC LIMITED.

RATING :- 1 x 210 MW STG.

WBS NO. :- CE/1104-SH1-48-01 &
CE/1104-SH1-48-02.

STATUS AS :-

SUBMITTED	23.12.2013
APPROVED	

PROJECT : 210 MW STG FOR NTPC, KAHALGAON.

BHARAT HEAVY ELECTRICALS LIMITED.
ELECTRONICS DIVISION, BANGALORE

TITLE: OGA FOR DAVR EQUIPMENT
(IDENTIFICATION SHEET)

No. OF SHEETS	07
SHEET No.	01

REV 00

W.B.S No. CE/1104-SH1-48-01 &
CE/1104-SH2-48-02. DRG. No. 3 655 00 10492

A3 SIZE

INVENTORY No.	REF. DRG. No.	SGL. & DATE
	36550010492/RAR	

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FORM No. AS-03

INVENTORY No. SKN. & DATE REF. DRG. No. 36550010492/R/M

TABLE OF EQUIPMENTS

REF.	DESCRIPTION	PROT. CLASS	QTY.	TOTAL WEIGHT IN Kg. (App.)	LOSSES	No. OF SHIPPING
DAVR	REGULATION CUBICLES	IP31	3	3000	3.5 KW	1
DAVR	REGULATION CUBICLES		2	2000	3.0 KW	1

COLOUR OF THE CUBICLE			REMARKS
SURFACE	COLOUR	SHADE	
EXTERIOR	PEBBLE GREY	RAL 7032	POWDER COATED
INTERIOR	BRILLIANT WHITE	No. 9-102, SP:1650	

NOTES :-

- PANEL CONSTRUCTION (EXCEPT BOTTOM COVERS) : C.R.C.A. STEEL SHEET 2mm THICK.
- BOTTOM COVER & GLAND PLATES : C.R.C.A. STEEL SHEET 3.0 mm THICK.
- HOUSE OF PANEL : CUBICLE TO BE MOUNTED IN A CLEAN AND DUST FREE PLACE.
- RECOMMENDED CLEARANCE ON FRONT AND REAR OF THE PANEL IS 1.5 METRE.
- 0VOLT EARTH & SCREEN EARTH POINTS OF AVR SHALL PREFERABLY BE EARTHED TO THE SEPARATE ELECTRONIC LOW VOLTAGE EARTH POINT IN THE PLANT, ISOLATED FROM PLANT EARTH.
- AFTER OPENING THE DOOR MINIMUM WORKING SPACE OF 1.0 METRE SHALL BE LEFT ON FRONT AND REAR SIDES OF ALL THE CUBICLES FOR BETTER APPROACHABILITY & MAINTAINABILITY.
- BOTTOM FRAME OF THE CUBICLES ARE TO BE WELDED TO THE ISMC CHANNEL AT FRONT & REAR SIDE OF THE CUBICLE.

PROJECT : 210 MW STG FOR NTPC, KAHALGAON.

BHARAT HEAVY ELECTRICALS LIMITED.
ELECTRONICS DIVISION, BANGALORE

OGA FOR DAVR EQUIPMENT
(TABLE OF EQUIPMENTS/GENERAL NOTES)

No. OF SHEETS 07
SHEET No. 02

W.B.S. No. CE/1104-SH1-46-01 & CE/1104-SH1-46-02
DRG. No. 3 655 00 10492
REV 00

REV.	DATE	ALTERED CHECKED APPROVED	NAME	SIGN	DATE
			DRAWN PRADEEP		21.12.13
			CHECKED KBR		21.12.13
			APPROVED R/M		21.12.13

3 655 00 10492

3 655 00 10492

3 655 00 10492

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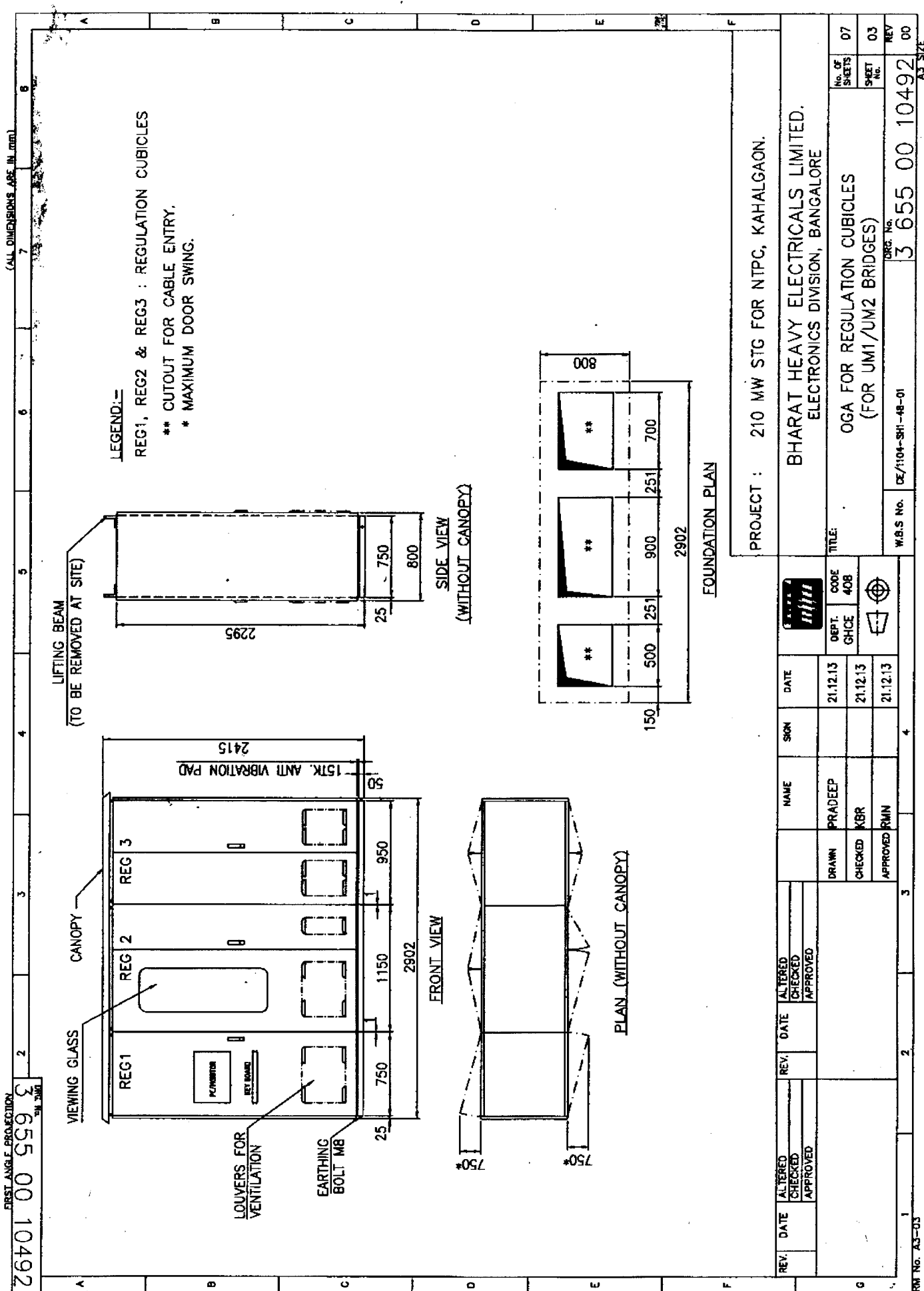
REF. DRG. No.

36550010466/R/M

SIGN. & DATE

INVENTORY No.

FORM No. A3-03



PROJECT : 210 MW STG FOR NTPC, KAHALGAON.
 BHARAT HEAVY ELECTRICALS LIMITED.
 ELECTRONICS DIVISION, BANGALORE

TITLE: OGA FOR REGULATION CUBICLES (FOR UM1/UM2 BRIDGES)

No. of SHEETS 07
 SHEET No. 03

REV 00
 3 655 00 10492

W.B.S No. DE/1104-SH-48-01

REV.	DATE	ALTERED	DATE	NAME	SRON	DATE
1		CHECKED	21.12.13	PRADEEP		21.12.13
2		APPROVED	21.12.13	KBR		21.12.13
3		APPROVED	21.12.13	RMN		21.12.13

DEPT: GHCE
 CODE 408

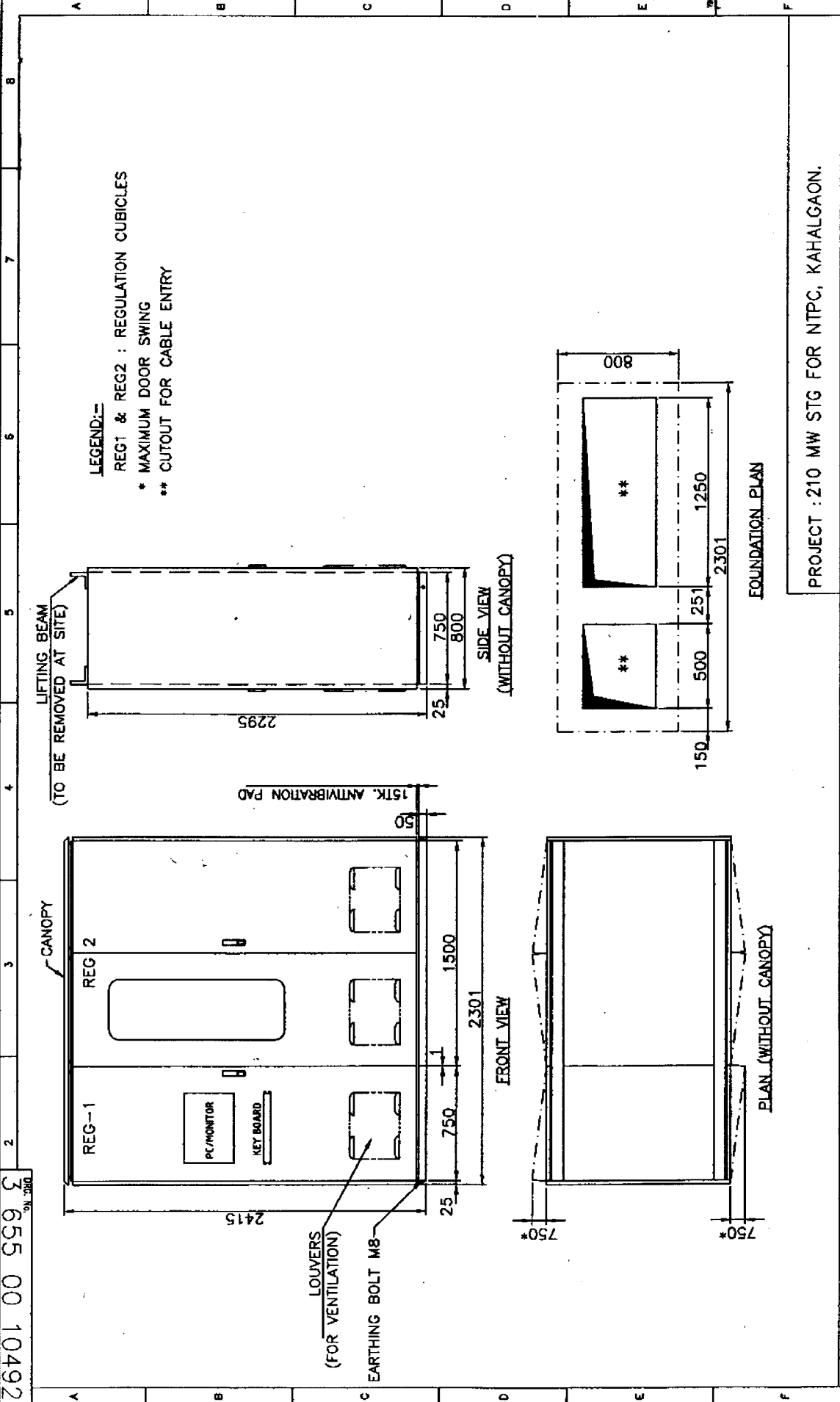


AS SIZE

(ALL DIMENSIONS ARE IN MM)

FIRST ANGLE PROJECTION
3 655 00 10492
ON 3000

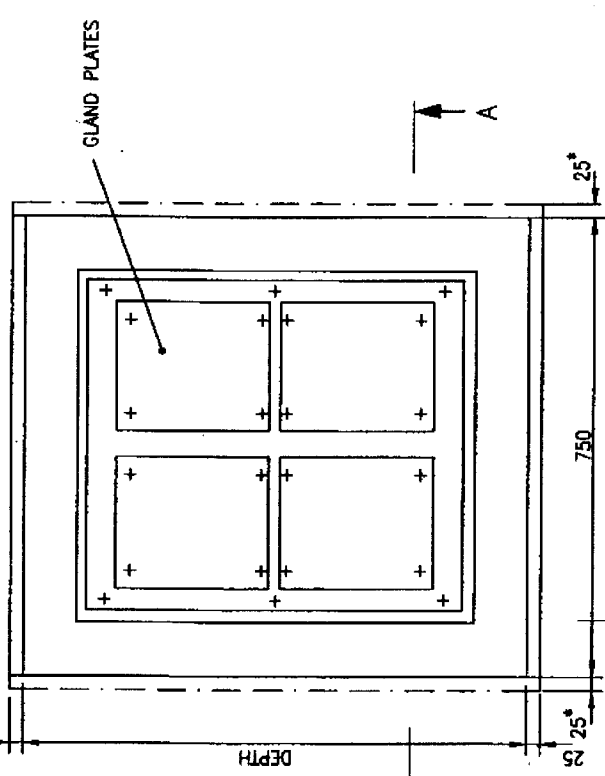
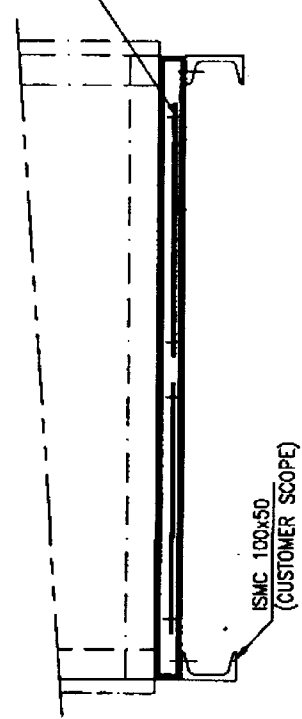
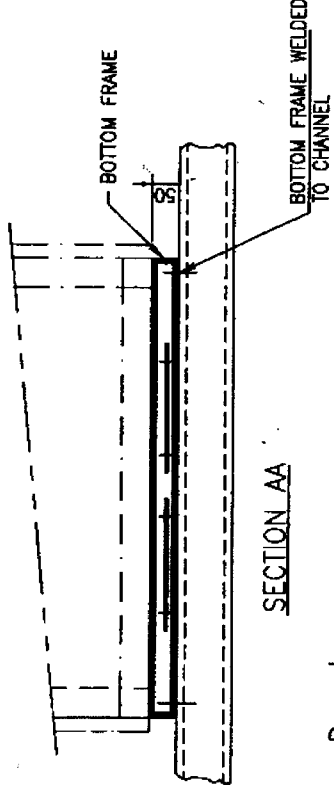
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REV. DATE	ALTERED	CHECKED	APPROVED	REV. DATE	ALTERED	CHECKED	APPROVED
SIGN. & DATE				INVENTORY NO.			
REF. DRG. NO. 35550010466/R/M/N				35550010466/R/M/N			
SIGN. & DATE				INVENTORY NO.			
PROJECT : 210 MW STG FOR NTPC, KAHALGAON.				BHARAT HEAVY ELECTRICALS LIMITED. ELECTRONICS DIVISION, BANGALORE			
TITLE: OGA FOR REGULATION CUBICLES (FOR UN1/UN2 BRIDGES)				No. OF SHEETS 07			
DRG. No. 3 655 00 10492				SHEET No. 04			
W.B.S No. CE/1104-SH-48-02				REV 00			

FIRST ANGLE PROJECTION
3 655 00 10492

ALL DIMENSIONS ARE IN (MM)



NOTE :-

1. GLAND PLATE MAY BE DRILLED AT SITE FOR SUITABLE CABLE GLANDS.
 2. BOTTOM FRAME OF THE CUBICLES ARE TO BE WELDED TO THE ISMC CHANNEL AT FRONT & REAR SIDE OF THE CUBICLE.
 3. UNLESS OTHERWISE STATED THE VIEWS ARE NOT TO SCALE.
 4. GLAND PLATE/PLATES ABOVE FLOOR CUTOUT CAN BE REMOVED WITHOUT OPENING THE REMAINING.
- *.DIMENSION IS APPLICABLE ONLY WHEN THERE IS NO ADJACENT PANEL.

PROJECT : 210 MW STG FOR NTPC, KAHALGAON.

BHARAT HEAVY ELECTRICALS LIMITED.
ELECTRONICS DIVISION, BANGALORE

TITLE:
OGA FOR DAVR EQUIPMENT
TYPICAL FOUNDATION DETAILS (REG1)

NO. OF SHEETS	07
SHEET NO.	05
REV	00

W.B.S No. CE/104-SH1-48-01 & CE/104-SH1-48-02

DRG. NO. 3 655 00 10492

A3 SIZE

REV.	DATE	ALTERED	CHECKED	APPROVED	REV.	DATE	ALTERED	CHECKED	APPROVED
DRAWN					DRAWN				
CHECKED					CHECKED				
APPROVED					APPROVED				
NAME					NAME				
SIGN					SIGN				
DATE					DATE				
DEPT.					DEPT.				
CODE					CODE				
GHCE					GHCE				
408					408				

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REF. DRG. NO. 36550010468/RMN

SIGN & DATE

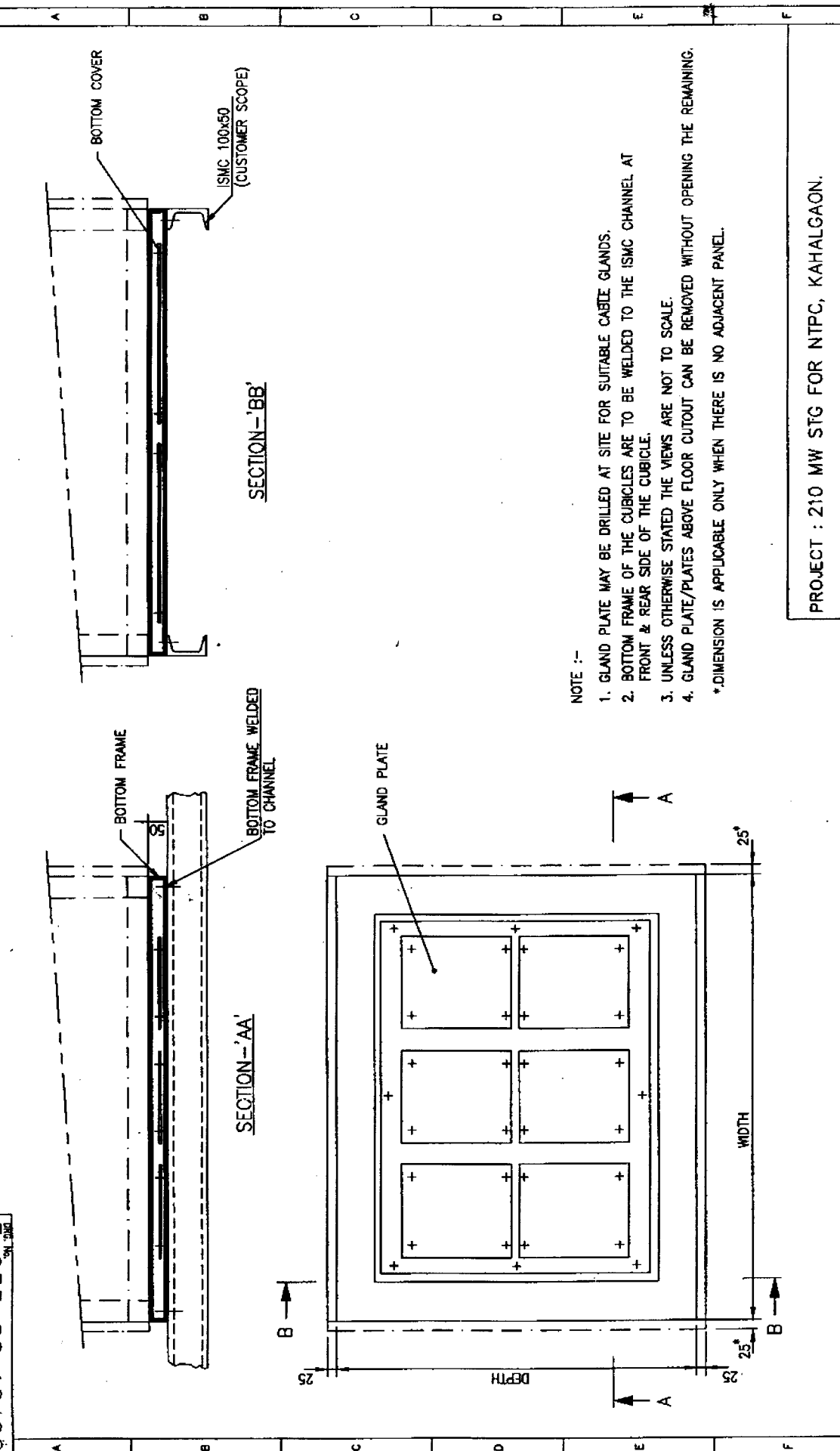
INVENTORY No.

FORM NO. 73-03

26700 5593 10492

CALL DIMENSIONS ARE IN mm

1 2 3 4 5 6 7



NOTE :-

1. GLAND PLATE MAY BE DRILLED AT SITE FOR SUITABLE CABLE GLANDS.
 2. BOTTOM FRAME OF THE CUBICLES ARE TO BE WELDED TO THE ISMC CHANNEL AT FRONT & REAR SIDE OF THE CUBICLE.
 3. UNLESS OTHERWISE STATED THE VIEWS ARE NOT TO SCALE.
 4. GLAND PLATE/PLATES ABOVE FLOOR CUTOUT CAN BE REMOVED WITHOUT OPENING THE REMAINING.
- *DIMENSION IS APPLICABLE ONLY WHEN THERE IS NO ADJACENT PANEL.

PROJECT : 210 MW STG FOR NTPC, KAHALGAON.

BHARAT HEAVY ELECTRICALS LIMITED.
ELECTRONICS DIVISION, BANGALORE

TITLE: OGA FOR DAVR EQUIPMENT
TYPICAL FOUNDATION DETAILS FOR REG-2&3

NO. OF SHEETS	07
SHEET NO.	06
REV	00

W.B.S No. CE/1104-SH1-48-D1 & CE/1104-SH1-48-D2

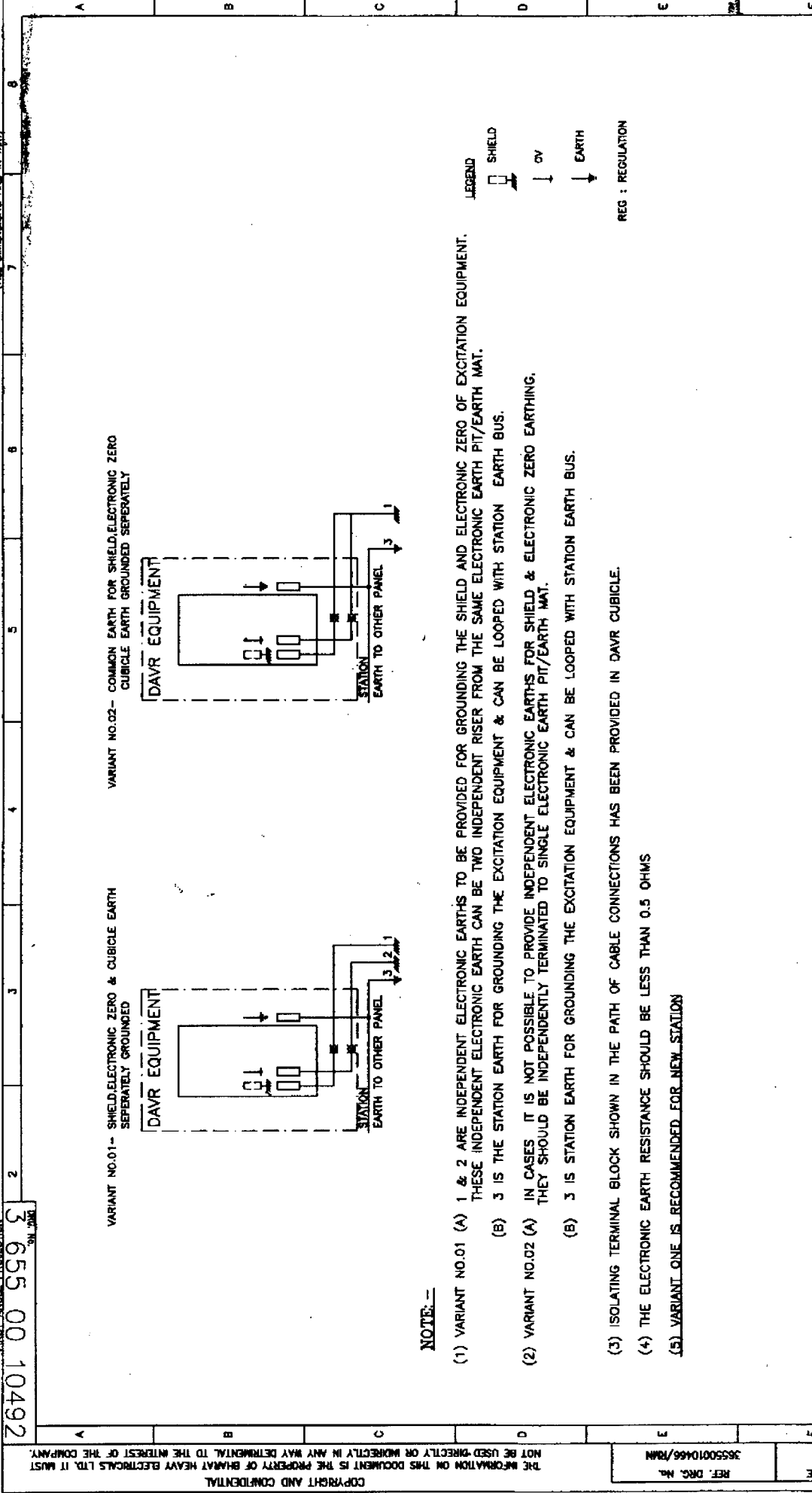
DRG. No. 3 655 00 10492

A3 SIZE

REV.	DATE	ALTERED	DATE	REV.	DATE	ALTERED	DATE	NAME	SIGN	DATE	DEPT.	CODE	LOGO
		CHECKED				CHECKED		PRADEEP		21.12.13	GHCE	408	
		APPROVED				APPROVED		KGR		21.12.13			
								RMN		21.12.13			

(ALL DIMENSIONS ARE IN mm)

FIRST ANGLE PROJECTION
3 655 00 10492
IN DWG

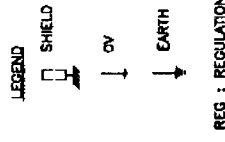


VARIANT NO.02 - COMMON EARTH FOR SHIELD, ELECTRONIC ZERO CUBICLE EARTH GROUNDED SEPARATELY

VARIANT NO.01 - SHIELD, ELECTRONIC ZERO & CUBICLE EARTH SEPARATELY GROUNDED

NOTE: -

- (1) VARIANT NO.01 (A) 1 & 2 ARE INDEPENDENT ELECTRONIC EARTHS TO BE PROVIDED FOR GROUNDING THE SHIELD AND ELECTRONIC ZERO OF EXCITATION EQUIPMENT. THESE INDEPENDENT ELECTRONIC EARTH CAN BE TWO INDEPENDENT RISER FROM THE SAME ELECTRONIC EARTH PIT/EARTH MAT.
(B) 3 IS THE STATION EARTH FOR GROUNDING THE EXCITATION EQUIPMENT & CAN BE LOOPED WITH STATION EARTH BUS.
- (2) VARIANT NO.02 (A) IN CASES IT IS NOT POSSIBLE TO PROVIDE INDEPENDENT ELECTRONIC EARTHS FOR SHIELD & ELECTRONIC ZERO EARTHING. THEY SHOULD BE INDEPENDENTLY TERMINATED TO SINGLE ELECTRONIC EARTH PIT/EARTH MAT.
(B) 3 IS STATION EARTH FOR GROUNDING THE EXCITATION EQUIPMENT & CAN BE LOOPED WITH STATION EARTH BUS.
- (3) ISOLATING TERMINAL BLOCK SHOWN IN THE PATH OF CABLE CONNECTIONS HAS BEEN PROVIDED IN DAVR CUBICLE.
- (4) THE ELECTRONIC EARTH RESISTANCE SHOULD BE LESS THAN 0.5 OHMS
- (5) VARIANT ONE IS RECOMMENDED FOR NEW STATION



INVENTORY No. _____
 SGN. & DATE _____
 REF. Dwg. No. 36550010466/RMN
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PROJECT : 210 MW STG FOR NTPC, KAHALGAON.

BHARAT HEAVY ELECTRICALS LIMITED.
ELECTRONICS DIVISION, BANGALORE

TITLE: OGA FOR DAVR EQUIPMENT (GENERAL METHOD OF GROUNDING DAVR EQUIPMENT)

W.B.S No. _____ REG. No. 3 655 00 10492

CE/1104-SHI-45-01 & CE/1104-SHI-45-02

REV.	DATE	ALTERED	CHECKED	APPROVED	REV.	DATE	ALTERED	CHECKED	APPROVED	NAME	SIGN	DATE	DEPT.	CODE	No. OF SHEETS
										PRADEEP		21.12.13	GHCE	408	07
										KBR		21.12.13			07
										RMN		21.12.13			00

FORM No. AS-03

3

4

W.B.S No.

REG. No.

REV

07

07

00

AS SIZE