Annexure 1A

DECLARATION

With reference no CPC TENDER NO. BHEL/CPC/SGL/FAB_STR/25/040 for Fabrication and Supply of Factory Fabricated Structures to Project Site

a) Bidder shall declare the total number of executable orders in hand and the cumulative tonnage of fabrication to be manufactured under these orders.

PO/WO Ref. Number	Order Quantity (in MT)	Contract Period (in month)	Balance Order Quantity to be executed (in MT)	Balance Contract Period (in month)

Based on above, average Monthly Output (in MT) required to execute the above-mentioned orders ___ MT/month.

b) Facilities/Equipments restricting or deciding the monthly capacity of the works.

Name of Equipment	Remarks

c) Monthly Capacity of works - _____MT / Month

We, hereby declare that above mentioned details are correct and verifiable. BHEL reserves the right to seek the supporting documents and carryout physical assessment of this works for establishing the claims made above. In case of inconsistency or falsification, appropriate action, as stipulated anywhere in the tender/contract may be taken in line with the provisions of the contract.

Seal and Sign of authorized person of Bidder

Annexure-1B

Tender Enquiry No. BHEL/CPC/SGL/FAB_STR/25/040 for Fabrication and Supply of Finished Factory Fabricated Structure up to Singrauli Project

Sl No.	PO/WO Details	PO/WO Date	Total Quantity	Details of supply of Structure (Per Month Quantity in MT)												TOTAL QTY for 12 months	Details of end Customer 1) Name of Customer 2) E-Mail Id of Contact Person 3) Phone No (If Available)
				MM/YY ...../.....	MM/YY ...../.....	MM/YY ...../.....	MM/YY ...../.....	MM/YY ...../.....	MM/YY ...../.....	MM/YY ...../.....	MM/YY ...../.....	MM/YY ...../.....	MM/YY ...../.....	MM/YY ...../.....	MM/YY ...../.....		
1																	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
TOTAL																	

Details with respect to the Fabrication and Supply of the Heaviest component by the Vendor

Sl No	Description	Details
1	Weight of the Heaviest Component Supplied by Vendor (MT)	
2	Dimensions of the heaviest Component	
3	Date of Manufacturing of the heaviest Component	
4	WO/PO/Drawing Reference for the above.	

Annexure-2

2.0 Performance Security Bank Guarantee (PBG):

- The Successful Bidder has to furnish PBG as per format provided.
- The Performance Bank Guarantee should be on Non-Judicial Stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the state(s) where the PBG is submitted or is to be acted upon or the rate prevailing in the state where the PBG is executed, whichever is higher.
- Bidder agrees to submit performance security required for execution of the contract within the time period mentioned. In case of delay in submission of Security Deposit, enhanced security deposit which would include interest (Repo rate + 4%) for the delayed period, shall be submitted by the bidder before submission of first bill. 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.

BG Format - I

BANK GUARRENTEE FOR PERFORMANCE SECURITY

Bank Guarantee No:

Date:

To

NAME & ADDRESSES OF THE BENEFICIARY:

Dear Sirs,

In consideration of Bharat Heavy Electricals Limited (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at _____ ___[1] through its Unit at _____ (Name of the Unit) having awarded to (Name of the Vendor / Contractor / Supplier) with its registered office at _____[2] hereinafter referred to as the ' Vendor / Contractor / Supplier ', which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns), a contract Ref No. _____ dated _____[3] valued at Rs._____[4] (Rupees _____)/FC_____(in words _____) for _____[5] (hereinafter called the 'Contract') and the Vendor / Contractor / Supplier having agreed to provide a Contract Performance Bank Guarantee, equivalent to _____% (_____Percent) of the said value of the Contract to the Employer for the faithful performance of the Contract,

we, _____ (hereinafter referred to as the Bank), having registered/Head office at _____ and inter alia a branch at _____ being the Guarantor under this Guarantee, hereby, irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer any sum or sums up to a maximum amount of Rs._____ [6] (Rupees _____) without any demur, immediately on first demand from the Employer and without any reservation, protest, and recourse and without the Employer needing to prove or demonstrate reasons for its such demand.

Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____.

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Vendor / Contractor / Supplier in any suit or proceeding pending before any Court or Tribunal, Arbitrator or any other authority, our liability under this present being absolute and unequivocal.

The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment thereunder and the Vendor / Contractor / Supplier shall have no claim against us for making such payment.

We the _____ bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract/satisfactory completion of the performance guarantee period as per the terms of the Contract and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged.

We _____ BANK further agree with the Employer that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said Vendor / Contractor / Supplier from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Vendor / Contractor / Supplier and to forbear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Vendor / Contractor / Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Vendor / Contractor / Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Vendor / Contractor / Supplier and notwithstanding any security or other guarantee that the Employer may have in relation to the Vendor / Contractor / Supplier 's liabilities.

This Guarantee shall remain in force up to and including _____[7] and shall be extended from time to time for such period as may be desired by Employer.

This Bank Guarantee shall be governed, construed and interpreted in accordance with the laws of India.

8Courts at Delhi shall alone have exclusive jurisdiction over any matter arising out of or in connection with this Bank Guarantee.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Vendor / Contractor / Supplier but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof.

Unless a demand or claim under this guarantee is made on us in writing on or before the _____[8] we shall be discharged from all liabilities under this guarantee thereafter.

We, _____ BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Any claim or dispute arising under the terms of this Guarantee shall be subject to the exclusive jurisdiction of the court at Delhi only.

Notwithstanding anything to the contrary contained hereinabove:

a) The liability of the Bank under this Guarantee shall not exceed _____[6]

b) This Guarantee shall be valid up to _____[7]

c) Unless the Bank is served a written claim or demand on or before _____[8] all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

We, _____ Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

For and on behalf of

(Name of the Bank)

Dated _____

Place of Issue _____

[1] NAME AND ADDRESS OF EMPLOYER i.e. Bharat Heavy Electricals Limited

[2] NAME AND ADDRESS OF THE VENDOR /CONTRACTOR / SUPPLIER.

[3] DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE

[4] CONTRACT VALUE

[5] PROJECT/SUPPLY DETAILS

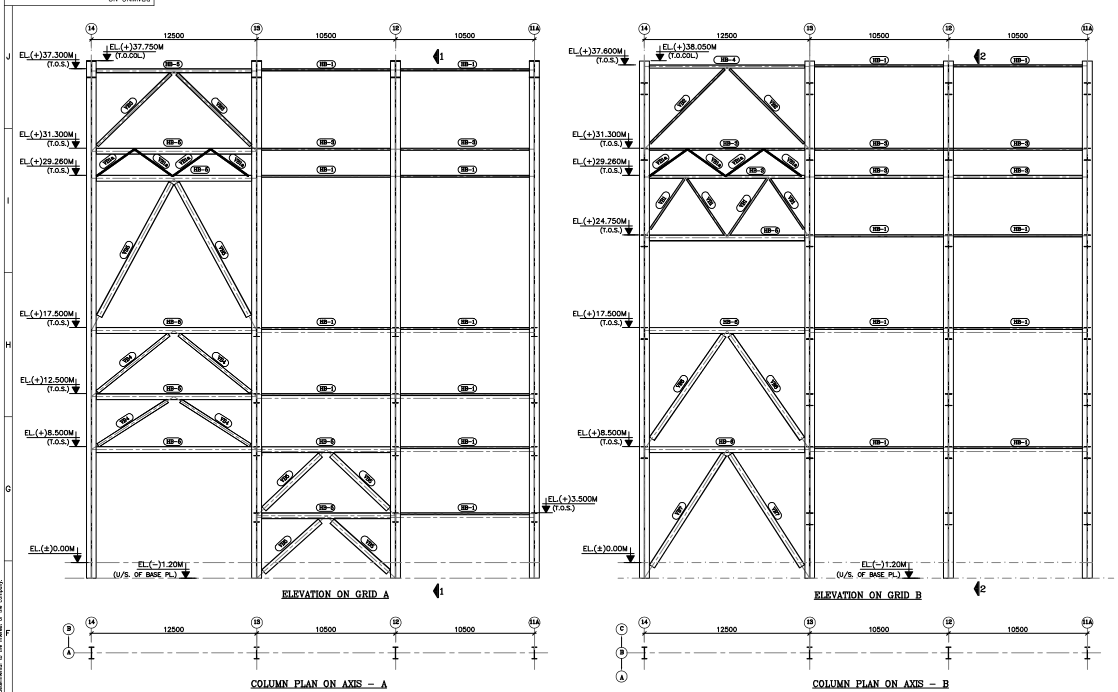
[6] BG AMOUNT IN FIGURES AND WORDS

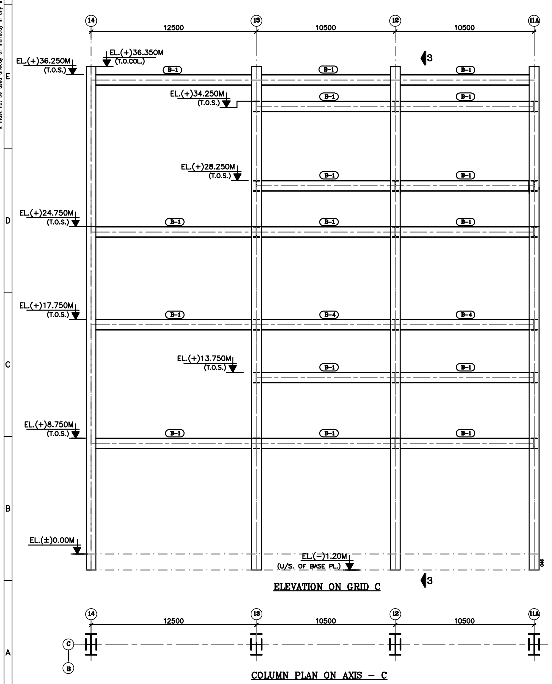
[7] VALIDITY DATE

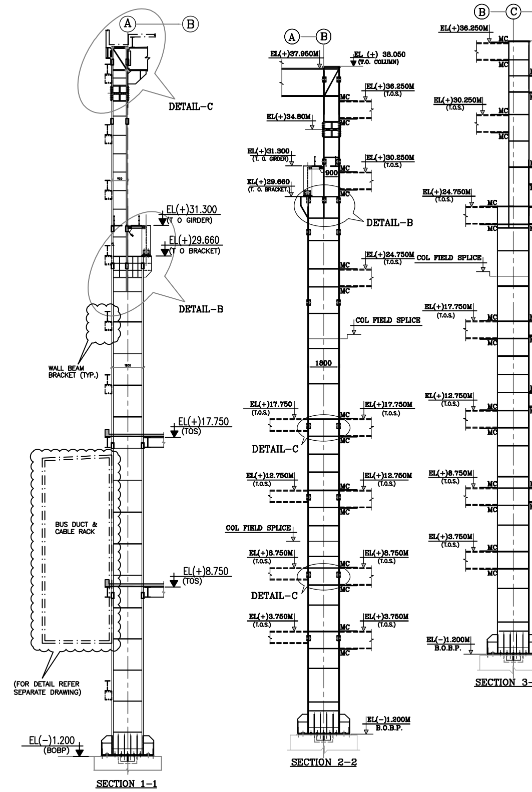
[8] DATE OF EXPIRY OF CLAIM PERIOD

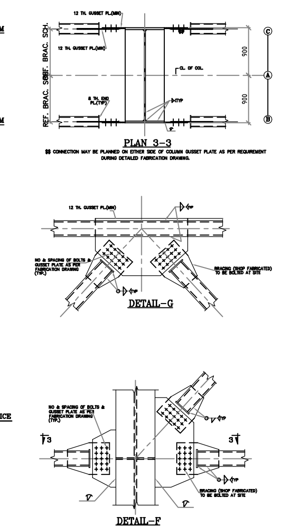
FIRST ANGLE PROJECTION

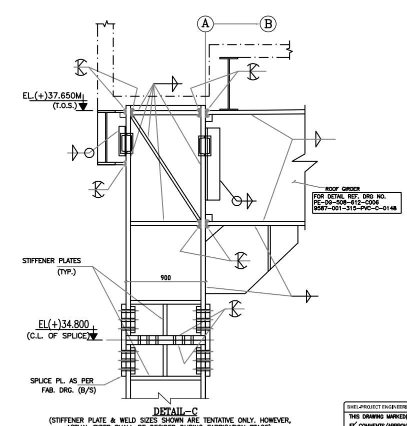
ALL DIMENSIONS ARE IN MM











A–ROW COLUMN SCHEDULE

ELEVATION	TYPE	GRID	FW (FLANGE)	FPL (FLANGE)	WD (WEB)	WPL (WEB)	REMARKS
+37.750 (T.O. COLUMN)		A–14, A–13, A–12, A–11a	740	32	900	20	PROVIDE 10 TH. WEB STIFF. @ 900 C/C (TYP)
+29.660 to (–)1.200 (U/S. OF BASE PL.)		A–14, A–13, A–12, A–11a	740	32	1800	20	PROVIDE 10 TH. WEB STIFF. @ 1800 C/C

B–ROW COLUMN SCHEDULE

ELEVATION	TYPE	GRID	FW (FLANGE)	FPL (FLANGE)	WD (WEB)	WPL (WEB)	REMARKS
+38.050 (T.O. COLUMN)		B–14	740	32	900	20	PROVIDE 10 TH. WEB STIFF. @ 900 C/C (TYP)
		B–13	740	45	900	28	
		B–12	740	45	900	28	
		B–11a	740	32	900	20	
+29.660		B–14	740	32	1800	20	PROVIDE 10 TH. WEB STIFF. @ 1800 C/C (TYP)
		B–13	740	32	1800	20	
		B–12	740	32	1800	20	
		B–11a	740	32	1800	20	
+18.250		B–14	740	32	1800	20	
		B–13	740	36	1800	25	
		B–12	740	36	1800	25	
		B–11a	740	32	1800	20	
+9.250		B–14	740	50	1800	32	
		B–13	740	50	1800	32	
		B–12	740	50	1800	32	
(–)1.200 (U/S. OF BASE PL.)		B–11a	740	36	1800	25	

C–ROW COLUMN SCHEDULE

ELEVATION	TYPE	GRID	FPL1 (FLANGE)	WPL1 (WEB)	FPL2 (FLANGE)	WPL2 (WEB)	REMARKS
+36.350 (T.O. COLUMN)		C–14, C–13, C–12, C–11a	740X32	20 THK.	400X32	20 THK.	PROVIDE 10 TH. WEB STIFF. @ 900 C/C (TYP)
+25.250		C–14	740X32	20 THK.	400X32	20 THK.	PROVIDE 10 TH. WEB STIFF. @ 1600 C/C (TYP)
		C–13	740X32	20 THK.	400X32	20 THK.	
		C–12	740X32	20 THK.	400X32	20 THK.	
		C–11a	740X32	20 THK.	400X32	20 THK.	
+9.250		C–14	740X32	20 THK.	400X32	20 THK.	
		C–13	740X45	32 THK.	400X32	25 THK.	
		C–12	740X45	32 THK.	400X32	25 THK.	
(–)1.200 (U/S. OF BASE PL.)		C–11a	740X32	20 THK.	400X32	20 THK.	

HORIZONTAL BRACING SCHEDULE.

BRACING MKD.	BRACING SECTION	TYPE	REMARKS
HB–1	2–MC 150 BOX		(*) BRACING TYP. ON BOTH FLANGES OF COLUMN ISMC SHALL BE CONNECTED TOE TO TOE WITH CONTINIOUS WELD
HB–2	2–MC 200 BOX		
HB–3	2–MC 250 BOX		
HB–4	2–MC 300 BOX		
HB–5	1–WEB. PLT 280X10, 2–FLG PLT. 320X10		
HB–6	1–WEB. PLT 326X12, 2–FLG PLT. 370X12		

VERTICAL BRACING SCHEDULE.

BRACING MKD.	BRACING SECTION	TYPE	REMARKS
VB1a	2–MC 100 BOX		(*) BRACING TYP. ON BOTH FLANGES OF COLUMN ISMC SHALL BE CONNECTED TOE TO TOE WITH CONTINIOUS WELD
VB1	2–MC 150 BOX		
VB2	2–MC 200 BOX		
VB3	2–MC 250 BOX		
VB4	2–MC 300 BOX		
VB5	1–WEB. PLT 280X10, 2–FLG PLT. 320X10		
VB6	1–WEB. PLT 326X12, 2–FLG PLT. 370X12		
VB7	1–WEB. PLT 318X16, 2–FLG PLT. 370X16		

PLATE GIRDER DETAILS

GIRDER MKD.	D	FW	FT	WT
B–1	800	480	25	16
B–4	800	480	28	16
B–2	900	480	25	16
B–3	900	480	28	20

(PROVIDE 8 TH. WEB STIFF. @ 1000 C/C (MAX) (FABRICATOR TO CHECK INTERFERENCE WITH SECONDARY BEAMS) FOR SHEAR CONNECTOR REF. RESPECTIVE FLOOR FRAME DRAWING

B–C BAY GIRDER SCHEDULE

EL. MKD. T.O.S. / GRID	11a	12	13	14
EL.+3.750	B–2	B–2	B–2	–
EL.+8.750	B–2	B–2	B–2	B–2
EL.+12.750	B–2	B–2	B–2	–
EL.+17.750	B–2	B–2	B–2	B–2
EL.+24.750	B–2	B–2	B–2	B–2
EL.+30.250	B–2	B–2	B–2	B–2
EL.+36.250	B–2	B–3	B–3	B–2

NOTES:–

1. ALL DIMENSIONS ARE IN MM & ELEVATIONS IN METERS UNLESS STATED OTHERWISE.
2. ALL ELEVATIONS ARE REFERRED TO THE FINISHED FLOOR LEVEL OF POWER HOUSE BUILDING AS EL. 0.00 M WHICH CORRESPONDS TO RL.(+) 209.50 M.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH CONTRACT TERMS AND CONDITIONS, TECHNICAL SPECIFICATIONS AND SCHEDULE OF ITEMS.
4. FOR OTHER NOTES AND STD. DETAILS REF. DRG. PE–DG–508–600–C002 (9587–001–315–PVC–C–0002)
5. CONNECTION DETAILS SHOWN ARE INDICATIVE ONLY. SIZE & THICKNESS OF GUSSETS, NO. & DIA. OF CONNECTION BOLTS ETC. SHALL BE SHOWN IN CORRESPONDING FABRICATION DRG.
6. FOR GROUTING OF BASE PL. REF. DRG. NO PE–DG–508–611–C002 (9587–001–315–PVC–C–0036)
7. ALL ELEVATIONS ARE TO THE TOP OF STEEL (U.N.O.)
8. ALL BOLTED FIELD CONNECTIONS ARE TO BE DONE WITH HSFG BOLTS OF PROPERTY CLASS 8.8. (U.N)
9. FABRICATOR MUST CHECK THE WELD SIZES GIVEN IN TABLE –A FOR DESIGN AND MAXIMUM OF DESIGN VALUE AND VALUE GIVEN TO BE USED.
10. ALL END CONNECTIONS FOR BRACINGS SHALL BE DESIGNED FOR FULL TENSILE STRENGTH OF MEMBERS.
11. STRUCTURAL STEEL ROLLED SECTIONS SHALL CONFORM TO GRADE DESIGNATION E–250 & STRUCTURAL STEEL PLATES SHALL CONFORM TO GRADE DESIGNATION E–350.

ENGINEERING REFERENCE DRAWINGS :–

1. PE–DG–508–100–M003 (9587–001–110–PVM–F–049) – TG EQUIPMENT PLAN AT GROUND FLOOR
2. PE–DG–508–100–M004 (9587–001–110–PVM–F–050) – TG EQUIPMENT PLAN AT MEZZANINE FLOOR
3. PE–DG–508–100–M005 (9587–001–110–PVM–F–051) – TG EQUIPMENT PLAN AT OPERATING FLOOR
4. PE–DG–508–100–M006 (9587–001–110–PVM–F–052) – TG EQUIPMENT PLAN AT MISC FLOORS ABOVE OPERATING FLOOR IN BC BAY
5. PE–DG–508–100–M007 (9587–001–110–PVM–F–053) – CROSS SECTION OF MAIN PLANT (T.G. BUILDING)

CONSTRUCTION REFERENCE DRAWINGS :–

1. PE–DG–508–612–C006 (9587–001–315–PVC–C–0148) – PH BUILDING DETAILS OF ROOF GIRDERS
2. PE–DG–508–612–C007 (9587–001–315–PVC–C–0149) – PH BUILDING GA AND DETAILS OF AB BAY GANTRY GIRDERS
3. PE–DG–508–612–C005 (9587–001–315–PVC–C–0147) – PH BLDG–CLADDING FRAMING ELEVATION ON AXIS A
4. PE–DG–508–611–C002 (9587–001–315–PVC–C–0036) – PH BUILDING G.A. & R.C. OF COLS FDN ON ROW A TO C UNIT–4 & CCR
5. PE–DG–508–612–C008 (9587–001–315–PVC–C–0150) – PH BUILDING–DETAILS OF ROOF PURLIN (AB BAY)
6. PE–DG–508–612–C023 (9587–001–315–PVC–C–0165) – MPH BLDG. –(AB BAY–CCR) FRAMING PLAN AT EL 9.0M FFL
7. PE–DG–508–612–C026 (9587–001–315–PVC–C–0168) – MPH BLDG.(AB BAY–CCR) – FRAMING PLAN @ EL 18.0M FFL
8. PE–DG–508–612–C039 (9587–001–315–PVC–C–0179) –MPH BLDG. – BUS DUCT SUPPORTING STRUCTURE ALONG AXIS–A

LEGEND:

1. TOS = TOP OF STEEL
2. BOS = BOTTOM OF STEEL
3. TYP. = TYPICAL
4. B/S = BOTH SIDE
5. F/S = FAR SIDE
6. N/S = NEAR SIDE
7. UNO = UNLESS NOTED OTHERWISE
8. TH. = THICK
9. PL. = PLATE

BHEL-PROJECT ENGINEERING MANAGEMENT (CIVIL)
THIS DRAWING MARKED(✓) IS RELEASED FOR
☑ COMMENTS/APPROVAL
☐ PLANNING/INFORMATION
☐ CONSTRUCTION
STAMP ALL PREVIOUS REVISION AS SUPERSEDED
ISSUED BY
NAME: AMIT THAKUR
SIGNATURE:
DATE: 17/07/2024

JOB NO. 508
STATUS: CONTRACT
DISTRIBUTION

REV.	DATE	ALTD	CHD	APPD
01	17.07.24	KD	AKT	DKM

BRACING AT B–ROW UPDATED AS PER NTPC COMMENTS

NTPC DRG. NO. 9587–001–315–PVC–C–0145

OWNER: NTPC Limited (A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT: LARA SUPER THERMAL POWER PROJECT 2X800MW STAGE–II

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA (U.P.)

DEPT CODE: C

	NAME	SIGN	DATE
DRN	YSR	Sd/–	22.06.2024
DESN	KD	Sd/–	22.06.2024
CHD	AT	Sd/–	22.06.2024
APPD	DKM	Sd/–	22.06.2024

TITLE: MPH–CCR BUILDING
STRUCTURAL FRAMING ALONG A ROW TO C ROW

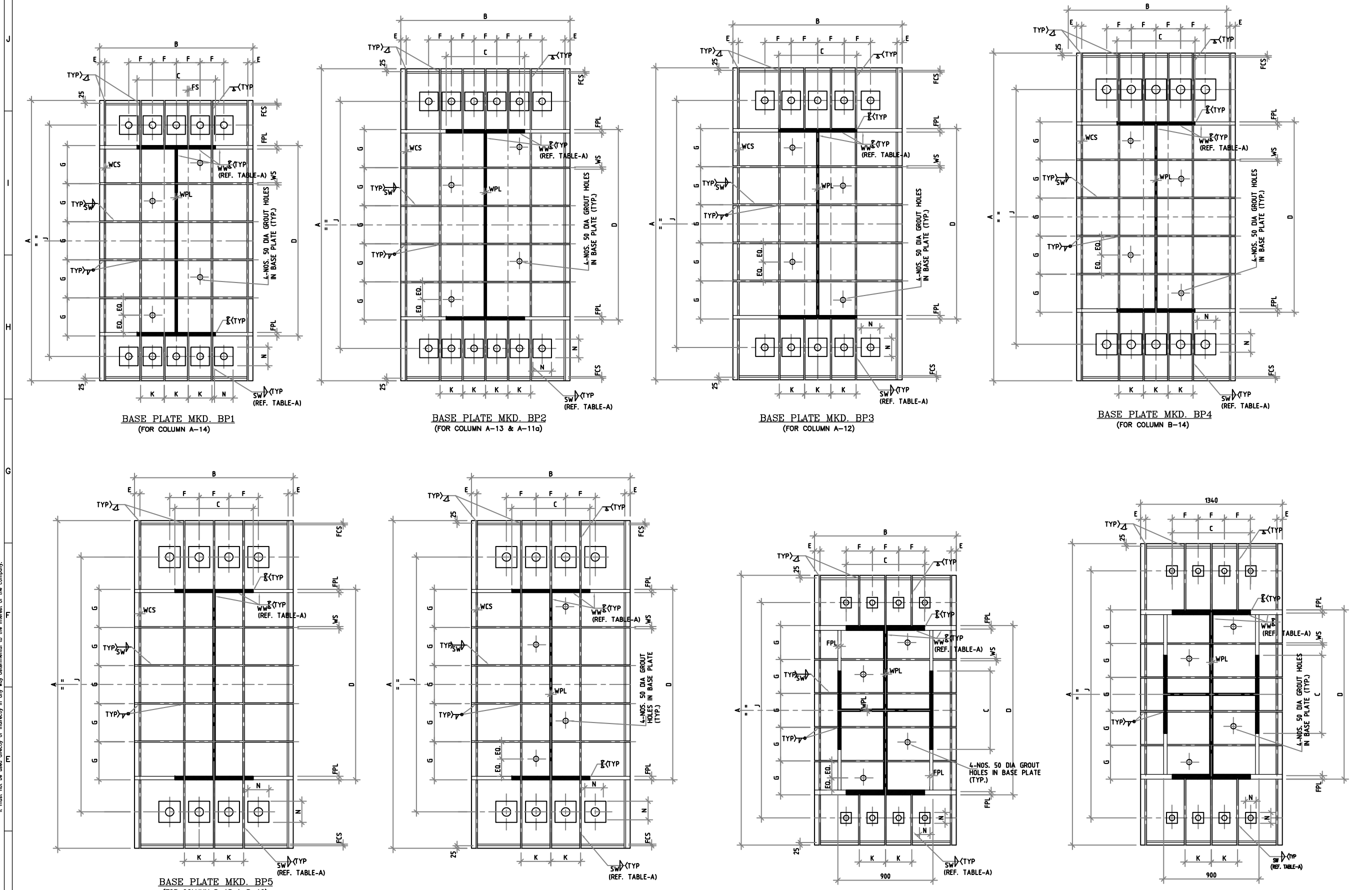
MPL | ELEC | C&I | MSE | MAX | DEPT. SIGN DATE | SCALE –

DRAWING NO. PE–DG–508–612–C004
SHEET 1 OF 2 REV. 01

FORMAT SIZE A0

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM



BASE PLATE MKD. BP1 (FOR COLUMN A-14)

BASE PLATE MKD. BP2 (FOR COLUMN A-13 & A-11a)

BASE PLATE MKD. BP3 (FOR COLUMN A-12)

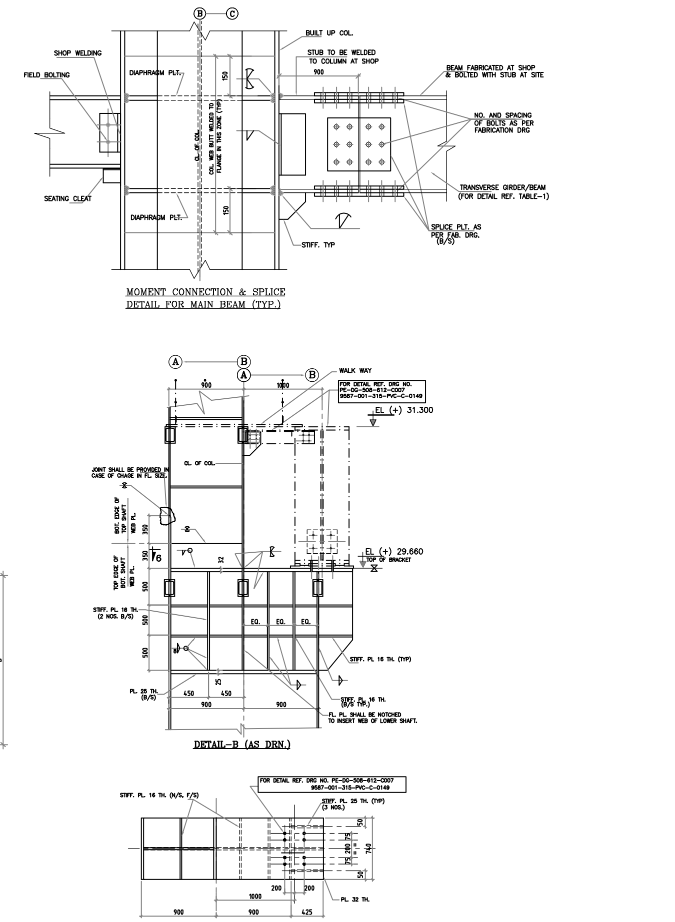
BASE PLATE MKD. BP4 (FOR COLUMN B-14)

BASE PLATE MKD. BP5 (FOR COLUMN B-13 & B-12)

BASE PLATE MKD. BP6 (FOR COLUMN B-11a)

BASE PLATE MKD. BP7 (FOR COLUMN C-14 & C-11a)

BASE PLATE MKD. BP8 (FOR COLUMN C-13 & C-12)



MOMENT CONNECTION & SPLICE DETAIL FOR MAIN BEAM (TYP.)

DETAIL-B (AS DRN.)

SECTION 6-6

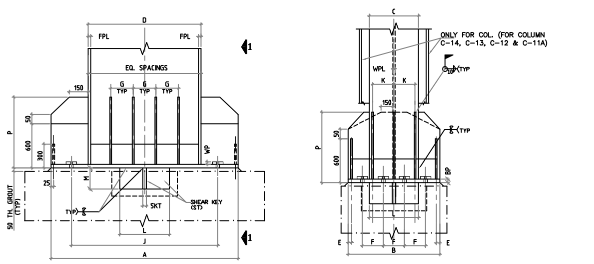
BASE PL. SCHEDULE

GROUP MKD.	BP1	BP2	BP3	BP4	BP5	BP6	BP7	BP8	
COL. MKD. / DIM MKD.	A-14	A-13 A-11a	A-12	B-14	B-13 B-12	B-11a	C-14 C-11a	C-13 C-12	REMARKS
A	2650	2950	2950	3100	3100	2950	2550	2850	BASE PLATE
B	1450	1600	1600	1500	1500	1500	1340	1340	
C	740	740	740	740	740	740	740	740	COL. SIZE
D	1800	1800	1800	1800	1800	1800	1600	1600	
E	50	50	50	50	50	50	50	50	REF. PLAN
G	360	360	360	360	360	360	320	320	
F	270	250	300	280	350	350	310	310	C/C OF BOLT
J	2225	2375	2375	2450	2450	2375	2075	2225	
J1	-	-	-	-	-	-	-	-	
K	270	250	300	280	350	350	310	310	
P	1000	1000	1000	1000	1000	1000	1000	1000	
L	1000	1000	1000	1100	1100	1000	1000	1000	SHEAR KEY
M	150	150	150	150	150	150	150	150	
SKT	32	36	36	40	40	40	40	32	
TYPE	1	2	2	2	2	1	1	2	
N	150	150	150	200	150	150	150	150	WASHER PLATE

BASE PL. SCHEDULE
(READ WITH DETAIL A)

GROUP MKD.	BP1	BP2	BP3	BP4	BP5	BP6	BP7	BP8	REMARKS
COL. MKD. / ITEM MKD.	A-14	A-13 A-11a	A-12	B-14	B-13 B-12	B-11a	C-14 C-11a	C-13 C-12	
BP	36	40	40	40	40	36	36	40	BASE PL WITH 4 NOS. 50ø GROUT HOLES AND * ø BOLT HOLE
DIA OF BOLT	63	63	63	80	50	50	50	50	DIA OF BOLT
FPL	SAME AS COL. FL. PL. THICKNESS								PL. BUTT WELDED TO COL. FL. PL.
WPL	REFER COLUMN SECTION								COL. WEB PL.
FS	16	16	16	16	16	16	16	16	FL. STIFF. PL.
WS	16	16	16	16	16	16	16	16	WEB STIFF. PL.
WP	16	16	16	20	16	16	16	16	WASHER PL. WITH 1-** ø BOLT HOLE
FCS	12	12	12	12	12	12	12	12	FL. CROSS STIFF. PL.
WCS	12	12	12	12	12	12	12	12	WEB CROSS STIFF. PL.
NOS. OF BOLT	10	12	10	10	8	8	8	8	TOTAL NUMBER OF BOLT

* ø HOLES. = DIA. OF BOLT + 16 MM
** ø HOLES. = DIA. OF BOLT + 3 MM

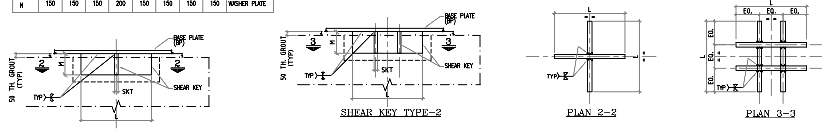


TYP. SECTION OF BASE PLATE

VIEW 1-1

TABLE - A

(SHOWING SIZE OF WELD) PL. THICKNESS.	WW (SIZE OF WELD IN MM)	SW (SIZE OF WELD IN MM)
8 & 10	DOUBLE BEVEL BUTT WELD WITH REINFORCED FILLET WELD OF 6 MM THICK WHEREVER REQD.	6
12		8
16 & 20		12
25		14
28 & 32		20
36 & 40		20
45 & 50		25



SHEAR KEY TYPE-1

SHEAR KEY TYPE-2

PLAN 2-2

PLAN 3-3

BILL OF MATERIAL

S.NO.	MEMBER	WEIGHT	GRADE
1.	10 THK. PLT.	30	IS2062-E350
2.	12 THK. PLT.	14	IS2062-E350
3.	16 THK. PLT.	74	IS2062-E350
4.	20 THK. PLT.	104	IS2062-E350
5.	25 THK. PLT.	88	IS2062-E350
6.	28 THK. PLT.	8	IS2062-E350
	32 THK. PLT.	190	IS2062-E350
	36 THK. PLT.	17	IS2062-E350
	40 THK. PLT.	12	IS2062-E350
	45 THK. PLT.	19	IS2062-E350
	50 THK. PLT.	18	IS2062-E350
	ISMC100	1.5	IS2062-E250
	ISMC150	18	IS2062-E250
	ISMC200	3.5	IS2062-E250
	ISMC250	4	IS2062-E250
	ISMC300	8.5	IS2062-E250
TOTAL TONNAGE- MT 609.5			

BHEL-PROJECT ENGINEERING MANAGEMENT (CIVIL)
THIS DRAWING MARKED(✓) IS RELEASED FOR
☑ COMMENTS/APPROVAL
☐ PLANNING/INFORMATION
☐ CONSTRUCTION
STAMP ALL PREVIOUS REVISION AS SUPERSEDED
ISSUED BY
NAME: AMIT THAKUR
SIGNATURE:
DATE: 17/07/2024

REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD
										01	17.07.24	KD	AKT	DKM
											BRACING AT B-ROW UPDATED AS PER NTPC COMMENTS			

JOB NO. 508
STATUS: CONTRACT
DISTRIBUTION

NTPC DRG. NO. 9587-001-315-PVC-C-0145

OWNER: NTPC Limited (A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT: LARA SUPER THERMAL POWER PROJECT 2X800MW STAGE-II

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA (U.P.)

DEPT CODE: C

	NAME	SIGN	DATE
DRN	YSR	Sd/-	22.06.2024
DESN	KD	Sd/-	22.06.2024
CHD	AT	Sd/-	22.06.2024
APPD	DKM	Sd/-	22.06.2024

TITLE: MPH-CCR BUILDING
STRUCTURAL FRAMING ALONG A ROW TO C ROW

MPL	ELEC	C&I	MSE	MAX	DEPT.
					SIGN
					DATE

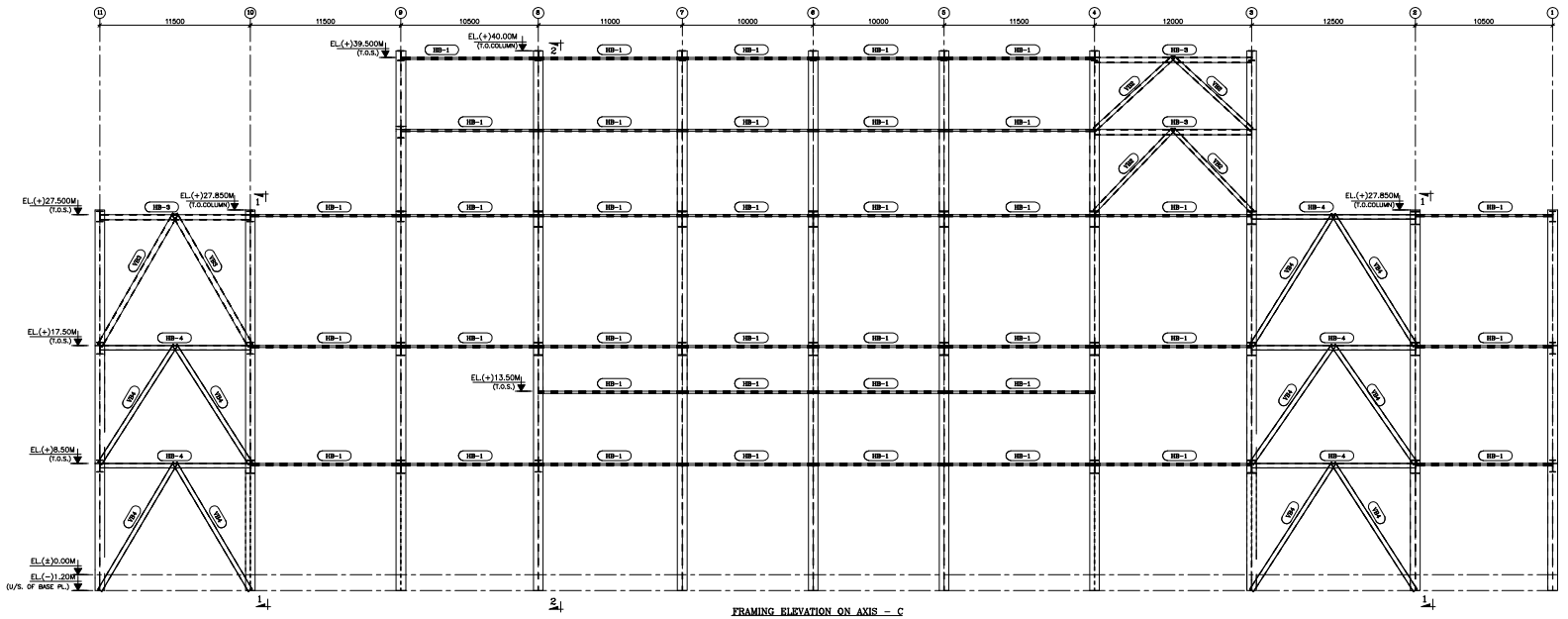
SCALE -

DRAWING NO. PE-DG-508-612-C004

SHEET 2 OF 2 REV. 01

FORMAT SIZE A0

FIRST ANGLE PROJECTION | ALL DIMENSIONS ARE IN MM | DRAWING NO. PE-DG-508-612-C003



FRAMING ELEVATION ON AXIS – C
(UNIT # 3)

BILL OF MATERIAL

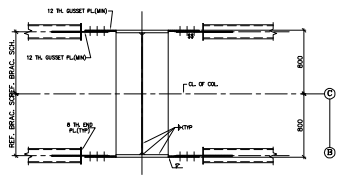
SECTION	WT (MT)	GRADE
ISMC150	28.29	E250
ISMC250	2.32	E250
ISMC300	6.55	E250
ISMC400	11.74	E250
PLATE 10	38.02	E350
PLATE 16	10.37	E350
PLATE 20	18.85	E350
PLATE 25	2.63	E350
PLATE 28	25.42	E350
PLATE 32	87.85	E350
PLATE 36	31.53	E350
PLATE 40	22.53	E350
PLATE 45	40.26	E350
PLATE 50	90.69	E350
TOTAL	417	

HORIZONTAL BRACING SCHEDULE

BRACING MKD.	BRACING SECTION	TYPE	REMARKS
HB-1	2-MC 150 BOX		(*) BRACING TYP. ON BOTH FLANGES OF COLUMN SHALL BE CONNECTED TOE TO TOE WITH CONTINUOUS WELD
HB-2	2-MC 300 BOX		
HB-3	2-MC 400 BOX		
HB-4	1-WEB PLT 330X10 2-FLG PLT. 370X10		

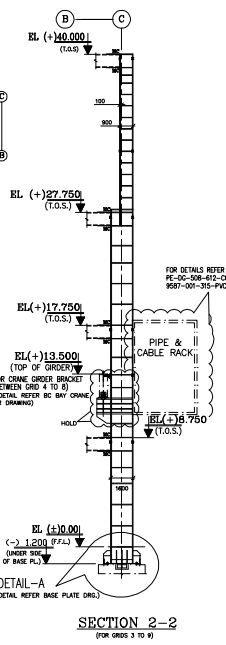
VERTICAL BRACING SCHEDULE

BRACING MKD.	BRACING SECTION	TYPE	REMARKS
VB1	2-MC 250 BOX		(*) BRACING TYP. ON BOTH FLANGES OF COLUMN SHALL BE CONNECTED TOE TO TOE WITH CONTINUOUS WELD
VB2	2-MC 300 BOX		
VB3	2-MC 400 BOX		
VB4	1-WEB PLT 330X10 2-FLG PLT. 370X10		

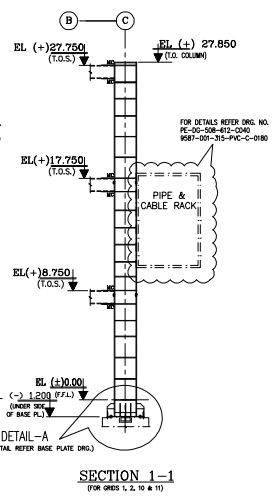


PLAN 3-3

$$ CONNECTION MAY BE PLANNED ON EITHER SIDE OF COLUMN GUSSET PLATE AS PER REQUIREMENT DURING DETAILED FABRICATION DRAWING.



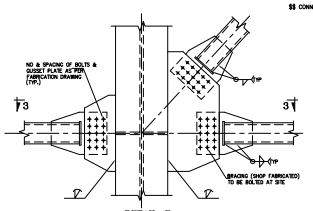
SECTION 2–2
(FOR GRIDS 3 TO 9)



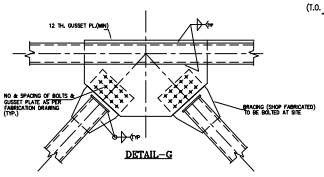
SECTION 1–1
(FOR GRIDS 1, 2, 10 & 11)

COLUMN SCHEDULE

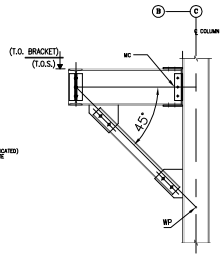
EL(+)40.000 (T.O. COLUMN) COL. MKD. C3 TO C11										REMARKS
	C-11	–	–	–	–					PROVIDE 10 TH. WEB STIFF. @ 1800 C/C (TYP)
	C-10	–	–	–	–					
	C-9	900	740	32	16					
	C-8	900	740	32	16					
	C-7	900	740	32	16					
	C-6	900	740	32	16					
	C-5	900	740	32	16					
	C-4	900	740	32	16					
	C-3	900	740	32	16					
	C-2	–	–	–	–					
	C-1	–	–	–	–					
EL(+)28.250 EL(+)27.850 (T.O. COLUMN) FOR COL. MKD. C1, C2, C10, C11	C-11	1600	740	32	20					PROVIDE 10 TH. WEB STIFF. @ 1800 C/C (TYP)
	C-10	1600	740	32	20					
	C-9	1600	740	32	20					
	C-8	1600	740	36	28					
	C-7	1600	740	45	32					
	C-6	1600	740	45	32					
	C-5	1600	740	45	32					
	C-4	1600	740	40	28					
	C-3	1600	740	40	32					
	C-2	1600	740	36	20					
	C-1	1600	740	32	20					
EL(+)18.250	C-11	1600	740	36	28					PROVIDE 10 TH. WEB STIFF. @ 1800 C/C (TYP)
	C-10	1600	740	36	28					
	C-9	1600	740	36	28					
	C-8	1600	740	45	32					
	C-7	1600	740	45	32					
	C-6	1600	740	45	32					
	C-5	1600	740	45	32					
	C-4	1600	740	40	28					
	C-3	1600	740	40	32					
	C-2	1600	740	36	20					
	C-1	1600	740	32	20					
EL(+)9.250	C-11	(-)1.200	1600	740	50	50	25	345	1 RIB	PROVIDE 10 TH. WEB STIFF. @ 1800 C/C (TYP)
	C-10	(-)1.200	1600	740	50	50	25	345	1 RIB	
	C-9	(-)1.200	1600	740	50	50	–	–	–	
	C-8	(-)1.200	1600	740	50	50	–	–	–	
	C-7	(-)1.200	1600	740	50	50	–	–	–	
	C-6	(-)1.200	1600	740	50	50	36	345	1 RIB	
	C-5	(-)1.200	1600	740	50	50	–	–	–	
	C-4	(-)1.200	1600	740	50	50	25	345	1 RIB	
	C-3	(-)1.200	1600	740	50	50	36	345	1 RIB	
	C-2	(-)1.200	1600	740	50	40	–	–	–	
	C-1	(-)1.200	1600	740	40	28	–	–	–	
(–)1.200 (U/S. OF BASE PL.)		GRID	LVL. (U/S. OF BASE PL.)	WD	FLANGE FW	WEB WPL	RPL	RFT	TYPE	
ELEVATION	TYPE			R ROW			RIB DETAIL			REMARKS



DETAIL–F



DETAIL–G



TYP. DET. BRACKET ON B & C ROW COLUMN FLANGES

(FOR BRACKET ELEVATION & SIZE DETAIL REFER DRG. NO. 9587-001-315-PVC-C-0170 (PE-DG-508-612-C028)

NOTES:–

1. ALL DIMENSIONS ARE IN MM & ELEVATIONS IN METERS UNLESS STATED OTHERWISE.
2. ALL ELEVATIONS ARE REFERRED TO THE FINISHED FLOOR LEVEL OF POWER HOUSE BUILDING AS EL. 0.00 M WHICH CORRESPONDS TO RL.(+) 209.50 M.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH CONTRACT TERMS AND CONDITIONS, TECHNICAL SPECIFICATIONS AND SCHEDULE OF ITEMS.
4. FOR OTHER NOTES AND STD. DETAILS REF. DRG. PE-DG-508-600-C002 (9587-001-315-PVC-C-0002)
5. CONNECTION DETAILS SHOWN ARE INDICATIVE ONLY. SIZE & THICKNESS OF GUSSETS, NO. & DIA. OF CONNECTION BOLTS ETC. SHALL BE SHOWN IN CORRESPONDING FABRICATION DRG.
6. FOR GROUTING OF BASE PL. REF. DRG. NO PE-DG-508-611-C001 (9587-001-315-PVC-C-0035)
7. ALL ELEVATIONS ARE TO THE TOP OF STEEL (U.N.O.)
8. ALL BOLTED FIELD CONNECTIONS ARE TO BE DONE WITH HSFG BOLTS OF PROPERTY CLASS 8.8. (U.N)
9. FABRICATOR MUST CHECK THE WELD SIZES GIVEN IN TABLE –A FOR DESIGN AND MAXIMUM OF DESIGN VALUE AND VALUE GIVEN TO BE USED.
10. ALL END CONNECTIONS FOR BRACINGS SHALL BE DESIGNED FOR FULL TENSILE STRENGTH OF MEMBERS.
11. STRUCTURAL STEEL ROLLED SECTIONS SHALL CONFORM TO GRADE DESIGNATION E-250 & STRUCTURAL STEEL PLATES SHALL CONFORM TO GRADE DESIGNATION E-350.

ENGINEERING REFERENCE DRAWINGS :–

1. PE-DG-508-100-M003 (9587-001-110-PVM-F-049)	– TG EQUIPMENT PLAN AT GROUND FLOOR
2. PE-DG-508-100-M004 (9587-001-110-PVM-F-050)	– TG EQUIPMENT PLAN AT MEZZANINE FLOOR
3. PE-DG-508-100-M005 (9587-001-110-PVM-F-051)	– TG EQUIPMENT PLAN AT OPERATING FLOOR
4. PE-DG-508-100-M006 (9587-001-110-PVM-F-052)	– TG EQUIPMENT PLAN AT MISC FLOORS ABOVE OPERATING FLOOR IN BC BAY
5. PE-DG-508-100-M007 (9587-001-110-PVM-F-053)	– CROSS SECTION OF MAIN PLANT (T.G. BUILDING)

CONSTRUCTION REFERENCE DRAWINGS :–

1. PE-DG-508-612-C011 (9587-001-315-PVC-C-0153)	– PH BLDG-CLADDING FRAMING ELEVATION ON AXIS C
2. PE-DG-508-611-C001 (9587-001-315-PVC-C-0035)	– PH BUILDING G.A. & R.C. OF COLS FDN ON ROW A TO C UNIT-3
3. PE-DG-508-612-C028 (9587-001-315-PVC-C-0170)	– MPH BLDG. – (BC–BAY–TG) FRAMING PLAN 9.0M FFL
4. PE-DG-508-612-C031 (9587-001-315-PVC-C-0173)	– MPH BLDG. – (BC–BAY–TG) FRAMING PLAN 18.0M FFL
5. PE-DG-508-612-C033 (9587-001-315-PVC-C-0175)	– MPH BLDG. – (BC–BAY–TG) FRAMING PLAN 28.0M FFL
6. PE-DG-508-612-C036 (9587-001-315-PVC-C-0178)	– MPH BLDG. – (BC–BAY) FRAMING PLAN +40.0M TOS
7. PE-DG-508-612-C107 (9587-001-315-PVC-C-0184)	– PH BUILDING GA AND DETAILS OF BC BAY GANTRY GIRDERS

LEGEND:

1. TOS = TOP OF STEEL
2. BOS = BOTTOM OF STEEL
3. TYP. = TYPICAL
4. B/S = BOTH SIDE
5. F/S = FAR SIDE
6. N/S = NEAR SIDE
7. UNO = UNLESS NOTED OTHERWISE
8. TH. = THICK
9. PL. = PLATE

BHEL-PROJECT ENGINEERING MANAGEMENT (PEM)
THIS DRAWING MARKED(✓) IS RELEASED FOR
☑ COMMENTS/APPROVAL
☐ PLANNING/INFORMATION
☐ CONSTRUCTION
SIGNED ALL PREVIOUS REVISIONS AS SUPERSEDING
SIGNED BY: AMIT THAKUR
DATE: 24/05/2024

REV.	DATE	ALTD	CHD	APPD

JOB NO.	508
STATUS	CONTRACT
DISTRIBUTION	

NTPC DRG. NO. 9587-001-315-PVC-C-0144

OWNER: NTPC Limited (A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT: LARA SUPER THERMAL POWER PROJECT 2X800MW STAGE–II

BHEL: BHARAT HEAVY ELECTRICALS LTD. POWER SECTOR PROJECT ENGINEERING MANAGEMENT NOIDA (U.P.)

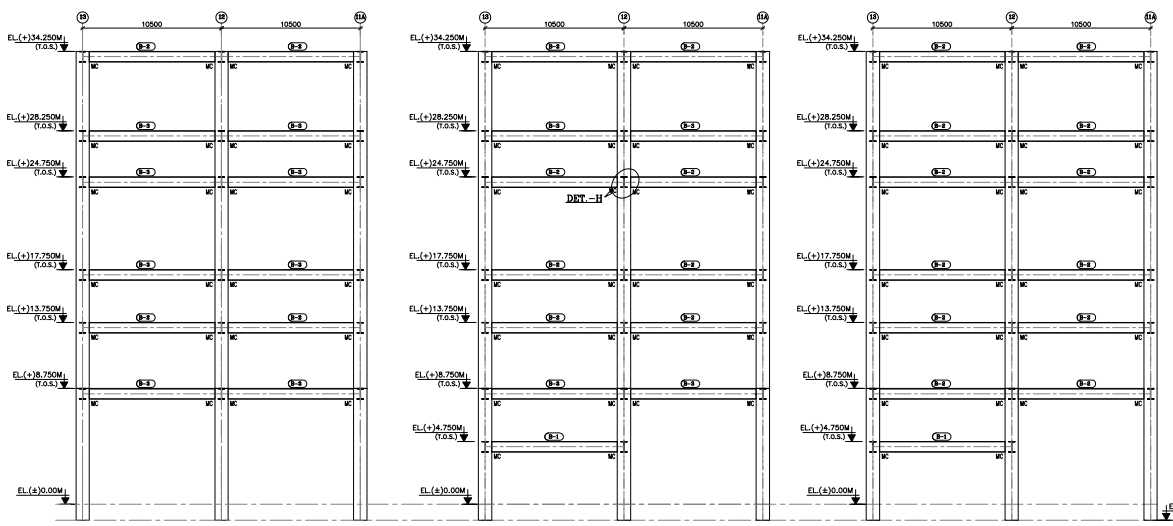
DEPT.	NAME	SIGN	DATE
DRN.	YSR		24.05.2024
DES/CKD/MK			24.05.2024
CHD_AT			24.05.2024
APPD/DKM			24.05.2024

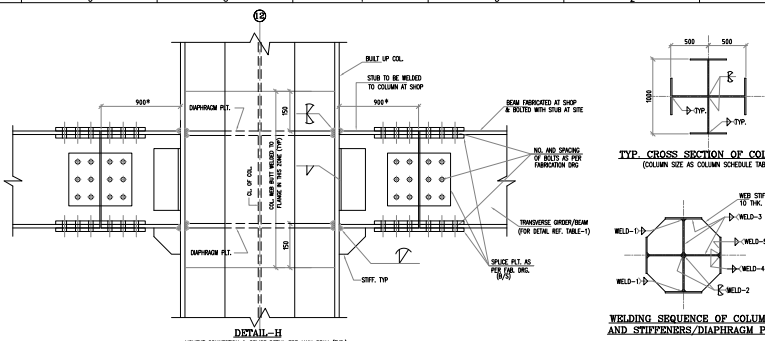
TITLE: MPH BUILDING
STRUCTURAL FRAMING & COLUMN DETAILS ALONG C ROW (UNIT–3)

MPL	ELEC	C&I	MSE	MAX	DEPT.	SCALE –
					SIGN	
					DATE	

DRAWING NO. PE-DG-508-612-C003
SHEET OF REV. 0

FORMAT SIZE A0





D-H ROW COLUMN SCHEDULE

+34.350 (T.O. COLUMN)		COL-13	500X25	16 THK.	500X25	16 THK.
		COL-12	500X25	16 THK.	500X25	16 THK.
		COL-11a	500X25	16 THK.	500X25	16 THK.
+8.750		COL-13	500X32	25 THK.	500X32	25 THK.
		COL-12	500X36	25 THK.	500X36	25 THK.
(–)1.200 (U/S. OF BASE PL.)		COL-11a	500X32	25 THK.	500X32	25 THK.
		GRID	FPL1	WPL1	FPL2	WPL2
ELEVATION / AXIS	TYPE		FLANGE	WEB	FLANGE	WEB
			AXIS – D TO H			

I-ROW COLUMN SCHEDULE

+36.900 (T.O. COLUMN) (I-13, I-12)		I-13	740	32	1000	16
+34.350 (T.O. COLUMN) (I-12, I-11a)		I-12	740	32	1000	16
		I-11a	740	32	1000	16
+8.750		I-13	740	36	1000	20
		I-12	740	50	1000	28
(–)1.200 (U/S. OF BASE PL.)		I-11a	740	50	1000	28
ELEVATION / AXIS	TYPE	GRID	FW	FPL	WD	WPL
			FLANGE		WEB	

REMARKS: PROVIDE 10 THK. @ 1000 C/C

PLATE GIRDER DETAILS

GIRDER MKD.	D	FW	FT	WT
B-1	800	300	16	16
B-2	800	480	25	16
B-3	800	480	28	16
B-4	700	300	16	16

(PROVIDE 8 TH. WEB STIFF. @ 1000 C/C. DMAG FABRICATOR TO CHECK INTERFERENCE WITH SECONDARY BEAMS) FOR SHEAR CONNECTOR REF. RESPECTIVE FLOOR FRAME DRAWING

C-H BAY GIRDER SCHEDULE

EL. / GRID MKD. T.O.S.	11a	12	13
EL.+8.750	B-4	B-4	B-4
EL.+13.750	B-4	B-4	B-4
EL.+17.750	B-4	B-4	B-4
EL.+24.750	B-4	B-4	B-4
EL.+28.250	B-4	B-4	B-4
EL.+34.250	B-4	B-4	B-4

H-I BAY GIRDER SCHEDULE

EL. / GRID MKD. T.O.S.	11a	12	13
EL.+8.750	B-4	B-4	B-4
EL.+13.750	B-4	B-1	B-4
EL.+17.750	B-4	B-1	B-4
EL.+24.750	B-4	B-1	B-4
EL.+28.250	B-4	B-1	B-4
EL.+34.250	B-4	B-4	B-4

E-G BAY GIRDER SCHEDULE

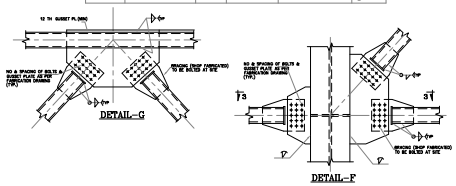
EL. / GRID MKD. T.O.S.	11a	12	13
EL.+4.750	–	B-1	B-1

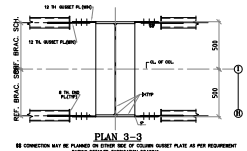
HORIZONTAL BRACING SCHEDULE

BRACING MKD.	BRACING SECTION	TYPE	REMARKS
HB-1	2-MC 150 BOX		(*) BRACING TYP. ON BOTH FLANGES OF COLUMN SHALL BE CONNECTED TOE TO TOE WITH CONTINUOUS WELD
HB-2	2-MC 200 BOX		
HB-3	2-MC 250 BOX		
HB-4	2-MC 300 BOX		
HB-5	1-WEB. PLT 280X10 2-FLG PLT. 320X10		
HB-6	1-WEB. PLT 326X12 2-FLG PLT. 370X12		

VERTICAL BRACING SCHEDULE

BRACING MKD.	BRACING SECTION	TYPE	REMARKS
VB2	2-MC 200 BOX		(*) BRACING TYP. ON BOTH FLANGES OF COLUMN SHALL BE CONNECTED TOE TO TOE WITH CONTINUOUS WELD
VB5	1-WEB. PLT 280X10 2-FLG PLT. 320X10		
VB7	1-WEB. PLT 318X16 2-FLG PLT. 370X16		





NOTES:–

1. ALL DIMENSIONS ARE IN MM & ELEVATIONS IN METERS UNLESS STATED OTHERWISE.
2. ALL ELEVATIONS ARE REFERRED TO THE FINISHED FLOOR LEVEL OF POWER HOUSE BUILDING AS EL. 0.00 M WHICH CORRESPONDS TO RL(+) 209.50 M.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH CONTRACT TERMS AND CONDITIONS, TECHNICAL SPECIFICATIONS AND SCHEDULE OF ITEMS.
4. FOR OTHER NOTES AND STD. DETAILS REF. DRG. PE–DG–508–600–C002 (9587–001–315–PVC–C–0002)
5. CONNECTION DETAILS SHOWN ARE INDICATIVE ONLY. SIZE & THICKNESS OF GUSSETS, NO. & DIA. OF CONNECTION BOLTS ETC. SHALL BE SHOWN IN CORRESPONDING FABRICATION DRG.
6. FOR GROUTING OF BASE PL. REF. DRG. NO PE–DG–508–611–C002 (9587–001–315–PVC–C–0036)
7. ALL ELEVATIONS ARE TO THE TOP OF STEEL (U.N.O.)
8. ALL BOLTED FIELD CONNECTIONS ARE TO BE DONE WITH HSFG BOLTS OF PROPERTY CLASS 8.8. (U.N)
9. FABRICATOR MUST CHECK THE WELD SIZES GIVEN IN TABLE –A FOR DESIGN AND MAXIMUM OF DESIGN VALUE ARE GIVEN TO BE USED.
10. ALL END CONNECTIONS FOR BRACINGS SHALL BE DESIGNED FOR FULL TENSILE STRENGTH OF MEMBERS.
11. STRUCTURAL STEEL ROLLED SECTIONS SHALL CONFORM TO GRADE DESIGNATION E–250 & STRUCTURAL STEEL PLATES SHALL CONFORM TO GRADE DESIGNATION E–350.

ENGINEERING REFERENCE DRAWINGS :–

1. PE–DG–508–100–M003 (9587–001–110–PVM–F–049) – TG EQUIPMENT PLAN AT GROUND FLOOR
2. PE–DG–508–100–M004 (9587–001–110–PVM–F–050) – TG EQUIPMENT PLAN AT MEZZANINE FLOOR
3. PE–DG–508–100–M005 (9587–001–110–PVM–F–051) – TG EQUIPMENT PLAN AT OPERATING FLOOR
4. PE–DG–508–100–M006 (9587–001–110–PVM–F–052) – TG EQUIPMENT PLAN AT MISC FLOORS ABOVE OPERATING FLOOR IN BC BAY
5. PE–DG–508–100–M007 (9587–001–110–PVM–F–053) – CROSS SECTION OF MAIN PLANT (T.G. BUILDING)

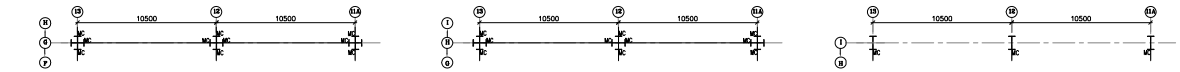
CONSTRUCTION REFERENCE DRAWINGS :–

1. PE–DG–508–612–C006 (9587–001–315–PVC–C–0148) – PH BUILDING DETAILS OF ROOF GIRDERS
2. PE–DG–508–612–C007 (9587–001–315–PVC–C–0149) – PH BUILDING GA AND DETAILS OF AB BAY GANTRY GIRDERS
3. PE–DG–508–612–C005 (9587–001–315–PVC–C–0147) – PH BLDG–CLADDING FRAMING ELEVATION ON AXIS A
4. PE–DG–508–611–C002 (9587–001–315–PVC–C–0036) – PH BUILDING G.A. & R.C. OF COLS FDN ON ROW A TO C UNIT–4 & CCR
5. PE–DG–508–612–C008 (9587–001–315–PVC–C–0150) – PH BUILDING–DETAILS OF ROOF PURLIN (AB BAY)
6. PE–DG–508–612–C023 (9587–001–315–PVC–C–0165) – MPH BLDG. –(AB BAY–CCR) FRAMING PLAN AT EL 9.0M FFL
7. PE–DG–508–612–C026 (9587–001–315–PVC–C–0168) – MPH BLDG.(AB BAY–CCR) – FRAMING PLAN @ EL 18.0M FFL
8. PE–DG–508–612–C039 (9587–001–315–PVC–C–0179) –MPH BLDG. – BUS DUCT SUPPORTING STRUCTURE ALONG AXIS–A

LEGEND:

1. TOS = TOP OF STEEL
2. BOS = BOTTOM OF STEEL
3. TYP. = TYPICAL
4. B/S = BOTH SIDE
5. F/S = FAR SIDE
6. N/S = NEAR SIDE
7. UNO = UNLESS NOTED OTHERWISE
8. TH. = THICK
9. PL. = PLATE

BHEL–PROJECT ENGINEERING MANAGEMENT (PEM)
THIS DRAWING MARKED(✓) IS RELEASED FOR
☑ COMMENTS/APPROVAL
☐ PLANNING/INFORMATION
☐ CONSTRUCTION
STAMP ALL PREVIOUS REVISIONS AS SUPERSEDED
BASED AT
MADE: AMIT THAKUR
CHECKED:
DATE: 25/07/2024



REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD

JOB NO. 508
STATUS CONTRACT
DISTRIBUTION

NTPC DRG. NO. 9587–001–315–PVC–C–0146

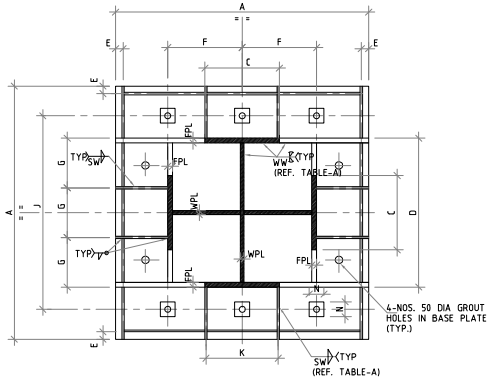
OWNER: NTPC Limited (A GOVERNMENT OF INDIA ENTERPRISE)
PROJECT: LARA SUPER THERMAL POWER PROJECT 2X800MW STAGE–II
BHARAT HEAVY ELECTRICALS LTD POWER SECTOR PROJECT ENGINEERING MANAGEMENT NOIDA (U.P.)

	NAME	SIGN	DATE
DSN	TYSR		22.07.2024
DRN	TYSR		22.07.2024
DESIGNED			
CHD	AT		22.07.2024
APPD/DKM			22.07.2024

TITLE: MPH–CCR BUILDING
STRUCTURAL FRAMING FROM D ROW TO I ROW

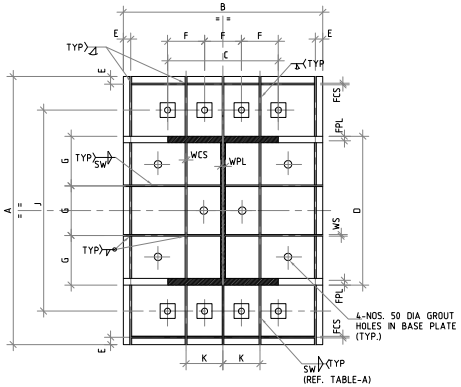
MPL	ELEC	C&I	MSE	MAX	DEPT.	SCALE –
					SIGN	
					DATE	

DRAWING NO. PE–DG–508–612–C004A
SHEET 1 OF 2 REV. 0
FORMAT SIZE A0



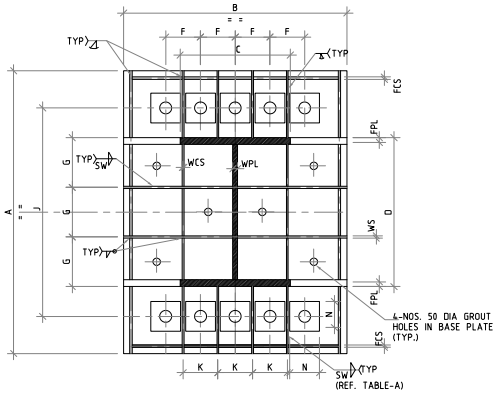
BASE PLATE MKD. BP1/BP2

(FOR COLUMN MKD. D-12, D-13, D-11a, E-12, E-13, E-11a, F-12, F-13, F-11a, G-12, G-13, G-11a, H-12, H-13, H-11a)



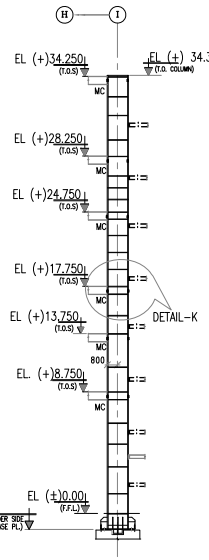
BASE PLATE MKD. BP3

(FOR COLUMN MKD. I-13)

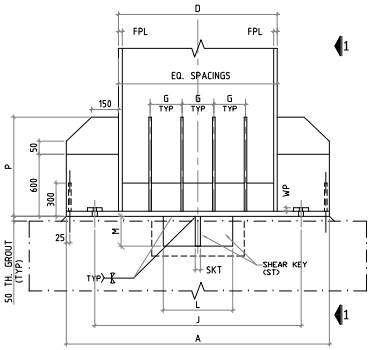


BASE PLATE MKD. BP3

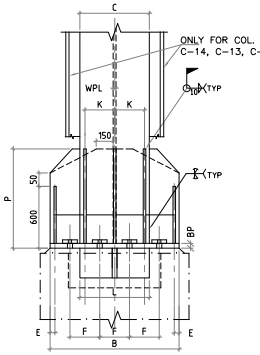
(FOR COLUMN MKD. I-12 , I11a)



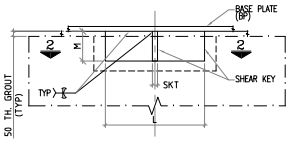
SECTION A-A



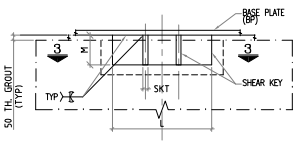
TYP. SECTION OF BASE PLATE



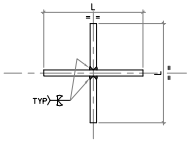
VIEW 1-1



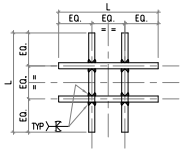
SHEAR KEY TYPE-1



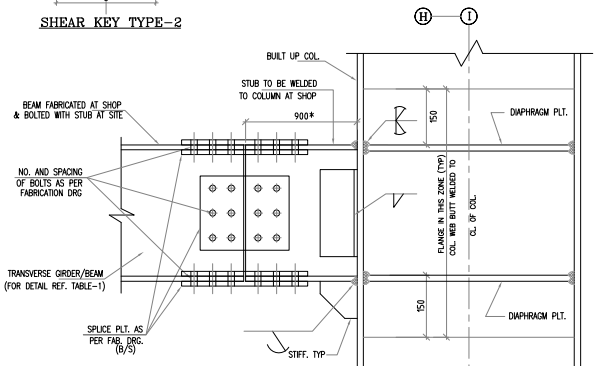
SHEAR KEY TYPE-2



PLAN 2-2



PLAN 3-3



DETAIL-K

MOMENT CONNECTION & SPLICE DETAL FOR MAIN BEAM (TYP.)

(* MAY VARY DURING DETAILED FABRICATION DRAWING)

BASE PL. SCHEDULE

GROUP MKD. / COL. MKD. / DIM MKD.	BP1	BP2	BP3	BP4	REMARKS
	D-13, D-11a, E-13, E-11a, F-13, F-11a, G-13, G-11a, H-12, H-13, H-11a	D-12, E-12, F-12, G-12	I13	I12, I11a	
A	1600	1700	1800	1900	BASE PLATE
B	1600	1700	1400	1500	
C	500	500	740	740	COL. SIZE
D	1000	1000	1000	1000	
E	50	50	50	50	REF. PLAN
F	625	650	325	280	
G	333	333	333	333	C/C OF BOLT
J	1250	1300	1400	1450	
J1	–	–	–	–	
K	500	500	325	280	
P	1000	1000	1000	1000	STIFF. PL. HEIGHT
L	1000	1000	1000	1000	SHEAR KEY
M	150	150	150	150	
SKT	25	32	25	36	
TYPE	1	1	1	2	
N	120	120	120	200	WASHER PLATE

BASE PL. SCHEDULE

(READ WITH DETAIL A)

GROUP MKD. / COL. MKD. / ITEM MKD.	BP1	BP2	BP3	BP4	REMARKS
	D-13, D-11a, E-13, E-11a, F-13, F-11a, G-13, G-11a, H-12, H-13, H-11a	D-12, E-12, F-12, G-12	I13	I12, I11a	
BP	36	40	36	40	BASE PL WITH 4 NOS. 50ø GROUT HOLES AND * ø BOLT HOLE
DIA OF BOLT	40	32	36	80	DIA OF BOLT
FPL	SAME AS COL. FL. PL. THICKNESS				PL. BUTT WELDED TO COL. FL. PL.
WPL	REFER COLUMN SECTION				COL. WEB PL.
FS	12	16	12	12	FL. STIFF. PL.
WS	12	16	12	12	WEB STIFF. PL.
WP	12	12	12	20	WASHER PL. WITH 1-** ø BOLT HOLE
FCS	12	12	12	12	FL. CROSS STIFF. PL.
WCS	12	12	12	12	WEB CROSS STIFF. PL.
NOS. OF BOLT	8	8	8	10	TOTAL NUMBER OF BOLT

* ø HOLES. = DIA. OF BOLT + 16 MM

** ø HOLES. = DIA. OF BOLT + 3 MM

BILL OF MATERIAL

S.NO.	MEMBER	WEIGHT	GRADE
1.	10 THK. PLT.	2.80	IS2062-E350
2.	12 THK. PLT.	19.0	IS2062-E350
3.	16 THK. PLT.	345.5	IS2062-E350
4.	20 THK. PLT.	3.0	IS2062-E350
5.	25 THK. PLT.	310.0	IS2062-E350
6.	28 THK. PLT.	32.0	IS2062-E350
7.	32 THK. PLT.	82.0	IS2062-E350
8.	36 THK. PLT.	42.0	IS2062-E350
9.	40 THK. PLT.	6.0	IS2062-E350
10.	45 THK. PLT.	–	IS2062-E350
11.	50 THK. PLT.	12.0	IS2062-E350
12.	ISMC150	4.5	IS2062-E250
13.	ISMC200	2.8	IS2062-E250
14.	ISMC250	1.5	IS2062-E250
15.	ISMC300	1.8	IS2062-E250
TOTAL TONNAGE- MT 865.0			

TABLE – A

(SHOWING SIZE OF WELD) PL. THICKNESS.	WW (SIZE OF WELD IN MM)	SW (SIZE OF WELD IN MM)
8 & 10	DOUBLE BEVEL BUTT WELD WITH REINFORCED FILLET WELD OF 6 MM THICK WHEREVER REQD.	6
12		8
16 & 20		12
25		14
28 & 32		20
36 & 40		20
45 & 50		25

BHEL-PROJECT ENGINEERING MANAGEMENT (EMD)

THIS DRAWING MARKED ✓ IS RELEASED FOR
☒ COMMENTS/APPROVAL
☐ PLANNING/INFORMATION
☐ CONSTRUCTION
STAMP ALL PREVIOUS REVISIONS AS SUPERSEDED

ISSUED BY
NAME: AMIT THAKUR
SIGNATURE:
DATE: 25/07/2024

REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD

JOB NO. 508
STATUS CONTRACT
DISTRIBUTION

NTPC DRG. NO. 9587-001-315-PVC-C-0146

OWNER (NTPC): NTPC Limited (A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT: LARA SUPER THERMAL POWER PROJECT 2X800MW STAGE-II

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA (U.P.)

	NAME	SIGN	DATE
DSN	DRN TSR	Sd/-	23.07.2024
DSN	DESIGNED	Sd/-	23.07.2024
CHD	CHD AT	Sd/-	23.07.2024
APPD	APPD DGM	Sd/-	23.07.2024

C

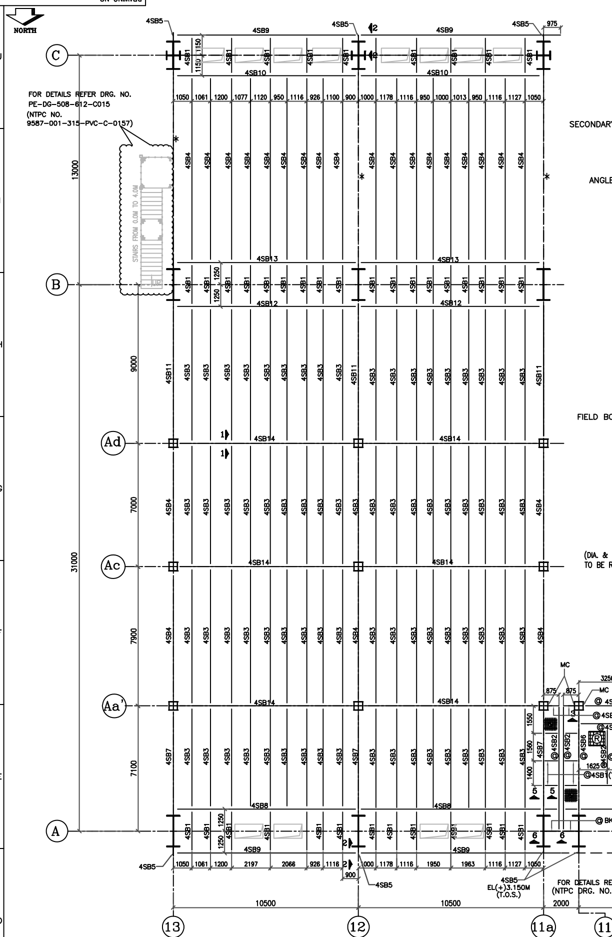
TITLE: MPH-CCR BUILDING
STRUCTURAL FRAMING FROM D ROW TO I ROW

MPL	ELEC	C&I	MSE	MAX	DEPT.	SCALE –	DRAWING NO.
					SIGN		PE-DG-508-612-C004A
					DATE		SHEET 2 OF 2 REV. 0

FORMAT SIZE A0

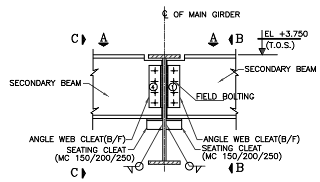
FIRST ANGLE PRJECTION

ALL DIMENSIONS ARE IN MM

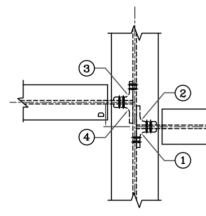


PLAN AT EL (+)3.750 (T.O.S.) (CCR)

* FOR SIZE REFER DRG. NO. PE-DG-508-612-C004 (NTPC DRG. NO. 9587-001-315-PVC-C-0145)
(⊕-MARKED MEMBERS ARE AT T.O.S. (+)3.960 U.N.O.)
(®- MARKED BEAMS ARE REMOVABLE BEAMS)
(ALL CONNECTIONS ARE SHEAR CONNECTIONS UNLESS NOTED OTHERWISE)

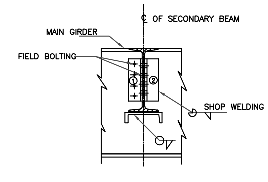


SECTION 1-1
TYP. CONNECTION DETAIL OF SECONDARY BEAM TO PRIMARY BEAM



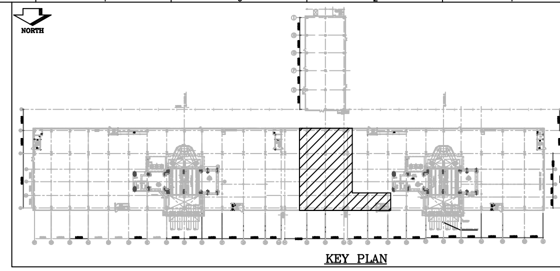
VIEW A-A

(DIA. & NO. OF BOLTS ARE INDICATIVE. ACTUAL DIA. & NO. OF BOLTS TO BE REFERRED FROM CORRESPONDING FABRICATION DRG.)
(REFER ERECTION SEQUENCE-1)

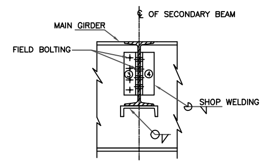


VIEW B-B

(DIA. & NO. OF BOLTS ARE INDICATIVE. ACTUAL DIA. & NO. OF BOLTS TO BE REFERRED FROM CORRESPONDING FABRICATION DRG.)
(REFER ERECTION SEQUENCE-1)

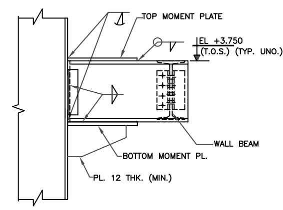


KEY PLAN

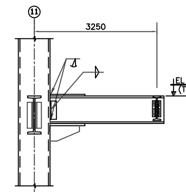


VIEW C-C

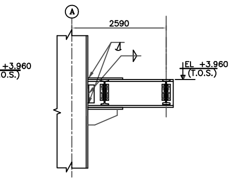
(DIA. & NO. OF BOLTS ARE INDICATIVE. ACTUAL DIA. & NO. OF BOLTS TO BE REFERRED FROM CORRESPONDING FABRICATION DRG.)
(REFER ERECTION SEQUENCE-1)



SECTION 2-2
TYP.BRACKET DETAIL WITHOUT KNEE
(MOMENT CONNECTION)



SECTION 3-3
(MOMENT CONNECTION)



SECTION 4-4
(MOMENT CONNECTION)

NOTES:-

1. ALL DIMENSIONS ARE IN MM & ELEVATIONS IN METERS UNLESS STATED OTHERWISE.
2. ALL ELEVATIONS ARE REFERRED TO THE FINISHED FLOOR LEVEL OF POWER HOUSE BUILDING AS EL. 0.00 M WHICH CORRESPONDS TO RL.(+) 209.50 M.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH CONTRACT TERMS AND CONDITIONS, TECHNICAL SPECIFICATIONS AND SCHEDULE OF ITEMS.
4. FOR OTHER NOTES AND STD. DETAILS REF. DRG. PE-DG-508-600-C002 (9587-001-315-PVC-C-0002)
5. CONNECTION DETAILS SHOWN ARE INDICATIVE ONLY. SIZE & THICKNESS OF GUSSETS, NO. & DIA. OF CONNECTION BOLTS ETC. SHALL BE SHOWN IN CORRESPONDING FABRICATION DRG.
6. FOR GROUTING OF BASE PL. REF. DRG. NO PE-DG-508-611-C001 (9587-001-315-PVC-C-0035)
7. ALL ELEVATIONS ARE TO THE TOP OF STEEL (U.N.O.)
8. ALL BOLTED FIELD CONNECTIONS ARE TO BE DONE WITH HSFG BOLTS OF PROPERTY CLASS 8.8. (U.N)
9. FABRICATOR MUST CHECK THE WELD SIZES GIVEN IN TABLE -A FOR DESIGN AND MAXIMUM OF DESIGN VALUE AND VALUE GIVEN TO BE USED.
10. ALL END CONNECTIONS FOR BRACINGS SHALL BE DESIGNED FOR FULL TENSILE STRENGTH OF MEMBERS.
11. STRUCTURAL STEEL ROLLED SECTIONS SHALL CONFORM TO GRADE DESIGNATION E-250 & STRUCTURAL STEEL PLATES SHALL CONFORM TO GRADE DESIGNATION E-350.

ENGINEERING REFERENCE DRAWINGS :-

1. PE-DG-508-100-M003 (9587-001-110-PVM-F-049) - TG EQUIPMENT PLAN AT GROUND FLOOR
2. PE-DG-508-100-E002 (9587-001-199-PVE-F-001) - LAYOUT OF MV SWITCHGEAR ROOM

CONSTRUCTION REFERENCE DRAWINGS :-

1. PE-DG-508-612-C004 --------- CCR BLDG.- STRUCTURAL FRAMING ALONG A TO C ROW (NTPC DRG. NO. 9587-001-315-PVC-C-0145)
2. PE-DG-508-612-C016 --------- MPH BLDG.- DETAILS OF STAIRCASE A-B BAY. MKD. SC-1 & SC-2 (NTPC DRG. NO. 9587-001-315-PVC-C-0158)
3. PE-DG-508-612-C005 --------- PH BLDG-CLADDING FRAMING ELEVATION ON AXIS A (NTPC DRG. NO. 9587-001-315-PVC-C-0147)
4. PE-DG-508-612-C015 --------- MPH BLDG. - DETAILS OF MISC. PLATFORMS & STAIRS (NTPC DRG. NO. 9587-001-315-PVC-C-0157)

ERECTION SEQUENCE-1

1. ONE LEG OF ANGLE 2/4 SHALL BE WELDED WITH MAIN BEAM AT SHOP.
2. HOLES FOR BOLT SHALL BE DRILLED AT SHOP IN OTHER OUTSTANDING LEG OF ANGLE 2/4 AS PER FABRICATION DRAWING.
3. ANGLE 1/3 WILL HAVE HOLES DRILLED IN BOTH LEGS AT SHOP AS PER FABRICATION DRAWING AND SHALL BE SHIPPED LOOSE TO SITE.
4. AFTER PLACING SECONDARY BEAM IN POSITION WITH CRANE, BOTH ANGLE 1 & 2 SHALL BE BOLTED TO SECONDARY BEAM
5. AFTER PLACING SECONDARY BEAM IN POSITION WITH CRANE, BOTH ANGLE 3 & 4 SHALL BE BOLTED TO SECONDARY BEAM
6. OUTSTANDING LEG OF ANGLE 1/3 SHALL BE BOLTED TO MAIN BEAM.
7. PLEASE ENSURE THAT WHEN 'D' IS LESS THAN 500MM, SHEAR CLEAT ANGLES 2 & 4 SHALL NECESSARILY BE CONNECTED ON THE NEAR SIDE WEB FACES OF BOTH SECONDARY BEAMS.

ERECTION SEQUENCE-2

1. TWO LEGS OF T-BEAM SHALL BE WELDED WITH COLUMN AT SHOP.
2. HOLES FOR BOLT SHALL BE DRILLED AT SHOP IN OUTSTANDING LEG OF T-BEAM AS PER FABRICATION DRAWING.
3. AFTER PLACING SECONDARY BEAM IN POSITION WITH CRANE, OUTSTAND LEG OF T-BEAM SHALL BE BOLTED TO SECONDARY BEAM.

LEGEND:

CL. = CENTRE LINE
EL = ELEVATION
TYP = TYPICAL
MC = MOMENT CONNECTION
T.O.S. = TOP OF STEEL
SW = SHOP WELDING
FB = FIELD BOLTING
B.O.S. = BOTTOM OF STEEL
N.T.S. = NOT TO SCALE
T.O.P. = TOP OF PLATE
WP. = WEB PLATE
= 40 THICK GRATING
® = REMOVABLE BEAM
= REMOVABLE GRATING
PTF. = PLATE ON TOP FLANGE

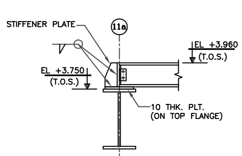
BILL OF MATERIAL

S.NO.	MEMBER	WEIGHT(MT)	GRADE
1	ISMC150	0.08	IS2062--E250
2	ISMB200	2.65	IS2062--E250
3	ISMB250	1.08	IS2062--E250
4	ISMB400	32.16	IS2062--E250
5	ISMB500	20.09	IS2062--E250
6	ISMB600	0.87	IS2062--E250
7	16 THK. PLT.	10.16	IS2062--E350
8	20 THK. PLT.	8.76	IS2062--E350
9	25 THK. PLT.	14.36	IS2062--E350
10	28 THK. PLT.	2.17	IS2062--E350
11	36 THK. PLT.	16.02	IS2062--E350
12	40 THK. PLT.	7.25	IS2062--E350
13	50 THK. PLT.	4.95	IS2062--E350
TOTAL		120.60	(APPROX.)

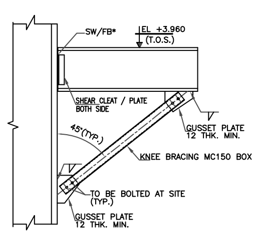
BEAM SCHEDULE

PL. GIRDER DETAILS	BEAM MKD.	BEAM SECTION			
	4SB1	MB 200			
	4SB2	MB 250			
	4SB3	MB 400			
	4SB4	MB 500			
	4SB5	MB 600			
	4SB6	PL. GIRDER	D - 500	FL. PL.- 250X16	WEB PL.- 16 TH.
	4SB7	PL. GIRDER	D - 550	FL. PL.- 300X20	WEB PL.- 16 TH.
	4SB8	PL. GIRDER	D - 550	FL. PL.- 300X40	WEB PL.- 28 TH.
	4SB9	PL. GIRDER	D - 600	FL. PL.- 250X25	WEB PL.- 16 TH.
	3SB10	PL. GIRDER	D - 600	FL. PL.- 300X50	WEB PL.- 40 TH.
	4SB11	PL. GIRDER	D - 700	FL. PL.- 300X20	WEB PL.- 16 TH.
	4SB12	PL. GIRDER	D - 700	FL. PL.- 300X25	WEB PL.- 20 TH.
	4SB13	PL. GIRDER	D - 700	FL. PL.- 300X36	WEB PL.- 20 TH.
	4SB14	PL. GIRDER	D - 700	FL. PL.- 350X36	WEB PL.- 25 TH.
	BKT-1	4SB2 + KNEE BRACING			

PL. GIRDER: D, FL. PL., WEB PL., FL. PL.
- BUILT UP GIRDERS SHALL BE PROVIDED WITH 8 TH. WEB STIFF. PL. AS PER IS:800.
- SHEAR CONNECTORS (STUDS) SHALL BE PROVIDED FOR BEAMS CONNECTED TO AUX. COLS. ON TOP FL. PL.
- ALL SECONDARY BEAMS SHALL HAVE SHEAR CONNECTION.

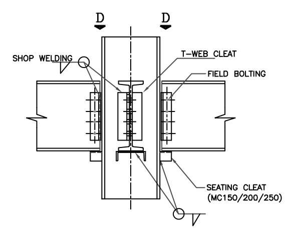


SECTION 5-5



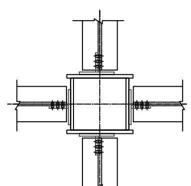
SECTION 6-6
TYP.BRACKET DETAIL WITH KNEE

(* TO BE DECIDED BY DETAILER DURING DETAILED FABRICATION DRAWING)



TYP. CONNECTION DETAIL OF PRIMARY BEAM TO AUX COL

(REFER ERECTION SEQUENCE-2)



VIEW D-D

(DIA. & NO. OF BOLTS ARE INDICATIVE. ACTUAL DIA. & NO. OF BOLTS TO BE REFERRED FROM CORRESPONDING FABRICATION DRG.)
(REFER ERECTION SEQUENCE-2)

BHEL-PROJECT ENGINEERING MANAGEMENT (CIVIL)
THIS DRAWING MARKED(✓) IS RELEASED FOR
☑ COMMENTS/APPROVAL
☐ PLANNING/INFORMATION
☐ CONSTRUCTION
STAMP ALL PREVIOUS REVISION AS SUPERSEDED
ISSUED BY
NAME: Amit Thakur
SIGNATURE:
DATE: 16/07/2024

JOB NO. 508
STATUS CONTRACT
DISTRIBUTION

REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD

NTPC DRG. NO. 9587-001-315-PVC-C-0163

OWNER: NTPC Limited (A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT: LARA SUPER THERMAL POWER PROJECT 2X800MW STAGE-II

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA (U.P.)

DEPT CODE: C

	NAME	SIGN	DATE
DRN	SEEMA	Sd/-	16.07.2024
DESN	NK	Sd/-	16.07.2024
CHD	AT	Sd/-	16.07.2024
APPD	DKM	Sd/-	16.07.2024

TITLE: MPH BUILDING FRAMING PLAN AT EL (+) 4.00M (FFL) (CCR BUILDING)

MPL	ELEC	C&I	MSE	MAX	DEPT.	SCALE -

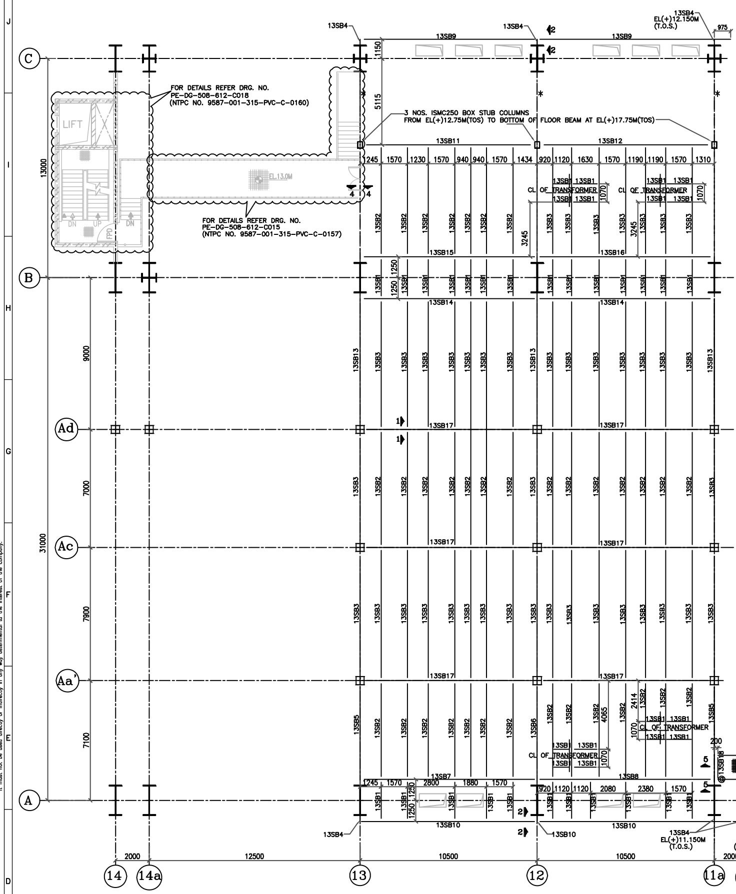
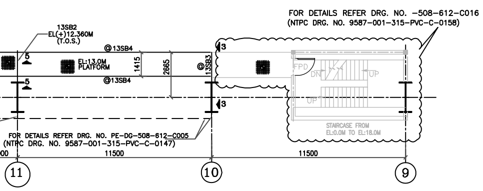
SIGN
DATE

DRAWING NO. PE-DG-508-612-C021
SHEET 1 OF 1 REV. 0

FORMAT SIZE A0

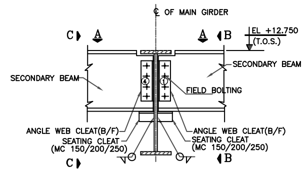
FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM

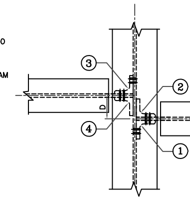



PLAN AT EL (+)12.750 (T.O.S.) (CCR)

* FOR SIZE REFER DRG. NO. PE-DG-508-612-C004 (NTPC DRG. NO. 9587-001-315-PVC-C-0145)
(⊕-MARKED MEMBERS ARE AT T.O.S. (+)12.960 U.N.O.)
(®- MARKED BEAMS ARE REMOVABLE BEAMS)
(ALL CONNECTIONS ARE SHEAR CONNECTIONS UNLESS NOTED OTHERWISE)

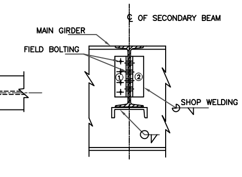


SECTION 1-1
TYP. CONNECTION DETAIL OF SECONDARY BEAM TO PRIMARY BEAM



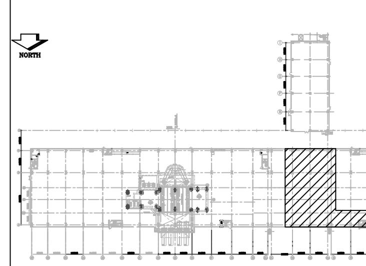
VIEW A-A

(DIA. & NO. OF BOLTS ARE INDICATIVE. ACTUAL DIA. & NO. OF BOLTS TO BE REFERRED FROM CORRESPONDING FABRICATION DRG.)
(REFER ERECTION SEQUENCE-1)

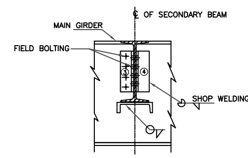


VIEW B-B

(DIA. & NO. OF BOLTS ARE INDICATIVE. ACTUAL DIA. & NO. OF BOLTS TO BE REFERRED FROM CORRESPONDING FABRICATION DRG.)
(REFER ERECTION SEQUENCE-1)

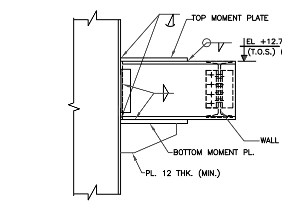


KEY PLAN

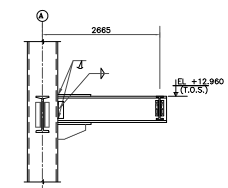


VIEW C-C

(DIA. & NO. OF BOLTS ARE INDICATIVE. ACTUAL DIA. & NO. OF BOLTS TO BE REFERRED FROM CORRESPONDING FABRICATION DRG.)
(REFER ERECTION SEQUENCE-1)



SECTION 2-2
TYP.BRACKET DETAIL WITHOUT KNEE
(MOMENT CONNECTION)



SECTION 3-3
(MOMENT CONNECTION)

NOTES:-

1. ALL DIMENSIONS ARE IN MM & ELEVATIONS IN METERS UNLESS STATED OTHERWISE.
2. ALL ELEVATIONS ARE REFERRED TO THE FINISHED FLOOR LEVEL OF POWER HOUSE BUILDING AS EL. 0.00 M WHICH CORRESPONDS TO RL.(+) 209.50 M.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH CONTRACT TERMS AND CONDITIONS, TECHNICAL SPECIFICATIONS AND SCHEDULE OF ITEMS.
4. FOR OTHER NOTES AND STD. DETAILS REF. DRG. PE-DG-508-600-C002 (9587-001-315-PVC-C-0002)
5. CONNECTION DETAILS SHOWN ARE INDICATIVE ONLY. SIZE & THICKNESS OF GUSSETS, NO. & DIA. OF CONNECTION BOLTS ETC. SHALL BE SHOWN IN CORRESPONDING FABRICATION DRG.
6. FOR GROUTING OF BASE PL. REF. DRG. NO PE-DG-508-611-C001 (9587-001-315-PVC-C-0035)
7. ALL ELEVATIONS ARE TO THE TOP OF STEEL (U.N.O.)
8. ALL BOLTED FIELD CONNECTIONS ARE TO BE DONE WITH HSFG BOLTS OF PROPERTY CLASS 8.8. (U.N)
9. FABRICATOR MUST CHECK THE WELD SIZES GIVEN IN TABLE -A FOR DESIGN AND MAXIMUM OF DESIGN VALUE AND VALUE GIVEN TO BE USED.
10. ALL END CONNECTIONS FOR BRACINGS SHALL BE DESIGNED FOR FULL TENSILE STRENGTH OF MEMBERS.
11. STRUCTURAL STEEL ROLLED SECTIONS SHALL CONFORM TO GRADE DESIGNATION E-250 & STRUCTURAL STEEL PLATES SHALL CONFORM TO GRADE DESIGNATION E-350.

ENGINEERING REFERENCE DRAWINGS :-

1. PE-DG-508-100-M004 (9587-001-110-PVM-F-050) - TG EQUIPMENT LAYOUT DRAWING AT MEZZANINE FLOOR 9.0M
2. PE-DG-508-100-E003 (9587-001-200-PVE-F-102) - LAYOUT OF LV SWITCHGEAR ROOM
3. JHS-9587-00-002 (9587-001-215-JHS-PVE-B-220) - 2500 KVA DRY TYPE TRANSFORMER- OGA

CONSTRUCTION REFERENCE DRAWINGS :-

1. PE-DG-508-612-C004 -------- CCR BLDG.- STRUCTURAL FRAMING ALONG A TO C ROW (NTPC DRG. NO. 9587-001-315-PVC-C-0145)
2. PE-DG-508-612-C018 -------- MPH BLDG.- DETAILS OF STAIRCASE MKD. SC-04 & SC-05 (NTPC DRG. NO. 9587-001-315-PVC-C-0160)
3. PE-DG-508-612-C005 -------- PH BLDG-CLADDING FRAMING ELEVATION ON AXIS A (NTPC DRG. NO. 9587-001-315-PVC-C-0147)
4. PE-DG-508-612-C015 -------- MPH BLDG. - DETAILS OF MISC. PLATFORMS & STAIRS (NTPC DRG. NO. 9587-001-315-PVC-C-0157)

ERECTION SEQUENCE-1

1. ONE LEG OF ANGLE 2/4 SHALL BE WELDED WITH MAIN BEAM AT SHOP.
2. HOLES FOR BOLT SHALL BE DRILLED AT SHOP IN OTHER OUTSTANDING LEG OF ANGLE 2/4 AS PER FABRICATION DRAWING.
3. ANGLE 1/3 WILL HAVE HOLES DRILLED IN BOTH LEGS AT SHOP AS PER FABRICATION DRAWING AND SHALL BE SHIPPED LOOSE TO SITE.
4. AFTER PLACING SECONDARY BEAM IN POSITION WITH CRANE, BOTH ANGLE 1 & 2 SHALL BE BOLTED TO SECONDARY BEAM
5. AFTER PLACING SECONDARY BEAM IN POSITION WITH CRANE, BOTH ANGLE 3 & 4 SHALL BE BOLTED TO SECONDARY BEAM
6. OUTSTANDING LEG OF ANGLE 1/3 SHALL BE BOLTED TO MAIN BEAM.
7. PLEASE ENSURE THAT WHEN 'D' IS LESS THAN 500MM, SHEAR CLEAT ANGLES 2 & 4 SHALL NECESSARILY BE CONNECTED ON THE NEAR SIDE WEB FACES OF BOTH SECONDARY BEAMS.

ERECTION SEQUENCE-2

1. TWO LEGS OF T-BEAM SHALL BE WELDED WITH COLUMN AT SHOP.
2. HOLES FOR BOLT SHALL BE DRILLED AT SHOP IN OUTSTANDING LEG OF T-BEAM AS PER FABRICATION DRAWING.
3. AFTER PLACING SECONDARY BEAM IN POSITION WITH CRANE, OUTSTAND LEG OF T-BEAM SHALL BE BOLTED TO SECONDARY BEAM.

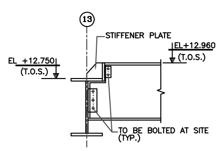
LEGEND:

CL. = CENTRE LINE
EL = ELEVATION
TYP = TYPICAL
MC = MOMENT CONNECTION
T.O.S. = TOP OF STEEL
SW = SHOP WELDING
FB = FIELD BOLTING
B.O.S. = BOTTOM OF STEEL
N.T.S. = NOT TO SCALE
T.O.P. = TOP OF PLATE
WP. = WEB PLATE
▦ = 40 THICK GRATING
® = REMOVABLE BEAM
▣ = REMOVABLE GRATING
PTF. = PLATE ON TOP FLANGE

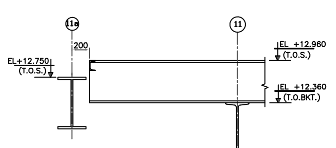
BILL OF MATERIAL			
S.NO.	MEMBER	WEIGHT(MT)	GRADE
1	ISMC75	0.01	IS2062--E250
2	ISMB200	2.00	IS2062--E250
3	ISMB400	14.08	IS2062--E250
4	ISMB500	27.20	IS2062--E250
5	ISMB600	3.93	IS2062--E250
6	16 THK. PLT.	8.41	IS2062--E350
7	20 THK. PLT.	8.72	IS2062--E350
8	25 THK. PLT.	3.46	IS2062--E350
9	28 THK. PLT.	14.95	IS2062--E350
10	32 THK. PLT.	1.58	IS2062--E350
11	36 THK. PLT.	14.24	IS2062--E350
12	40 THK. PLT.	1.98	IS2062--E350
13	45 THK. PLT.	2.22	IS2062--E350
14	50 THK. PLT.	2.47	IS2062--E350
	TOTAL	105.30	(APPROX.)

BEAM SCHEDULE

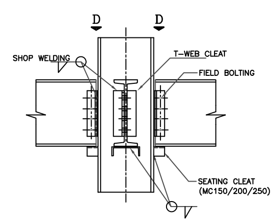
PL. GIRDER DETAILS	BEAM MKD.	BEAM SECTION			
(PL. GIRDER: D, FL. PL., WEB PL., FL. PL.) - BUILT UP GIRDERS SHALL BE PROVIDED WITH 8 TH. WEB STIFF. PL AS PER IS:800. - SHEAR CONNECTORS (STUDS) SHALL BE PROVIDED FOR BEAMS CONNECTED TO AUX. COLS. ON TOP FL. PL. - ALL SECONDARY BEAMS SHALL HAVE SHEAR CONNECTION.	13SB1	MB 200			
	13SB2	MB 400			
	13SB3	MB 500			
	13SB4	MB 600			
	13SB5	PL. GIRDER	D - 550	FL. PL.- 250X16	WEB PL.- 16 TH.
	13SB6	PL. GIRDER	D - 550	FL. PL.- 300X20	WEB PL.- 20 TH.
	13SB7	PL. GIRDER	D - 550	FL. PL.- 300X45	WEB PL.- 28 TH.
	13SB8	PL. GIRDER	D - 550	FL. PL.- 300X50	WEB PL.- 28 TH.
	13SB9	PL. GIRDER	D - 600	FL. PL.- 250X16	WEB PL.- 16 TH.
	13SB10	PL. GIRDER	D - 600	FL. PL.- 250X25	WEB PL.- 16 TH.
	13SB11	PL. GIRDER	D - 600	FL. PL.- 300X28	WEB PL.- 20 TH.
	13SB12	PL. GIRDER	D - 600	FL. PL.- 300X32	WEB PL.- 20 TH.
	13SB13	PL. GIRDER	D - 700	FL. PL.- 300X20	WEB PL.- 16 TH.
	13SB14	PL. GIRDER	D - 700	FL. PL.- 300X28	WEB PL.- 20 TH.
	13SB15	PL. GIRDER	D - 700	FL. PL.- 300X36	WEB PL.- 20 TH.
	13SB16	PL. GIRDER	D - 700	FL. PL.- 300X40	WEB PL.- 25 TH.
	13SB17	PL. GIRDER	D - 700	FL. PL.- 350X36	WEB PL.- 28 TH.
	13SB18	ISMC 75			



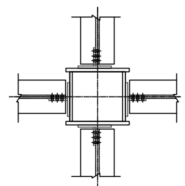
SECTION 4-4



SECTION 5-5



TYP. CONNECTION DETAIL OF PRIMARY BEAM TO AUX. COL.
(REFER ERECTION SEQUENCE-2)



VIEW D-D

(DIA. & NO. OF BOLTS ARE INDICATIVE. ACTUAL DIA. & NO. OF BOLTS TO BE REFERRED FROM CORRESPONDING FABRICATION DRG.)
(REFER ERECTION SEQUENCE-2)

BHEL-PROJECT ENGINEERING MANAGEMENT (CIVIL)
THIS DRAWING MARKED(✓) IS RELEASED FOR
☑ COMMENTS/APPROVAL
☐ PLANNING/INFORMATION
☐ CONSTRUCTION
STAMP ALL PREVIOUS REVISION AS SUPERSEDED
ISSUED BY
NAME: Amit Thakur
SIGNATURE:
DATE: 19/07/2024

JOB NO. 508
STATUS: CONTRACT
DISTRIBUTION

REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD

NTPC DRG. NO. 9587-001-315-PVC-C-0166

OWNER: NTPC Limited (A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT: LARA SUPER THERMAL POWER PROJECT 2X800MW STAGE-II

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA (U.P.)

DEPT CODE: C

	NAME	SIGN	DATE
DRN	SEEMA	Sd/-	19.07.2024
DESN	NK	Sd/-	19.07.2024
CHD	AT	Sd/-	19.07.2024
APPD	DKM	Sd/-	19.07.2024

TITLE: MPH BUILDING
FRAMING PLAN AT EL (+) 13.00M (FFL) (CCR BUILDING)

MPL | ELEC | C&I | MSE | MAX | DEPT. SIGN DATE

SCALE -

DRAWING NO. PE-DG-508-612-C024

SHEET 1 OF 1 | REV. 0

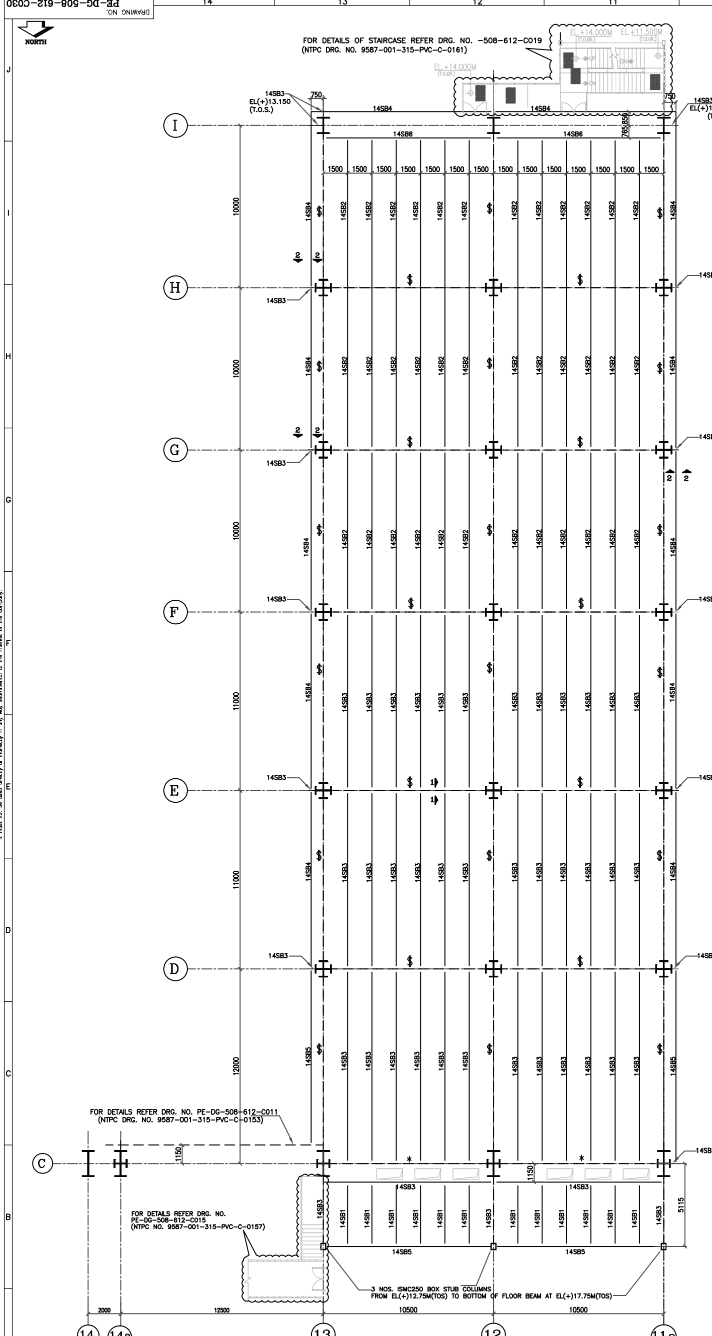
FORMAT SIZE A0

DRAWING NO. PE-DG-508-612-C024

FIRST ANGLE PRJECTION

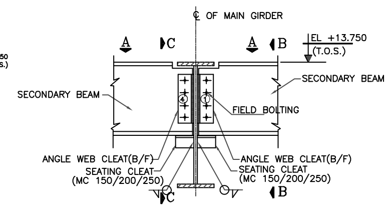
ALL DIMENSIONS ARE IN MM

PE-DG-508-612-C030
DRAWING NO.

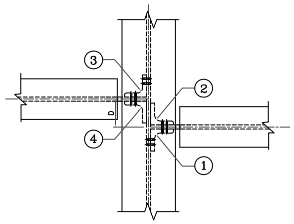


PLAN AT EL (+)13.750 (T.O.S.)
(CCR BUILDING)

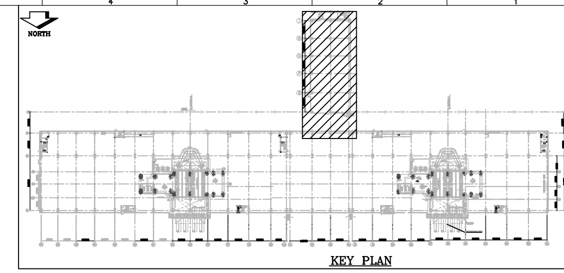
* FOR SIZE REFER DRG. NO. PE-DG-508-612-C004 (NTPC DRG. NO. 9587-001-315-PVC-C-0145)
$ FOR SIZE REFER DRG. NO. PE-DG-508-612-C004A (NTPC DRG. NO. 9587-001-315-PVC-C-0146)
(ALL CONNECTIONS ARE SHEAR CONNECTIONS UNLESS NOTED OTHERWISE)



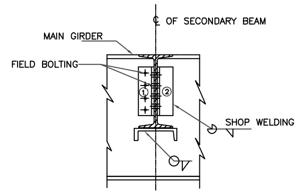
SECTION 1-1
TYP. CONNECTION DETAIL OF
SECONDARY BEAM TO PRIMARY BEAM



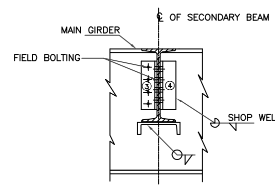
VIEW A-A
(DIA. & NO. OF BOLTS ARE INDICATIVE. ACTUAL DIA. & NO. OF BOLTS TO BE REFERRED FROM CORRESPONDING FABRICATION DRG.)
(REFER ERECTION SEQUENCE-1)



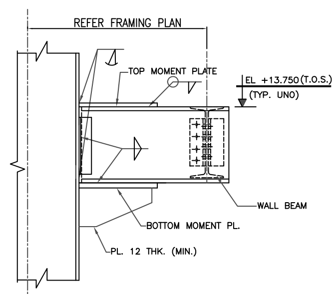
KEY PLAN



VIEW B-B
(DIA. & NO. OF BOLTS ARE INDICATIVE. ACTUAL DIA. & NO. OF BOLTS TO BE REFERRED FROM CORRESPONDING FABRICATION DRG.)
(REFER ERECTION SEQUENCE-1)



VIEW C-C
(DIA. & NO. OF BOLTS ARE INDICATIVE. ACTUAL DIA. & NO. OF BOLTS TO BE REFERRED FROM CORRESPONDING FABRICATION DRG.)
(REFER ERECTION SEQUENCE-1)



SECTION 2-2
TYP.BRACKET DETAIL WITHOUT KNEE

BILL OF MATERIAL			
S.NO.	MEMBER	WEIGHT(MT)	GRADE
1	ISMB250	1.77	IS2062--E250
2	ISMB500	30.49	IS2062--E250
3	ISMB600	55.16	IS2062--E250
4	16 THK. PLT.	21.67	IS2062--E350
5	20 THK. PLT.	5.51	IS2062--E350
	TOTAL	114.61	

BEAM SCHEDULE

PL. GIRDER DETAILS	BEAM MKD.	BEAM SECTION			
PL. GIRDER (D, FL. PL., WEB PL., FL. PL.)	14SB1	MB 250			
	14SB2	MB 500			
	14SB3	MB 600			
	14SB4	PL. GIRDER	D - 600	FL. PL.- 250X16	WEB PL.- 16 TH.
	14SB5	PL. GIRDER	D - 600	FL. PL.- 250X20	WEB PL.- 16 TH.
	14SB6	PL. GIRDER	D - 700	FL. PL.- 300X20	WEB PL.- 16 TH.

- BUILT UP GIRDERS SHALL BE PROVIDED WITH 8 TH. WEB STIFF. PL. AS PER IS:800.
- ALL SECONDARY BEAMS SHALL HAVE SHEAR CONNECTION.

NOTES:-

1. ALL DIMENSIONS ARE IN MM & ELEVATIONS IN METERS UNLESS STATED OTHERWISE.
2. ALL ELEVATIONS ARE REFERRED TO THE FINISHED FLOOR LEVEL OF POWER HOUSE BUILDING AS EL. 0.00 M WHICH CORRESPONDS TO RL.(+) 209.50 M.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH CONTRACT TERMS AND CONDITIONS, TECHNICAL SPECIFICATIONS AND SCHEDULE OF ITEMS.
4. FOR OTHER NOTES AND STD. DETAILS REF. DRG. PE-DG-508-600-C002 (9587-001-315-PVC-C-0002)
5. CONNECTION DETAILS SHOWN ARE INDICATIVE ONLY. SIZE & THICKNESS OF GUSSETS, NO. & DIA. OF CONNECTION BOLTS ETC. SHALL BE SHOWN IN CORRESPONDING FABRICATION DRG.
6. FOR GROUTING OF BASE PL. REF. DRG. NO PE-DG-508-611-C001 (9587-001-315-PVC-C-0035)
7. ALL ELEVATIONS ARE TO THE TOP OF STEEL (U.N.O.)
8. ALL BOLTED FIELD CONNECTIONS ARE TO BE DONE WITH HSFG BOLTS OF PROPERTY CLASS 8.8. (U.N)
9. FABRICATOR MUST CHECK THE WELD SIZES GIVEN IN TABLE -A FOR DESIGN AND MAXIMUM OF DESIGN VALUE AND VALUE GIVEN TO BE USED.
10. ALL END CONNECTIONS FOR BRACINGS SHALL BE DESIGNED FOR FULL TENSILE STRENGTH OF MEMBERS.
11. STRUCTURAL STEEL ROLLED SECTIONS SHALL CONFORM TO GRADE DESIGNATION E-250 & STRUCTURAL STEEL PLATES SHALL CONFORM TO GRADE DESIGNATION E-350.

ENGINEERING REFERENCE DRAWINGS :-

1. PE-DG-508-100-M004 (9587-001-110-PVM-F-050) - TG EQUIPMENT LAYOUT DRAWING AT MEZZANINE FLOOR 9.0M

CONSTRUCTION REFERENCE DRAWINGS :-

1. PE-DG-508-612-C004 --------- CCR BLDG.- STRUCTURAL FRAMING ALONG A TO C ROW (NTPC DRG. NO. 9587-001-315-PVC-C-0145)
2. PE-DG-508-612-C004A --------- CCR BLDG.- STRUCTURAL FRAMING ALONG D TO I ROW (NTPC DRG. NO. 9587-001-315-PVC-C-0146)
3. PE-DG-508-612-C019 --------- MPH BLDG.- DETAILS OF STAIRCASE MKD. SC-07 (NTPC DRG. NO. 9587-001-315-PVC-C-0161)
4. PE-DG-508-612-C011 --------- PH BLDG-CLADDING FRAMING ELEVATION ON AXIS C (NTPC DRG. NO. 9587-001-315-PVC-C-0153)
5. PE-DG-508-612-C015 --------- MPH BLDG. - DETAILS OF MISC. PLATFORMS & STAIRS (NTPC DRG. NO. 9587-001-315-PVC-C-0157)

ERECTION SEQUENCE-1

1. ONE LEG OF ANGLE 2/4 SHALL BE WELDED WITH MAIN BEAM AT SHOP.
2. HOLES FOR BOLT SHALL BE DRILLED AT SHOP IN OTHER OUTSTANDING LEG OF ANGLE 2/4 AS PER FABRICATION DRAWING.
3. ANGLE 1/3 WILL HAVE HOLES DRILLED IN BOTH LEGS AT SHOP AS PER FABRICATION DRAWING AND SHALL BE SHIPPED LOOSE TO SITE.
4. AFTER PLACING SECONDARY BEAM IN POSITION WITH CRANE, BOTH ANGLE 1 & 2 SHALL BE BOLTED TO SECONDARY BEAM
5. AFTER PLACING SECONDARY BEAM IN POSITION WITH CRANE, BOTH ANGLE 3 & 4 SHALL BE BOLTED TO SECONDARY BEAM
6. OUTSTANDING LEG OF ANGLE 1/3 SHALL BE BOLTED TO MAIN BEAM.
7. PLEASE ENSURE THAT WHEN 'D' IS LESS THAN 500MM, SHEAR CLEAT ANGLES 2 & 4 SHALL NECESSARILY BE CONNECTED ON THE NEAR SIDE WEB FACES OF BOTH SECONDARY BEAMS.

ERECTION SEQUENCE-2

1. TWO LEGS OF T-BEAM SHALL BE WELDED WITH COLUMN AT SHOP.
2. HOLES FOR BOLT SHALL BE DRILLED AT SHOP IN OUTSTANDING LEG OF T-BEAM AS PER FABRICATION DRAWING.
3. AFTER PLACING SECONDARY BEAM IN POSITION WITH CRANE, OUTSTAND LEG OF T-BEAM SHALL BE BOLTED TO SECONDARY BEAM.

LEGEND:

CL.	=	CENTRE LINE
EL	=	ELEVATION
TYP	=	TYPICAL
MC	=	MOMENT CONNECTION
T.O.S.	=	TOP OF STEEL
SW	=	SHOP WELDING
FB	=	FIELD BOLTING
B.O.S.	=	BOTTOM OF STEEL
N.T.S.	=	NOT TO SCALE
T.O.P.	=	TOP OF PLATE
WP.	=	WEB PLATE
(symbol)	=	40 THICK GRATING
®	=	REMOVABLE BEAM
(symbol)	=	REMOVABLE GRATING
PTF.	=	PLATE ON TOP FLANGE

BHEL-PROJECT ENGINEERING MANAGEMENT (CML)
THIS DRAWING MARKED(✓) IS RELEASED FOR
☑ COMMENTS/APPROVAL
☐ PLANNING/INFORMATION
☐ CONSTRUCTION
STAMP ALL PREVIOUS REVISION AS SUPERSEDED
ISSUED BY
NAME: Amit Thakur
SIGNATURE:
DATE: 23/07/2024

JOB NO. 508
STATUS: CONTRACT
DISTRIBUTION

REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD

NTPC DRG. NO. 9587-001-315-PVC-C-0172

OWNER: NTPC Limited (A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT: LARA SUPER THERMAL POWER PROJECT 2X800MW STAGE-II

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA (U.P.)

DEPT CODE: C

	NAME	SIGN	DATE
DRN	SEEMA	Sd/-	23.07.2024
DESN	NK	Sd/-	23.07.2024
CHD	AT	Sd/-	23.07.2024
APPD	DKM	Sd/-	23.07.2024

TITLE: MPH BUILDING
FRAMING PLAN AT EL (+) 14.00M (FFL) (CCR BUILDING)

MPL	ELEC	C&I	MSE	MAX	DEPT.

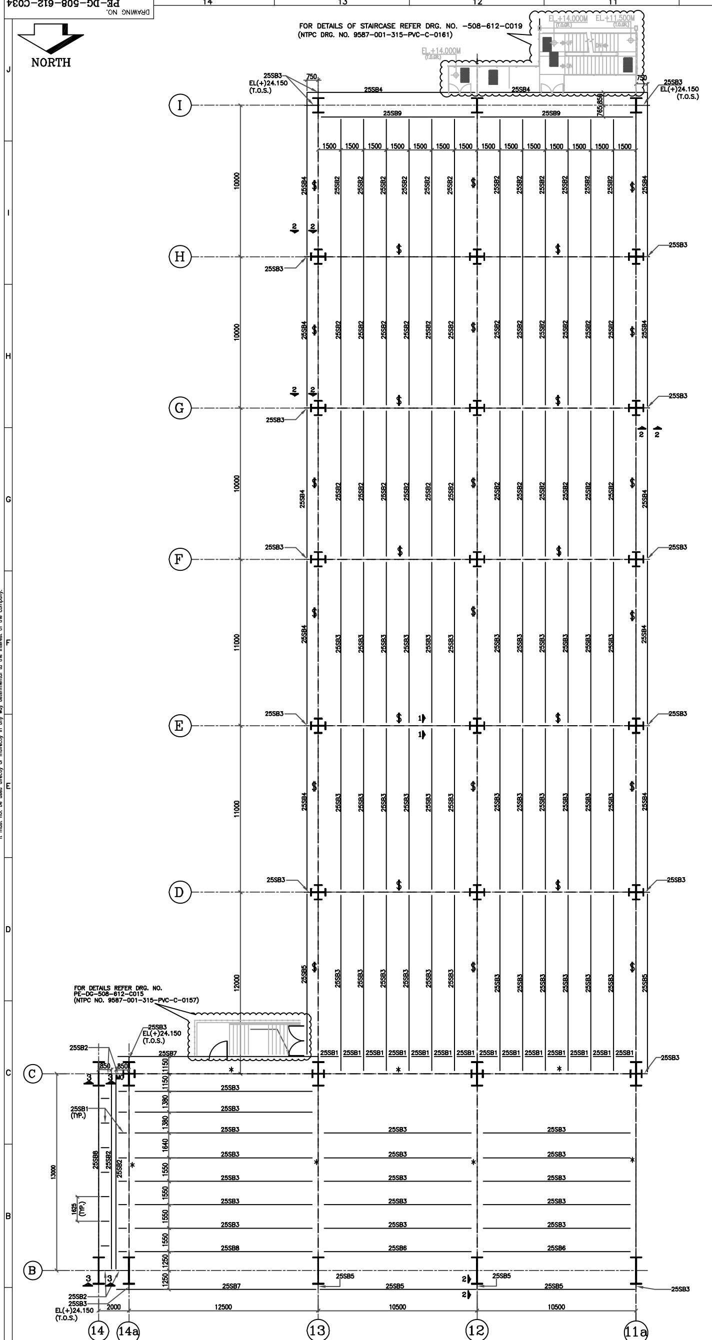
SCALE -
SIGN
DATE

DRAWING NO. PE-DG-508-612-C030
SHEET 1 OF 1
REV. 0

FORMAT SIZE A0

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM



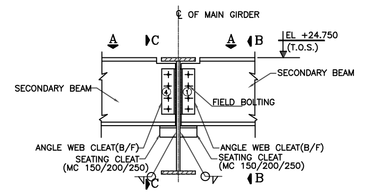
PLAN AT EL (+)24.750 (T.O.S.)

(CCR BUILDING)

* FOR SIZE REFER DRG. NO. PE-DG-508-612-C004 (NTPC DRG. NO. 9587-001-315-PVC-C-0145)

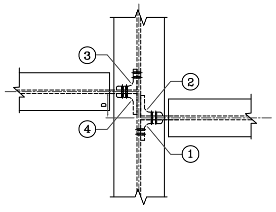
$ FOR SIZE REFER DRG. NO. PE-DG-508-612-C004A (NTPC DRG. NO. 9587-001-315-PVC-C-0146)

(ALL CONNECTIONS ARE SHEAR CONNECTIONS UNLESS NOTED OTHERWISE)



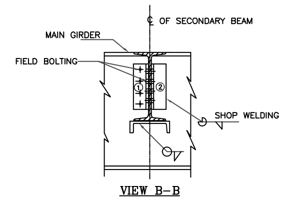
SECTION 1-1

TYP. CONNECTION DETAIL OF SECONDARY BEAM TO PRIMARY BEAM



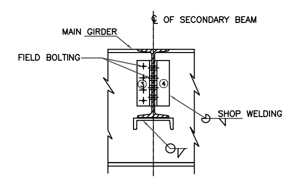
VIEW A-A

(DIA. & NO. OF BOLTS ARE INDICATIVE. ACTUAL DIA. & NO. OF BOLTS TO BE REFERRED FROM CORRESPONDING FABRICATION DRG.)
(REFER ERECTION SEQUENCE-1)



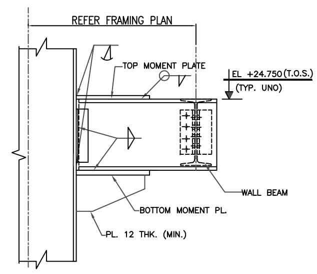
VIEW B-B

(DIA. & NO. OF BOLTS ARE INDICATIVE. ACTUAL DIA. & NO. OF BOLTS TO BE REFERRED FROM CORRESPONDING FABRICATION DRG.)
(REFER ERECTION SEQUENCE-1)



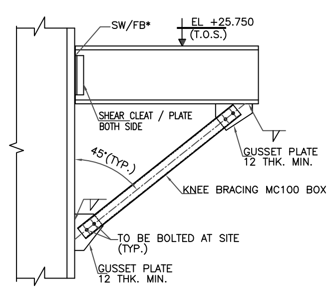
VIEW C-C

(DIA. & NO. OF BOLTS ARE INDICATIVE. ACTUAL DIA. & NO. OF BOLTS TO BE REFERRED FROM CORRESPONDING FABRICATION DRG.)
(REFER ERECTION SEQUENCE-1)



SECTION 2-2

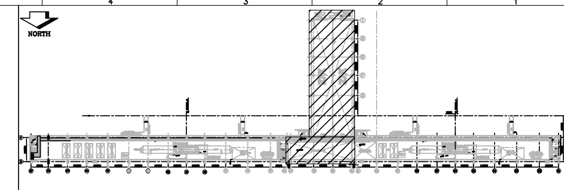
TYP.BRACKET DETAIL WITHOUT KNEE



SECTION 3-3

TYP. BRACKET DETAIL WITH KNEE

(* TO BE DECIDED BY DETAILER DURING DETAILED FABRICATION DRAWING)



KEY PLAN

NOTES:-

1. ALL DIMENSIONS ARE IN MM & ELEVATIONS IN METERS UNLESS STATED OTHERWISE.
2. ALL ELEVATIONS ARE REFERRED TO THE FINISHED FLOOR LEVEL OF POWER HOUSE BUILDING AS EL. 0.00 M WHICH CORRESPONDS TO RL.(+) 209.50 M.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH CONTRACT TERMS AND CONDITIONS, TECHNICAL SPECIFICATIONS AND SCHEDULE OF ITEMS.
4. FOR OTHER NOTES AND STD. DETAILS REF. DRG. PE-DG-508-600-C002 (9587-001-315-PVC-C-0002)
5. CONNECTION DETAILS SHOWN ARE INDICATIVE ONLY. SIZE & THICKNESS OF GUSSETS, NO. & DIA. OF CONNECTION BOLTS ETC. SHALL BE SHOWN IN CORRESPONDING FABRICATION DRG.
6. FOR GROUTING OF BASE PL. REF. DRG. NO PE-DG-508-611-C001 (9587-001-315-PVC-C-0035)
7. ALL ELEVATIONS ARE TO THE TOP OF STEEL (U.N.O.)
8. ALL BOLTED FIELD CONNECTIONS ARE TO BE DONE WITH HSFG BOLTS OF PROPERTY CLASS 8.8. (U.N)
9. FABRICATOR MUST CHECK THE WELD SIZES GIVEN IN TABLE -A FOR DESIGN AND MAXIMUM OF DESIGN VALUE AND VALUE GIVEN TO BE USED.
10. ALL END CONNECTIONS FOR BRACINGS SHALL BE DESIGNED FOR FULL TENSILE STRENGTH OF MEMBERS.
11. STRUCTURAL STEEL ROLLED SECTIONS SHALL CONFORM TO GRADE DESIGNATION E-250 & STRUCTURAL STEEL PLATES SHALL CONFORM TO GRADE DESIGNATION E-350.

ENGINEERING REFERENCE DRAWINGS :-

1. PE-DG-508-100-M006 - TG EQUIPMENT PLAN AT UPPER FLOORS IN B-C BAY (9587-001-110-PVM-F-052)

CONSTRUCTION REFERENCE DRAWINGS :-

1. PE-DG-508-612-C004 -------- CCR BLDG.- STRUCTURAL FRAMING ALONG A TO C ROW (NTPC DRG. NO. 9587-001-315-PVC-C-0145)
2. PE-DG-508-612-C004A -------- CCR BLDG.- STRUCTURAL FRAMING ALONG D TO I ROW (NTPC DRG. NO. 9587-001-315-PVC-C-0146)
3. PE-DG-508-612-C019 -------- MPH BLDG.- DETAILS OF STAIRCASE MKD. SC-07 (NTPC DRG. NO. 9587-001-315-PVC-C-0161)
4. PE-DG-508-612-C011 -------- PH BLDG-CLADDING FRAMING ELEVATION ON AXIS C (NTPC DRG. NO. 9587-001-315-PVC-C-0153)
5. PE-DG-508-612-C015 -------- MPH BLDG. - DETAILS OF MISC. PLATFORMS & STAIRS (NTPC DRG. NO. 9587-001-315-PVC-C-0157)

ERECTION SEQUENCE-1

1. ONE LEG OF ANGLE 2/4 SHALL BE WELDED WITH MAIN BEAM AT SHOP.
2. HOLES FOR BOLT SHALL BE DRILLED AT SHOP IN OTHER OUTSTANDING LEG OF ANGLE 2/4 AS PER FABRICATION DRAWING.
3. ANGLE 1/3 WILL HAVE HOLES DRILLED IN BOTH LEGS AT SHOP AS PER FABRICATION DRAWING AND SHALL BE SHIPPED LOOSE TO SITE.
4. AFTER PLACING SECONDARY BEAM IN POSITION WITH CRANE, BOTH ANGLE 1 & 2 SHALL BE BOLTED TO SECONDARY BEAM
5. AFTER PLACING SECONDARY BEAM IN POSITION WITH CRANE, BOTH ANGLE 3 & 4 SHALL BE BOLTED TO SECONDARY BEAM
6. OUTSTANDING LEG OF ANGLE 1/3 SHALL BE BOLTED TO MAIN BEAM.
7. PLEASE ENSURE THAT WHEN 'D' IS LESS THAN 500MM, SHEAR CLEAT ANGLES 2 & 4 SHALL NECESSARILY BE CONNECTED ON THE NEAR SIDE WEB FACES OF BOTH SECONDARY BEAMS.

LEGEND:

CL. = CENTRE LINE
EL = ELEVATION
TYP = TYPICAL
MC = MOMENT CONNECTION
T.O.S. = TOP OF STEEL
SW = SHOP WELDING
FB = FIELD BOLTING
B.O.S. = BOTTOM OF STEEL
N.T.S. = NOT TO SCALE
T.O.P. = TOP OF PLATE
WP. = WEB PLATE
(grating symbol) = 40 THICK GRATING
® = REMOVABLE BEAM
(R symbol) = REMOVABLE GRATING
PTF. = PLATE ON TOP FLANGE

BEAM SCHEDULE

PL. GIRDER DETAILS	BEAM MKD.	BEAM SECTION			
PL. GIRDER (D, FL. PL., WEB PL., FL. PL.)	25SB1	MB 200			
	25SB2	MB 500			
	25SB3	MB 600			
	25SB4	PL. GIRDER	D - 600	FL. PL.- 250X16	WEB PL.- 16 TH.
	25SB5	PL. GIRDER	D - 600	FL. PL.- 250X20	WEB PL.- 16 TH.
	25SB6	PL. GIRDER	D - 600	FL. PL.- 250X25	WEB PL.- 16 TH.
	25SB7	PL. GIRDER	D - 600	FL. PL.- 250X36	WEB PL.- 20 TH.
	25SB8	PL. GIRDER	D - 600	FL. PL.- 300X36	WEB PL.- 20 TH.
	25SB9	PL. GIRDER	D - 700	FL. PL.- 300X20	WEB PL.- 16 TH.

- BUILT UP GIRDERS SHALL BE PROVIDED WITH 8 TH. WEB STIFF. PL. AS PER IS:800.
- ALL SECONDARY BEAMS SHALL HAVE SHEAR CONNECTION.

BILL OF MATERIAL

S.NO.	MEMBER	WEIGHT(MT)	GRADE
1	ISMC100	0.07	IS2062--E250
2	ISMB200	0.81	IS2062--E250
3	ISMB500	34.07	IS2062--E250
4	ISMB600	74.34	IS2062--E250
5	16 THK. PLT.	23.22	IS2062--E350
6	20 THK. PLT.	9.80	IS2062--E350
7	25 THK. PLT.	2.06	IS2062--E350
8	36 THK. PLT.	7.86	IS2062--E350
TOTAL		152.30	(APPROX.)

BHEL-PROJECT ENGINEERING MANAGEMENT (CML)
THIS DRAWING MARKED(✓) IS RELEASED FOR
☑ COMMENTS/APPROVAL
☐ PLANNING/INFORMATION
☐ CONSTRUCTION
STAMP ALL PREVIOUS REVISION AS SUPERSEDED
ISSUED BY
NAME: Amit Thakur
SIGNATURE:
DATE: 26/07/2024

JOB NO. 508
STATUS: CONTRACT
DISTRIBUTION

REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD

NTPC DRG. NO. 9587-001-315-PVC-C-0176

OWNER: NTPC Limited (A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT: LARA SUPER THERMAL POWER PROJECT
2X800MW STAGE-II

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA (U.P.)

DEPT CODE: C

	NAME	SIGN	DATE
DRN	SEEMA	Sd/-	26.07.2024
DESN	NK	Sd/-	26.07.2024
CHD	AT	Sd/-	26.07.2024
APPD	DKM	Sd/-	26.07.2024

TITLE: MPH BUILDING
FRAMING PLAN AT EL (+) 25.00M (FFL) (CCR BUILDING)

MPL	ELEC	C&I	MSE	MAX	DEPT.
					SIGN
					DATE

SCALE -

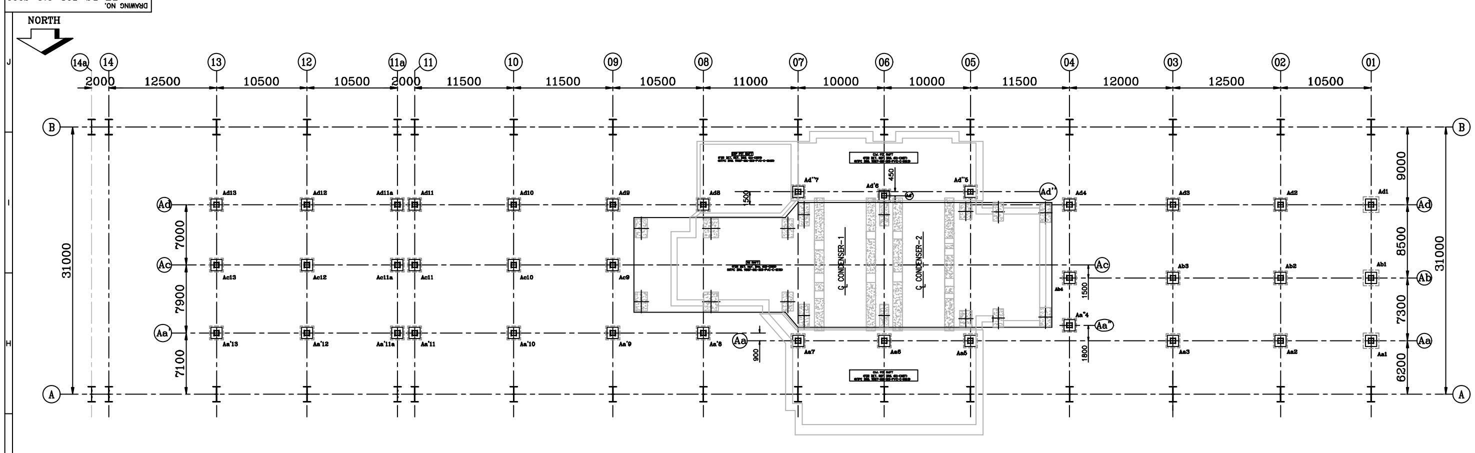
DRAWING NO. PE-DG-508-612-C034

SHEET 1 OF 1 REV. 0

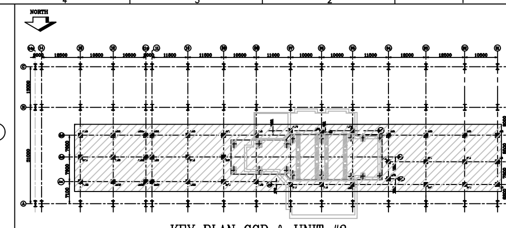
FORMAT SIZE A0

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM



FOUNDATION PLAN (CCR & UNIT#3)



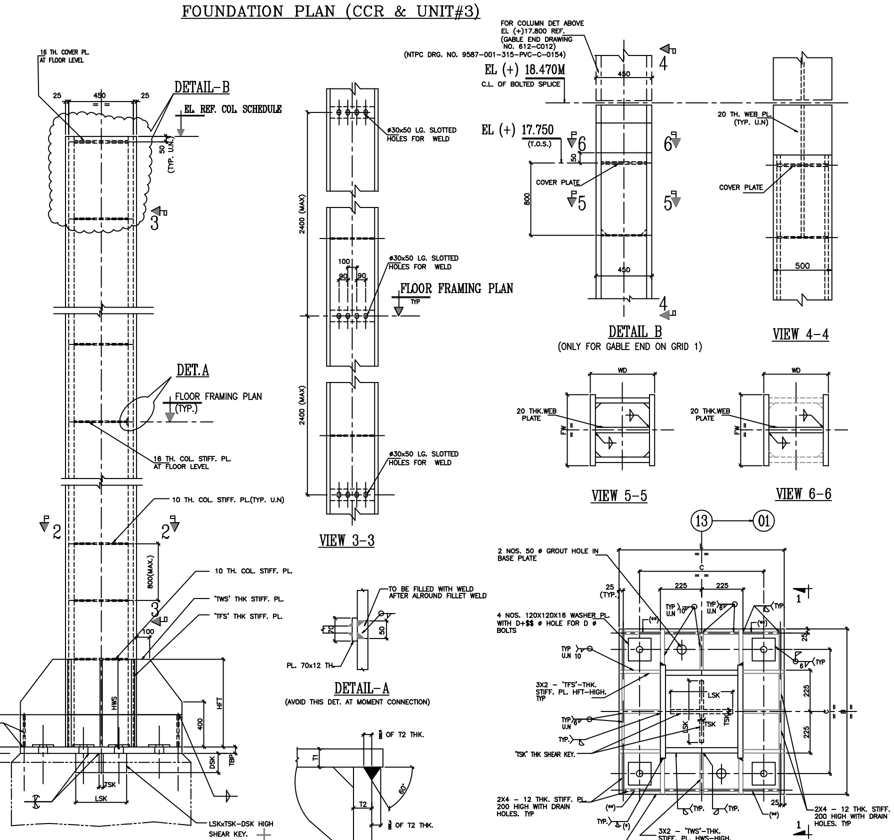
KEY PLAN CCR & UNIT #3

INTERMEDIATE COLUMN CCR & UNIT # 3

COLUMN SECTION

COLUMN MARKED	FW	WD	FLANGE THICKNESS T1	WEB THICKNESS T2	COL. ELEVATION (UNDER SIDE OF BASE PL.)	COL. ELEVATION (T.O.S.)
Aa'13	500	450	16	16	EL.(-) 1.200M	EL.(+) 17.800M
Ac13	500	450	16	16	EL.(-) 1.200M	EL.(+) 17.800M
Ad13	500	450	25	25	EL.(-) 1.200M	EL.(+) 17.800M
Aa'12	500	450	25	25	EL.(-) 1.200M	EL.(+) 17.800M
Ac12	500	450	25	25	EL.(-) 1.200M	EL.(+) 17.800M
Ad12	500	450	32	32	EL.(-) 1.200M	EL.(+) 17.800M
Aa'11a	500	450	16	16	EL.(-) 1.200M	EL.(+) 17.800M
Ac11a	500	450	16	16	EL.(-) 1.200M	EL.(+) 17.800M
Ad11a	500	450	25	25	EL.(-) 1.200M	EL.(+) 17.800M
Aa'11	500	450	16	16	EL.(-) 1.200M	EL.(+) 17.800M
Ac11	500	450	16	16	EL.(-) 1.200M	EL.(+) 17.800M
Ad11	500	450	16	16	EL.(-) 1.200M	EL.(+) 17.800M
Aa'10	500	450	32	32	EL.(-) 1.200M	EL.(+) 17.800M
Ac10	500	450	32	32	EL.(-) 1.200M	EL.(+) 17.800M
Ad10	500	450	32	32	EL.(-) 1.200M	EL.(+) 17.800M
Aa'9	500	450	32	32	EL.(-) 1.200M	EL.(+) 17.800M
Ac9	500	450	25	25	EL.(-) 1.200M	EL.(+) 17.800M
Ad9	500	450	32	32	EL.(-) 1.200M	EL.(+) 17.800M
Aa'8	500	450	16	16	EL.(-) 1.200M	EL.(+) 17.800M
Ad8	500	450	16	16	EL.(-) 3.950M	EL.(+) 17.800M
Aa7	500	450	20	20	EL.(-) 6.200M	EL.(+) 17.800M
Ad"7	500	450	20	20	EL.(-) 3.950M	EL.(+) 17.800M
Aa6	500	450	20	20	EL.(-) 6.200M	EL.(+) 17.800M
Ad'6	500	450	20	20	EL.(-) 5.700M	EL.(+) 17.800M
Aa5	500	450	20	20	EL.(-) 6.200M	EL.(+) 17.800M
Ad"5	500	450	20	20	EL.(-) 5.700M	EL.(+) 17.800M
Aa"4	500	450	32	32	EL.(-) 1.200M	EL.(+) 17.800M
Ab4	500	450	25	25	EL.(-) 1.200M	EL.(+) 17.800M
Ad4	500	450	32	32	EL.(-) 1.200M	EL.(+) 17.800M
Aa3	500	450	32	32	EL.(-) 1.200M	EL.(+) 17.800M
Ab3	500	450	32	32	EL.(-) 1.200M	EL.(+) 17.800M
Ad3	500	450	36	36	EL.(-) 1.200M	EL.(+) 17.800M
Aa2	500	450	25	25	EL.(-) 1.200M	EL.(+) 17.800M
Ab2	500	450	25	25	EL.(-) 1.200M	EL.(+) 17.800M
Ad2	500	450	25	25	EL.(-) 1.200M	EL.(+) 17.800M
Aa1	500	450	25	25	EL.(-) 1.200M	EL.(+) 17.800M
Ab1	500	450	25	25	EL.(-) 1.200M	EL.(+) 17.800M
Ad1	500	450	25	25	EL.(-) 1.200M	EL.(+) 17.800M

FOR COLS ABOVE EL +18.00 ON GRID – 1 REF.
DETAIL B AND DRG. PE-DG-508-612-C012
(NTPC DRG. NO.– 9587-001-315-PVC-C-0154)



VIEW 1-1

NOTE :- IF ANY BRACKET TO BE SUPPORTED, STIFF. SHALL BE PROVIDED INSIDE COL. IN LINE WITH BRACKET.

VIEW 3-3

DETAIL-A

(AVOID THIS DET. AT MOMENT CONNECTION)

DETAIL – C

DETAIL B

(ONLY FOR GABLE END ON GRID 1)

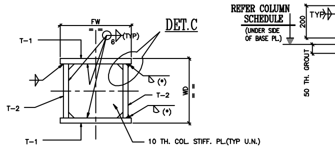
VIEW 4-4

VIEW 5-5

VIEW 6-6

DETAIL OF COLUMN & BASE PLATE

(*) BUTT WELD REINFORCED WITH FILLET WELD
REFER BASE PLATE SCHEDULE FOR THICKNESS OF PLATES
(**) THIS PLATE SHALL BE WELDED AFTER ALIGNMENT OF COLUMN
$ ø HOLES. = ø. OF BOLT + 10 MM
$$ ø HOLES. = ø. OF BOLT + 3 MM



SECTION 2-2

(*) BUTT WELD REINFORCED WITH FILLET WELD

AUX. COLUMN BASE PLATES (CCR & UNIT#3)

COULAM MARKED	LENGTH OF THE BASE PLATE, L	WIDTH OF THE BASE PLATE, B	THK. OF BASE PLATE, TBP	BOLT DISTANCE CENTER TO CENTER, C	THK. OF FLANGE STIFFENER PLATE, TFS	THK. OF WEB STIFFENER PLATE, TWS	HEIGHT OF FLANGE STIFFENER, HFT	HEIGHT OF WEB STIFFENER, HWS	DIA OF BOLTS, D	NOS. OF BOLTS (ON SINGLE SIDE)	THICKNESS OF SHEAR KEY, TSK	WIDTH OF SHEAR KEY, LSK	DEPTH OF SHEAR KEY, DSK
Aa'13	1000	1000	25	725	12	12	600	600	32	4	16	200	150
Ac13	1000	1000	25	725	12	12	600	600	32	4	16	200	150
Ad13	1100	1100	25	775	12	12	600	600	32	4	16	200	150
Aa'12	1200	1200	25	825	12	12	800	800	32	4	16	200	150
Ac12	1200	1200	25	825	12	12	800	800	32	4	16	200	150
Ad12	1300	1300	25	875	12	12	900	900	32	4	16	200	150
Aa'11a	1000	1000	25	725	12	12	600	600	32	4	16	200	150
Ac11a	1000	1000	25	725	12	12	600	600	32	4	16	200	150
Ad11a	1100	1100	25	775	12	12	600	600	32	4	16	200	150
Aa'11	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Ac11	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Ad11	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Aa'10	1000	1000	25	725	12	12	700	700	25	4	16	200	150
Ac10	1000	1000	25	725	12	12	700	700	25	4	16	200	150
Ad10	1100	1100	25	775	12	12	850	850	25	4	16	200	150
Aa'9	1000	1000	25	725	12	12	700	700	25	4	16	200	150
Ac9	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Ad9	1000	1000	25	725	12	12	700	700	25	4	16	200	150
Aa'8	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Ad8	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Aa7	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Ad"7	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Aa6	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Ad"6	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Aa5	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Ad"5	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Aa"4	1000	1000	25	725	12	12	700	700	25	4	16	200	150
Ab4	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Ad4	1100	1100	25	775	12	12	850	850	25	4	16	200	150
Aa3	1000	1000	25	725	12	12	700	700	25	4	16	200	150
Ab3	1100	1100	25	775	12	12	850	850	25	4	16	200	150
Ad3	1200	1200	25	825	16	16	1000	1000	25	4	16	200	150
Aa2	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Ab2	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Ad2	1000	1000	25	725	12	12	600	600	25	4	16	200	150
Aa1	1000	1000	20	725	12	12	600	600	32	4	16	200	150
Ab1	1000	1000	20	725	12	12	600	600	32	4	16	200	150
Ad1	1000	1000	20	725	12	12	600	600	25	4	16	200	150

TABLE – A

(SHOWING SIZE OF WELD) PL. THICKNESS.	(SIZE OF WELD IN MM)	(SIZE OF WELD IN MM)
8 & 10	DOUBLE BEVEL BUTT WELD WITH REINFORCED FILLET WELD OF 6 MM THICK WHEREVER REQD.	6
12		8
16 & 20		12
25		14
28 & 32		20
36 & 40		22
45 & 50		25

BILL OF MATERIAL

S.NO.	MEMBER	WEIGHT	GRADE
1.	12 THK. PLT.	11.17	IS2062-E350
2.	16 THK. PLT.	38.66	IS2062-E350
3.	20 THK. PLT.	40.76	IS2062-E350
4.	25 THK. PLT.	80.92	IS2062-E350
5.	32 THK. PLT.	79.59	IS2062-E350
6.	36 THK. PLT.	8.87	IS2062-E350
TOTAL TONNAGE- MT 260			

NOTES:-

1. ALL DIMENSIONS ARE IN MM & ELEVATIONS IN METERS UNLESS STATED OTHERWISE.
2. ALL ELEVATIONS ARE REFERRED TO THE FINISHED FLOOR LEVEL OF POWER HOUSE BUILDING AS EL. 0.00 M WHICH CORRESPONDS TO RL.(+) 209.50 M.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH CONTRACT TERMS AND CONDITIONS, TECHNICAL SPECIFICATIONS AND SCHEDULE OF ITEMS.
4. FOR OTHER NOTES AND STD. DETAILS REF. DRG. PE-DG-508-600-C002 (9587-001-315-PVC-C-0002)
5. CONNECTION DETAILS SHOWN ARE INDICATIVE ONLY. SIZE & THICKNESS OF GUSSETS, NO. & DIA. OF CONNECTION BOLTS ETC. SHALL BE SHOWN IN CORRESPONDING FABRICATION DRG.
6. FOR GROUTING OF BASE PL. REF. DRG. NO PE-DG-508-611-C001 (9587-001-315-PVC-C-0035)
7. ALL ELEVATIONS ARE TO THE TOP OF STEEL (U.N.O.)
8. ALL BOLTED FIELD CONNECTIONS ARE TO BE DONE WITH HSFG BOLTS OF PROPERTY CLASS 8.8. (U.N)
9. FABRICATOR MUST CHECK THE WELD SIZES GIVEN IN TABLE -A FOR DESIGN AND MAXIMUM OF DESIGN VALUE AND VALUE GIVEN TO BE USED.
10. ALL END CONNECTIONS FOR BRACINGS SHALL BE DESIGNED FOR FULL TENSILE STRENGTH OF MEMBERS.
11. STRUCTURAL STEEL ROLLED SECTIONS SHALL CONFORM TO GRADE DESIGNATION E-250 & STRUCTURAL STEEL PLATES SHALL CONFORM TO GRADE DESIGNATION E-350.

ENGINEERING REFERENCE DRAWINGS :-

1. PE-DG-508-100-M003 (9587-001-110-PVM-F-049) – TG EQUIPMENT PLAN AT GROUND FLOOR
2. PE-DG-508-100-M004 (9587-001-110-PVM-F-050) – TG EQUIPMENT PLAN AT MEZZANINE FLOOR
3. PE-DG-508-100-M005 (9587-001-110-PVM-F-051) – TG EQUIPMENT PLAN AT OPERATING FLOOR
4. PE-DG-508-100-M006 (9587-001-110-PVM-F-052) – TG EQUIPMENT PLAN AT MISC FLOORS ABOVE OPERATING FLOOR IN BC BAY
5. PE-DG-508-100-M007 (9587-001-110-PVM-F-053) – CROSS SECTION OF MAIN PLANT (T.G. BUILDING)

CONSTRUCTION REFERENCE DRAWINGS :-

1. PE-DG-508-612-C001 – PH BUILDING: STRUCTURAL FRAMING ALONG A ROW (NTPC DRG. NO.– 9587-001-315-PVC-C-0142)
2. PE-DG-508-612-C002 – PH BUILDING: STRUCTURAL FRAMING ALONG B ROW (NTPC DRG. NO.– 9587-001-315-PVC-C-0143)
3. PE-DG-508-612-C004 – PH BUILDING: CCR STRUCTURAL FRAMING ALONG A TO C ROW (NTPC DRG. NO.– 9587-001-315-PVC-C-0145)
4. PE-DG-508-612-C012 – PH BUILDING: DETAILS OF GABLE END COLUMNS (NTPC DRG. NO.– 9587-001-315-PVC-C-0154)

LEGEND:

1. TOS = TOP OF STEEL
2. BOS = BOTTOM OF STEEL
3. TYP. = TYPICAL
4. B/S = BOTH SIDE
5. F/S = FAR SIDE
6. N/S = NEAR SIDE
7. UNO = UNLESS NOTED OTHERWISE
8. TH. = THICK
9. PL. = PLATE

BHEL-PROJECT ENGINEERING MANAGEMENT (CIVIL)
THIS DRAWING MARKED(✓) IS RELEASED FOR
☑ COMMENTS/APPROVAL
☐ PLANNING/INFORMATION
☐ CONSTRUCTION
STAMP ALL PREVIOUS REVISION AS SUPERSEDED
ISSUED BY
NAME: AMIT THAKUR
SIGNATURE:
DATE: 22/06/2024

NTPC DRG. NO. 9587-001-315-PVC-C-0151

OWNER: NTPC Limited (A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT: LARA SUPER THERMAL POWER PROJECT 2X800MW STAGE-II

JOB NO. 508
STATUS: CONTRACT
DISTRIBUTION

REV.	DATE	ALTD	CHD	APPD

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA (U.P.)

DEPT CODE: C

	NAME	SIGN	DATE
DRN	VIKAS	Sd/-	20.06.2024
DESN	NK	Sd/-	19.06.2024
CHD	AT	Sd/-	21.06.2024
APPD	DKM	Sd/-	22.06.2024

TITLE: MPH BUILDING
DETAILS OF INTERMEDIATE COLUMNS (CCR & UNIT#3)

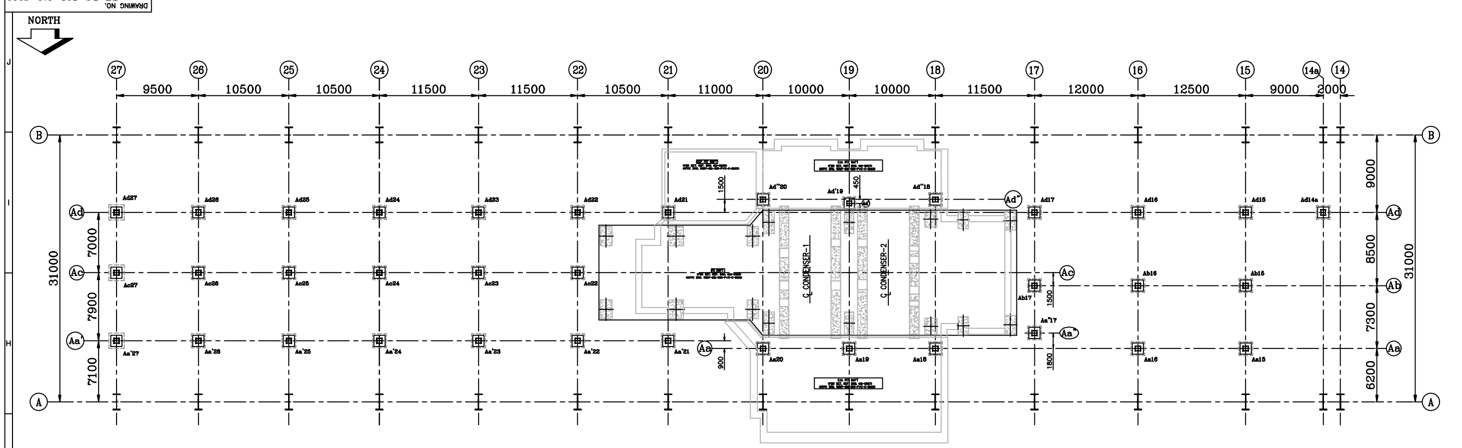
MPL | ELEC | C&I | MSE | MAX | DEPT. | SCALE – | SIGN | DATE

DRAWING NO. PE-DG-508-612-C009
SHEET 1 OF 2 REV. 0

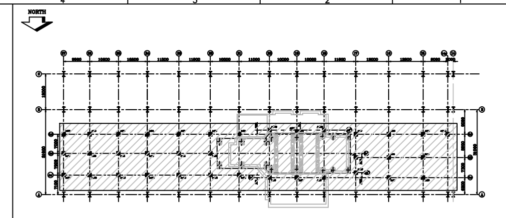
FORMAT SIZE A0

FIRST ANGLE PRJECTION

ALL DIMENSIONS ARE IN MM



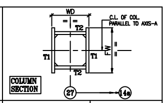
FOUNDATION PLAN (UNIT#4)



KEY PLAN UNIT #4

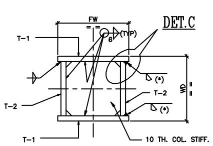
COLUMN MARKED	FW	WD	FLANGE THICKNESS T1	WEB THICKNESS T2	COL. ELEVATION (UNDER SIDE OF BASE PL.)	COL. ELEVATION (T.O.S.)
Aa'27	500	450	25	25	EL.(–) 1.200M	EL.(+) 17.800M
Ac27	500	450	25	25	EL.(–) 1.200M	EL.(+) 17.800M
Ad27	500	450	25	25	EL.(–) 1.200M	EL.(+) 17.800M
Aa'26	500	450	25	25	EL.(–) 1.200M	EL.(+) 17.800M
Ac26	500	450	25	25	EL.(–) 1.200M	EL.(+) 17.800M
Ad26	500	450	25	25	EL.(–) 1.200M	EL.(+) 17.800M
Aa'25	500	450	36	36	EL.(–) 1.200M	EL.(+) 17.800M
Ac25	500	450	32	32	EL.(–) 1.200M	EL.(+) 17.800M
Ad25	500	450	36	36	EL.(–) 1.200M	EL.(+) 17.800M
Aa'24	500	450	36	36	EL.(–) 1.200M	EL.(+) 17.800M
Ac24	500	450	32	32	EL.(–) 1.200M	EL.(+) 17.800M
Ad24	500	450	36	36	EL.(–) 1.200M	EL.(+) 17.800M
Aa'23	500	450	32	32	EL.(–) 1.200M	EL.(+) 17.800M
Ac23	500	450	32	32	EL.(–) 1.200M	EL.(+) 17.800M
Ad23	500	450	32	32	EL.(–) 1.200M	EL.(+) 17.800M
Aa'22	500	450	25	25	EL.(–) 1.200M	EL.(+) 17.800M
Ac22	500	450	20	20	EL.(–) 1.200M	EL.(+) 17.800M
Ad22	500	450	25	25	EL.(–) 1.200M	EL.(+) 17.800M
Aa'21	500	450	16	16	EL.(–) 1.200M	EL.(+) 17.800M
Ad21	500	450	16	16	EL.(–) 3.950M	EL.(+) 17.800M
Aa20	500	450	16	16	EL.(–) 6.200M	EL.(+) 17.800M
Ad''20	500	450	16	16	EL.(–) 3.950M	EL.(+) 17.800M
Aa19	500	450	16	16	EL.(–) 6.200M	EL.(+) 17.800M
Ad'19	500	450	16	16	EL.(–) 5.700M	EL.(+) 17.800M
Aa18	500	450	16	16	EL.(–) 6.200M	EL.(+) 17.800M
Ad''18	500	450	16	16	EL.(–) 5.700M	EL.(+) 17.800M
Aa'''17a	500	450	20	20	EL.(–) 1.200M	EL.(+) 17.800M
Ab17	500	450	16	16	EL.(–) 1.200M	EL.(+) 17.800M
Ad17	500	450	28	28	EL.(–) 1.200M	EL.(+) 17.800M
Aa16	500	450	32	32	EL.(–) 1.200M	EL.(+) 17.800M
Ab16	500	450	32	32	EL.(–) 1.200M	EL.(+) 17.800M
Ad16	500	450	36	36	EL.(–) 1.200M	EL.(+) 17.800M
Aa15	500	450	25	25	EL.(–) 1.200M	EL.(+) 17.800M
Ab15	500	450	25	25	EL.(–) 1.200M	EL.(+) 17.800M
Ad15	500	450	25	25	EL.(–) 1.200M	EL.(+) 17.800M
Ad14a	500	450	20	20	EL.(–) 1.200M	EL.(+) 17.800M

INTERMEDIATE COLUMN UNIT # 4



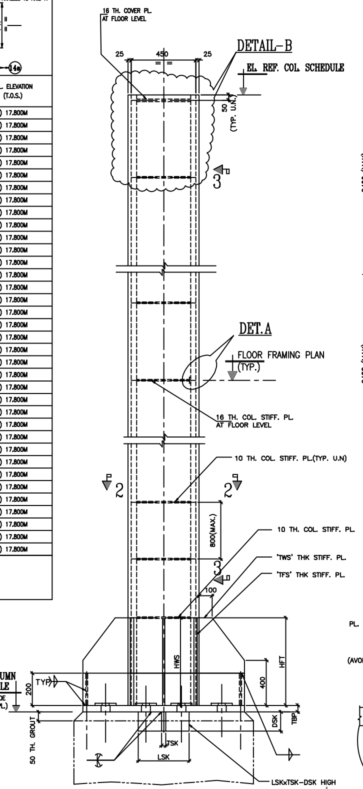
COLUMN SECTION

FOR COLS ABOVE EL +18.00 ON GRID – 27 REF. DETAIL B AND DRG. PE-DG-508-612-C012 (NTPC DRG. NO. 9587-001-315-PVC-C-0154)



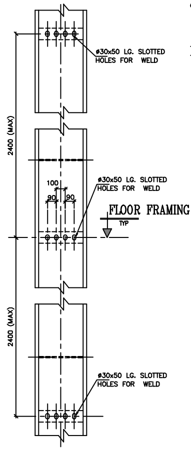
SECTION 2-2

(*) BUTT WELD REINFORCED WITH FILLET WELD

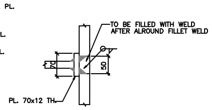


VIEW 1-1

NOTE – IF ANY BRACKET TO BE SUPPORTED, STIFF. SHALL BE PROVIDED INSIDE COL. IN LINE WITH BRACKET.

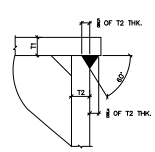


VIEW 3-3

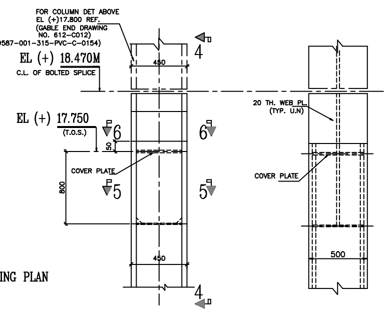


DETAIL-A

(AVOID THIS DET. AT MOMENT CONNECTION)



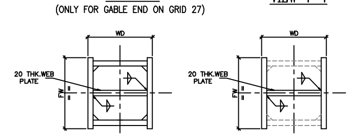
DETAIL - C



DETAIL B

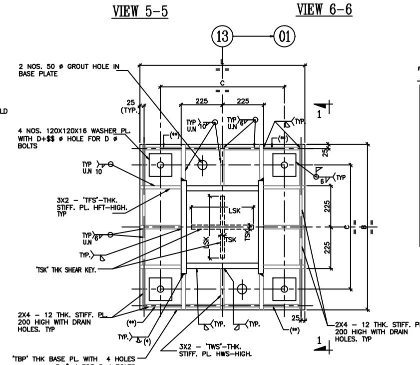
(ONLY FOR GABLE END ON GRID 27)

VIEW 4-4



VIEW 5-5

VIEW 6-6



DETAIL OF COLUMN & BASE PLATE

(*) BUTT WELD REINFORCED WITH FILLET WELD

REFER BASE PLATE SCHEDULE FOR THICKNESS OF PLATES

(**) THIS PLATE SHALL BE WELDED AFTER ALIGNMENT OF COLUMN

$ ø HOLES. = ø. OF BOLT + 10 MM

$$ ø HOLES. = ø. OF BOLT + 3 MM

AUX. COLUMN BASE PLATES (UNIT#4)

COULAM MARKED	LENGTH OF THE BASE PLATE, L	WIDTH OF THE BASE PLATE, B	THK. OF BASE PLATE, TBP	BOLT DISTANCE CENTER TO CENTER, C	THK. OF FLANGE STIFFENER PLATE, TFS	THK. OF WEB STIFFENER PLATE, TWS	HEIGHT OF FLANGE STIFFENER, HFT	HEIGHT OF WEB STIFFENER, HWS	DIA OF BOLTS, D	NOS. OF BOLTS (ON SINGLE SIDE)	THICKNESS OF SHEAR KEY, TSK	WIDTH OF SHEAR KEY, LSK	DEPTH OF SHEAR KEY, DSK
Aa'27	1000	1000	20	725	12	12	600	600	32	4	16	200	150
Ac27	1000	1000	20	725	12	12	600	600	32	4	16	200	150
Ad27	1000	1000	20	725	12	12	600	600	32	4	16	200	150
Aa'26	1000	1000	25	725	12	12	600	600	32	4	16	200	150
Ac26	1000	1000	25	725	12	12	600	600	32	4	16	200	150
Ad26	1000	1000	25	725	12	12	600	600	32	4	16	200	150
Aa'25	1100	1100	25	775	12	12	600	600	32	4	16	200	150
Ac25	1100	1100	25	775	12	12	600	600	32	4	16	200	150
Ad25	1100	1100	25	775	12	12	600	600	32	4	16	200	150
Aa'24	1200	1200	25	825	12	12	700	700	32	4	16	200	150
Ac24	1100	1100	25	775	12	12	600	600	32	4	16	200	150
Ad24	1200	1200	25	825	12	12	700	700	32	4	16	200	150
Aa'23	1000	1000	25	725	12	12	600	600	25	4	16	200	150
Ac23	1000	1000	25	725	12	12	600	600	25	4	16	200	150
Ad23	1000	1000	25	725	12	12	600	600	25	4	16	200	150
Aa'22	1000	1000	25	725	12	12	600	600	25	4	16	200	150
Ac22	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Ad22	1000	1000	25	725	12	12	600	600	25	4	16	200	150
Aa'21	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Ad21	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Aa20	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Ad''20	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Aa19	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Ad''19	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Aa18	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Ad''18	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Aa'''17	1000	1000	25	725	12	12	600	600	25	4	16	200	150
Ab17	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Ad17	1100	1100	25	775	12	12	600	600	25	4	16	200	150
Aa16	1000	1000	25	725	12	12	600	600	25	4	16	200	150
Ab16	1100	1100	25	775	12	12	600	600	25	4	16	200	150
Ad16	1200	1200	25	825	12	12	600	600	25	4	16	200	150
Aa15	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Ab15	1000	1000	20	725	12	12	600	600	25	4	16	200	150
Ad15	1000	1000	25	725	12	12	600	600	25	4	16	200	150
Ad14a	1000	1000	20	725	12	12	600	600	32	4	16	200	150

TABLE - A

(SHOWING SIZE OF WELD) PL. THICKNESS.	(SIZE OF WELD IN MM)	(SIZE OF WELD IN MM)
8 & 10	DOUBLE BEVEL BUTT WELD WITH REINFORCED FILLET WELD OF 6 MM THICK WHEREVER REQD.	6
12		8
16 & 20		12
25		14
28 & 32		20
36 & 40		22
45 & 50		25

BILL OF MATERIAL

S.NO.	MEMBER	WEIGHT	GRADE
1.	12 THK. PLT.	10.03	IS2062–E350
2.	16 THK. PLT.	43.76	IS2062–E350
3.	20 THK. PLT.	17.86	IS2062–E350
4.	25 THK. PLT.	73.97	IS2062–E350
5.	28 THK. PLT.	7.03	IS2062–E350
6.	32 THK. PLT.	55.71	IS2062–E350
7.	36 THK. PLT.	44.34	IS2062–E350
TOTAL TONNAGE– MT 253			

NOTES:–

1. ALL DIMENSIONS ARE IN MM & ELEVATIONS IN METERS UNLESS STATED OTHERWISE.
2. ALL ELEVATIONS ARE REFERRED TO THE FINISHED FLOOR LEVEL OF POWER HOUSE BUILDING AS EL. 0.00 M WHICH CORRESPONDS TO RL.(+) 209.50 M.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH CONTRACT TERMS AND CONDITIONS, TECHNICAL SPECIFICATIONS AND SCHEDULE OF ITEMS.
4. FOR OTHER NOTES AND STD. DETAILS REF. DRG. PE-DG-508-600-C002 (9587-001-315-PVC-C-0002)
5. CONNECTION DETAILS SHOWN ARE INDICATIVE ONLY. SIZE & THICKNESS OF GUSSETS, NO. & DIA. OF CONNECTION BOLTS ETC. SHALL BE SHOWN IN CORRESPONDING FABRICATION DRG.
6. FOR GROUTING OF BASE PL. REF. DRG. NO PE-DG-508-611-C001 (9587-001-315-PVC-C-0035)
7. ALL ELEVATIONS ARE TO THE TOP OF STEEL (U.N.O.)
8. ALL BOLTED FIELD CONNECTIONS ARE TO BE DONE WITH HSFG BOLTS OF PROPERTY CLASS 8.8. (U.N)
9. FABRICATOR MUST CHECK THE WELD SIZES GIVEN IN TABLE –A FOR DESIGN AND MAXIMUM OF DESIGN VALUE AND VALUE GIVEN TO BE USED.
10. ALL END CONNECTIONS FOR BRACINGS SHALL BE DESIGNED FOR FULL TENSILE STRENGTH OF MEMBERS.
11. STRUCTURAL STEEL ROLLED SECTIONS SHALL CONFORM TO GRADE DESIGNATION E-250 & STRUCTURAL STEEL PLATES SHALL CONFORM TO GRADE DESIGNATION E-350.

ENGINEERING REFERENCE DRAWINGS :–

1. PE-DG-508-100-M003 (9587-001-110-PVM-F-049) – TG EQUIPMENT PLAN AT GROUND FLOOR
2. PE-DG-508-100-M004 (9587-001-110-PVM-F-050) – TG EQUIPMENT PLAN AT MEZZANINE FLOOR
3. PE-DG-508-100-M005 (9587-001-110-PVM-F-051) – TG EQUIPMENT PLAN AT OPERATING FLOOR
4. PE-DG-508-100-M006 (9587-001-110-PVM-F-052) – TG EQUIPMENT PLAN AT MISC FLOORS ABOVE OPERATING FLOOR IN BC BAY
5. PE-DG-508-100-M007 (9587-001-110-PVM-F-053) – CROSS SECTION OF MAIN PLANT (T.G. BUILDING)

CONSTRUCTION REFERENCE DRAWINGS :–

1. PE-DG-508-612-C001 (NTPC DRG. NO.– 9587-001-315-PVC-C-0142) – PH BUILDING: STRUCTURAL FRAMING ALONG A ROW
2. PE-DG-508-612-C002 (NTPC DRG. NO.– 9587-001-315-PVC-C-0143) – PH BUILDING: STRUCTURAL FRAMING ALONG B ROW
3. PE-DG-508-612-C004 (NTPC DRG. NO.– 9587-001-315-PVC-C-0145) – PH BUILDING: CCR STRUCTURAL FRAMING ALONG A TO C ROW
4. PE-DG-508-612-C012 (NTPC DRG. NO.– 9587-001-315-PVC-C-0154) – PH BUILDING: DETAILS OF GABLE END COLUMNS

LEGEND:

1. TOS = TOP OF STEEL
2. BOS = BOTTOM OF STEEL
3. TYP. = TYPICAL
4. B/S = BOTH SIDE
5. F/S = FAR SIDE
6. N/S = NEAR SIDE
7. UNO = UNLESS NOTED OTHERWISE
8. TH. = THICK
9. PL. = PLATE

BHEL-PROJECT ENGINEERING MANAGEMENT (CIVIL)

THIS DRAWING MARKED(✓) IS RELEASED FOR

- [x] COMMENTS/APPROVAL
- [ ] PLANNING/INFORMATION
- [ ] CONSTRUCTION

STAMP ALL PREVIOUS REVISION AS SUPERSEDED

ISSUED BY

NAME: AMIT THAKUR

SIGNATURE:

DATE: 22/06/2024

NTPC DRG. NO. 9587-001-315-PVC-C-0151

OWNER: NTPC Limited (A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT: LARA SUPER THERMAL POWER PROJECT 2X800MW STAGE-II

JOB NO. 508

STATUS: CONTRACT

DISTRIBUTION

REV.	DATE	ALTD	CHD	APPD

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA (U.P.)

DEPT CODE: C

	NAME	SIGN	DATE
DRN	VIKAS	Sd/–	20.06.2024
DESN	NK	Sd/–	19.06.2024
CHD	AT	Sd/–	21.06.2024
APPD	DKM	Sd/–	22.06.2024

TITLE: MPH BUILDING
DETAILS OF INTERMEDIATE COLUMNS (UNIT#4)

MPL	ELEC	C&I	MSE	MAX	DEPT.	SCALE –

SIGN / DATE

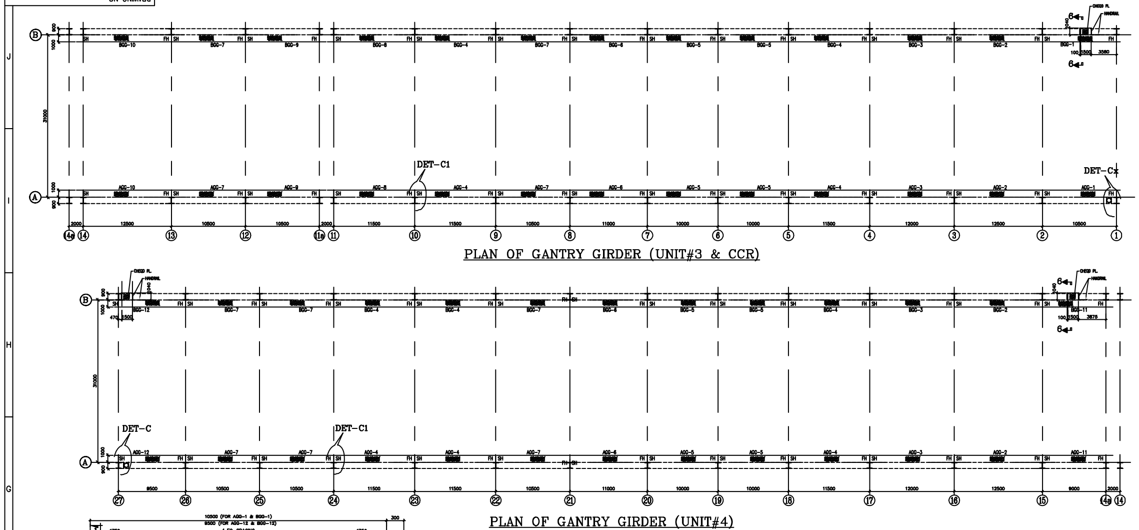
DRAWING NO. PE-DG-508-612-C009

SHEET 2 OF 2 REV. 0

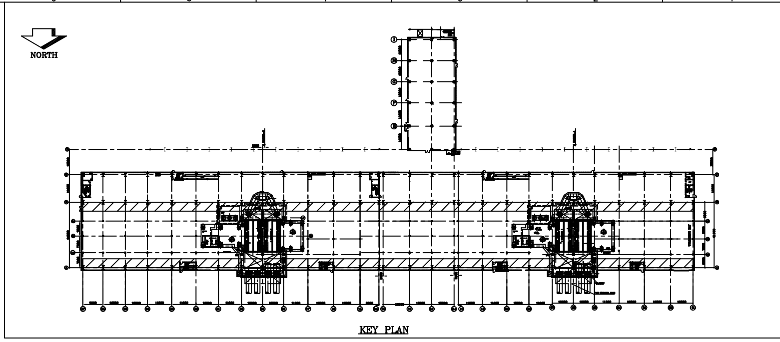
FORMAT SIZE A0

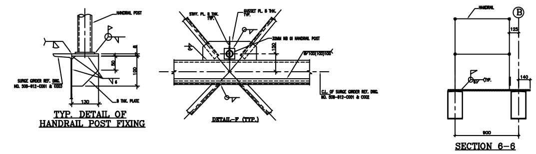
FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM


PLAN OF GANTRY GIRDER (UNIT#3 & CCR)

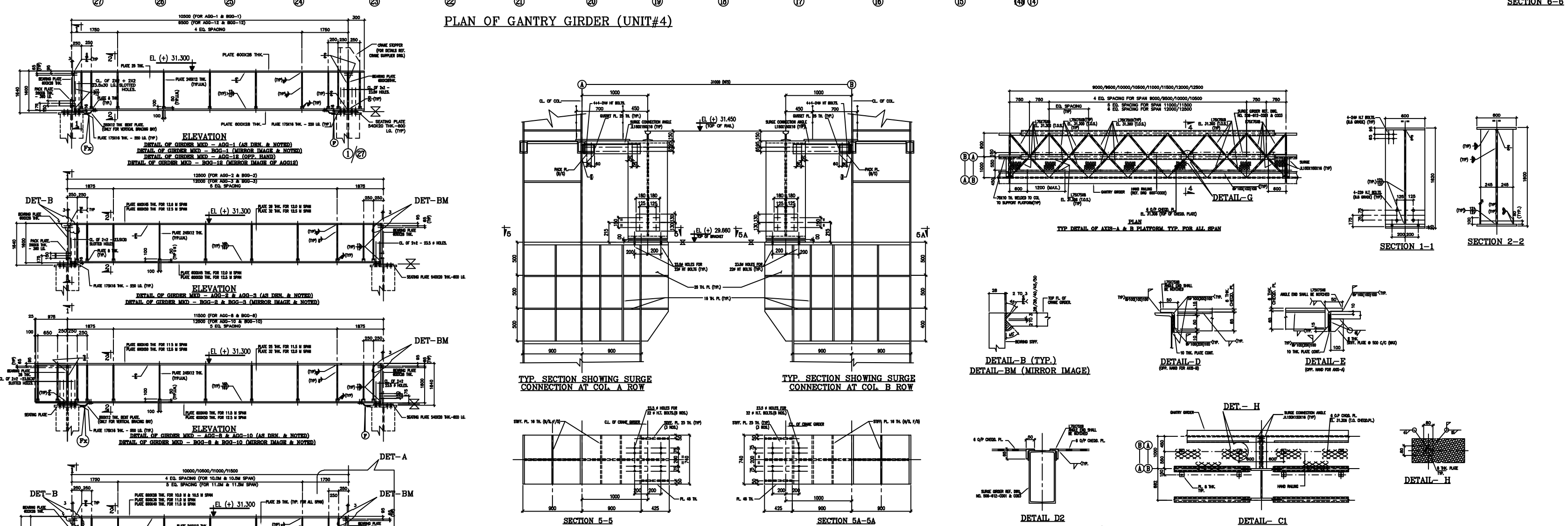
PLAN OF GANTRY GIRDER (UNIT#4)


KEY PLAN


TYP. DETAIL OF HANDRAIL POST FIXING

DETAIL-F (TYP.)

SECTION 6-6


ELEVATION
DETAIL OF GIRDER MKD - AGG-1 (AS DRN. & NOTED)
DETAIL OF GIRDER MKD - BGG-1 (MIRROR IMAGE & NOTED)
DETAIL OF GIRDER MKD - AGG-12 (OPP. HAND)
DETAIL OF GIRDER MKD - BGG-12 (MIRROR IMAGE OF AGG12)

ELEVATION
DETAIL OF GIRDER MKD - AGG-2 & AGG-3 (AS DRN. & NOTED)
DETAIL OF GIRDER MKD - BGG-2 & BGG-3 (MIRROR IMAGE & NOTED)

ELEVATION
DETAIL OF GIRDER MKD - AGG-8 & AGG-10 (AS DRN. & NOTED)
DETAIL OF GIRDER MKD - BGG-8 & BGG-10 (MIRROR IMAGE & NOTED)

TYP. SECTION SHOWING SURGE CONNECTION AT COL. A ROW

TYP. SECTION SHOWING SURGE CONNECTION AT COL. B ROW

PLAN
TYP DETAIL OF AXIS-A & B PLATFORM. TYP. FOR ALL SPAN

DETAIL-G

SECTION 1-1

SECTION 2-2

DETAIL-B (TYP.)
DETAIL-BM (MIRROR IMAGE)

DETAIL-D

DETAIL-E

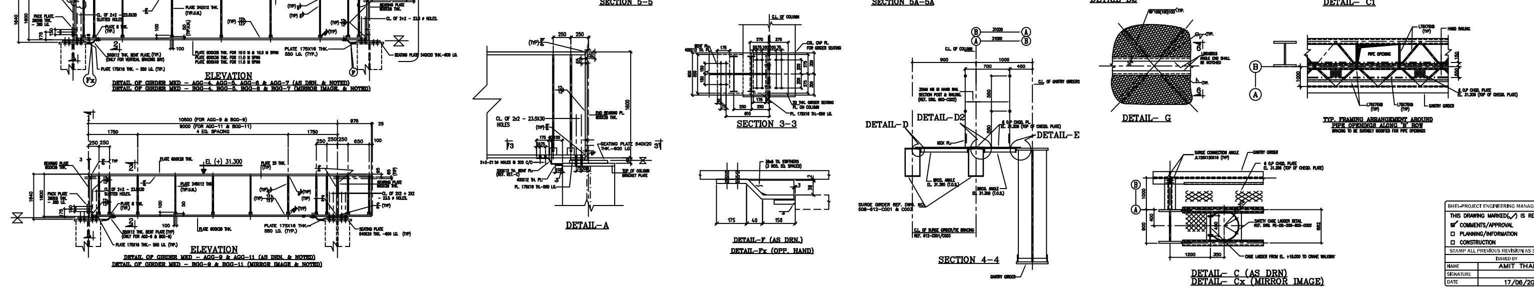
SECTION 5-5

SECTION 5A-5A

DETAIL D2

DETAIL- C1

DETAIL- H


ELEVATION
DETAIL OF GIRDER MKD - AGG-4, AGG-5, AGG-6 & AGG-7 (AS DRN. & NOTED)
DETAIL OF GIRDER MKD - BGG-4, BGG-5, BGG-6 & BGG-7 (MIRROR IMAGE & NOTED)

ELEVATION
DETAIL OF GIRDER MKD - AGG-9 & AGG-11 (AS DRN. & NOTED)
DETAIL OF GIRDER MKD - BGG-9 & BGG-11 (MIRROR IMAGE & NOTED)

DETAIL-A

SECTION 3-3

DETAIL-F (AS DRN.)
DETAIL-Fx (OPP. HAND)

SECTION 4-4

DETAIL- G

TYP. FRAMING ARRANGEMENT AROUND PIPE OPENINGS ALONG 'B' ROW

DETAIL- C (AS DRN)
DETAIL- Cx (MIRROR IMAGE)

BILL OF MATERIAL

S.NO.	MEMBER	WEIGHT	GRADE
1.	L75X75X8	14.53	IS2062-E250
2.	25 THK. PLT.	134.35	IS2062-E350
3.	28 THK. PLT.	107.78	IS2062-E350
3.	32 THK. PLT.	28.26	IS2062-E350
3.	36 THK. PLT.	14.92	IS2062-E350
4.	40 THK. PLT.	52.00	IS2062-E350
4.	45 THK. PLT.	20.35	IS2062-E350
4.	50 THK. PLT.	35.33	IS2062-E350
TOTAL TONNAGE MT 408 (APPROX.)			

NOTES:-

1. ALL DIMENSIONS ARE IN MM & ELEVATIONS IN METERS UNLESS STATED OTHERWISE.
2. ALL ELEVATIONS ARE REFERRED TO THE FINISHED FLOOR LEVEL OF POWER HOUSE BUILDING AS EL. 0.00 M WHICH CORRESPONDS TO RL.(+) 209.50 M.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH CONTRACT TERMS AND CONDITIONS, TECHNICAL SPECIFICATIONS AND SCHEDULE OF ITEMS.
4. FOR OTHER NOTES AND STD. DETAILS REF. DRG. PE-DG-508-600-C002 (9587-001-315-PVC-C-0002)
5. CONNECTION DETAILS SHOWN ARE INDICATIVE ONLY. SIZE & THICKNESS OF GUSSETS, NO. & DIA. OF CONNECTION BOLTS ETC. SHALL BE SHOWN IN CORRESPONDING FABRICATION DRG.
6. FOR GROUTING OF BASE PL. REF. DRG. NO PE-DG-508-611-C001 (9587-001-315-PVC-C-0035)
7. ALL ELEVATIONS ARE TO THE TOP OF STEEL (U.N.O.)
8. ALL BOLTED FIELD CONNECTIONS ARE TO BE DONE WITH HSFG BOLTS OF PROPERTY CLASS 8.8. (U.N)
9. FABRICATOR MUST CHECK THE WELD SIZES GIVEN IN TABLE -A FOR DESIGN AND MAXIMUM OF DESIGN VALUE AND VALUE GIVEN TO BE USED.
10. ALL END CONNECTIONS FOR BRACINGS SHALL BE DESIGNED FOR FULL TENSILE STRENGTH OF MEMBERS.
11. STRUCTURAL STEEL ROLLED SECTIONS SHALL CONFORM TO GRADE DESIGNATION E-250 & STRUCTURAL STEEL PLATES SHALL CONFORM TO GRADE DESIGNATION E-350.

ENGINEERING REFERENCE DRAWINGS :-

1. PE-DG-508-501-A001 (9587-001-110-PVM-B-395) - CRANE CLEARANCE DIAGRAM OF TG HALL
2. PE-DG-508-100-M003 (9587-001-110-PVM-F-049) - TG EQUIPMENT PLAN AT GROUND FLOOR
3. PE-DG-508-100-M004 (9587-001-110-PVM-F-050) - TG EQUIPMENT PLAN AT MEZZANINE FLOOR
4. PE-DG-508-100-M005 (9587-001-110-PVM-F-051) - TG EQUIPMENT PLAN AT OPERATING FLOOR
5. PE-DG-508-100-M006 (9587-001-110-PVM-F-052) - TG EQUIPMENT PLAN AT MISC FLOORS ABOVE OPERATING FLOOR IN BC BAY
6. PE-DG-508-100-M007 (9587-001-110-PVM-F-053) - CROSS SECTION OF MAIN PLANT (T.G. BUILDING)

CONSTRUCTION REFERENCE DRAWINGS :-

1. PE-DG-508-612-C006 (9587-001-315-PVC-C-0148) - PH BUILDING DETAILS OF ROOF GIRDERS
2. PE-DG-508-612-C001 (9587-001-315-PVC-C-0050) - PH BLDG-STRUCTURAL FRAMING ALONG A ROW (UNIT-3)
3. PE-DG-508-612-C002 (9587-001-315-PVC-C-0051) - PH BLDG-STRUCTURAL FRAMING ALONG B ROW (UNIT-3)

LEGEND:

1. TOS = TOP OF STEEL
2. BOS = BOTTOM OF STEEL
3. TYP. = TYPICAL
4. B/S = BOTH SIDE
5. F/S = FAR SIDE
6. N/S = NEAR SIDE
7. UNO = UNLESS NOTED OTHERWISE
8. TH. = THICK
9. PL. = PLATE
10. FH = FIX HOLES
11. SH = SLOTTED HOLES

TABLE - A

(SHOWING SIZE OF WELD) PL. THICKNESS.	WW (SIZE OF WELD IN MM)	SW (SIZE OF WELD IN MM)
8 & 10	DOUBLE BEVEL BUTT WELD WITH REINFORCED FILLET WELD OF 6 MM THICK WHEREVER REQD.	6
12		8
16 & 20		12
25		14
28 & 32		20
36 & 40		22
45 & 50		25

BHEL-PROJECT ENGINEERING MANAGEMENT (CIVIL)
THIS DRAWING MARKED(✓) IS RELEASED FOR
☑ COMMENTS/APPROVAL
☐ PLANNING/INFORMATION
☐ CONSTRUCTION
STAMP ALL PREVIOUS REVISION AS SUPERSEDED
ISSUED BY
NAME: AMIT THAKUR
SIGNATURE:
DATE: 17/06/2024

JOB NO. 508
STATUS: CONTRACT
DISTRIBUTION

REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD

NTPC DRG. NO. 9587-001-315-PVC-C-0149

OWNER: NTPC Limited (A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT: LARA SUPER THERMAL POWER PROJECT 2X800MW STAGE-II

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA (U.P.)

DEPT CODE: C

	NAME	SIGN	DATE
DRN	RPC	Sd/-	15.06.2024
DESN	NK	Sd/-	15.06.2024
CHD	AT	Sd/-	15.06.2024
APPD	DKM	Sd/-	15.06.2024

TITLE: MPH BUILDING
GA AND DETAILS OF AB BAY GANTRY GIRDERS

MPL	ELEC	C&I	MSE	MAX	DEPT.

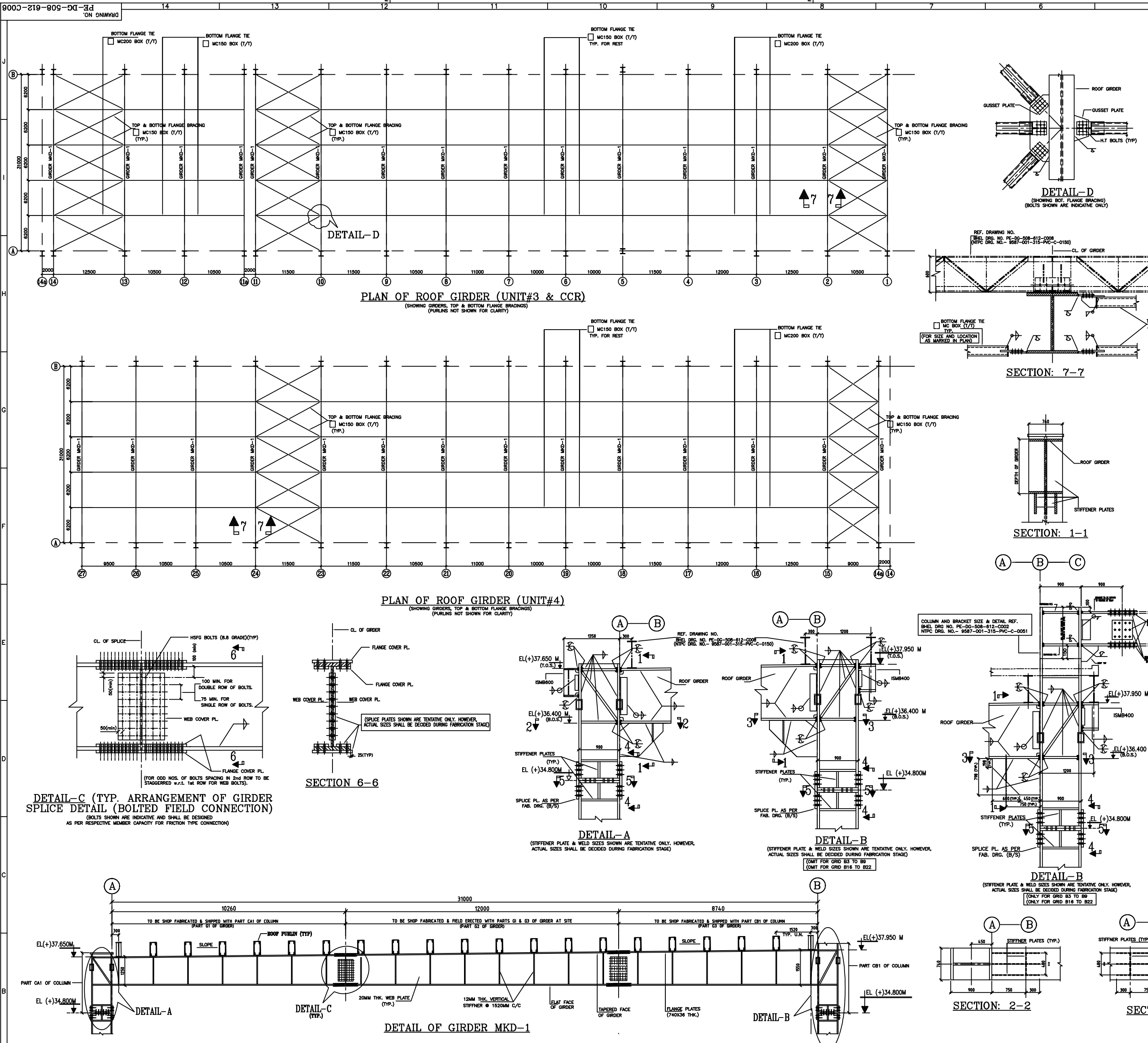
SCALE -
SIGN
DATE

DRAWING NO. PE-DG-508-612-C007
SHEET OF
REV. 0

FORMAT SIZE A0

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM



PLAN OF ROOF GIRDER (UNIT#3 & CCR)

PLAN OF ROOF GIRDER (UNIT#4)

DETAIL-D

SECTION: 7-7

SECTION: 1-1

DETAIL-C (TYP. ARRANGEMENT OF GIRDER SPLICE DETAIL (BOLTED FIELD CONNECTION)

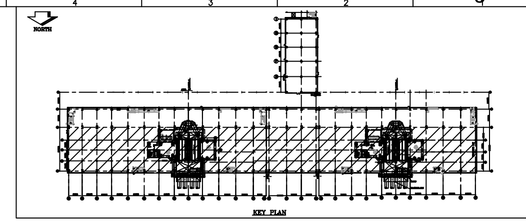
SECTION 6-6

DETAIL-A

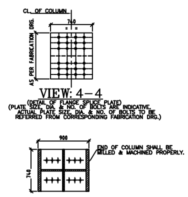
DETAIL-B

DETAIL OF GIRDER MKD-1

SECTION: 2-2

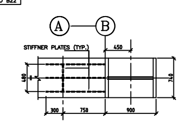


KEY PLAN



VIEW: 4-4

SECTION: 5-5



SECTION: 3-3

TABLE-A: SIZE OF WELD

PLATE THICKNESS(MM)	WW SIZE OF WELD IN(MM)	SW SIZE OF WELD IN(MM)
8 & 10	DOUBLE BEVEL BUTT WELD WITH REINFORCED FILLET WELD OF 6MM THICK WHEREVER REQUIRED	6
12		8
16 & 20		12
25		14
28 & 32		20
36 & 40		22
45 & 50		25

BILL OF MATERIAL

S.NO.	MEMBER	WEIGHT	GRADE
1.	ISMC 150	72.10	IS2062-E250
2.	ISMC 200	10.95	IS2062-E250
3.	20 THK. PLT.	187.44	IS2062-E350
4.	36 THK. PLT.	376.00	IS2062-E350
TOTAL TONNAGE MT 647 (APPROX.)			

NOTES:-

1. ALL DIMENSIONS ARE IN MM & ELEVATIONS IN METERS UNLESS STATED OTHERWISE.
2. ALL ELEVATIONS ARE REFERRED TO THE FINISHED FLOOR LEVEL OF POWER HOUSE BUILDING AS EL. 0.00 M WHICH CORRESPONDS TO RL.(+) 209.50 M.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH CONTRACT TERMS AND CONDITIONS, TECHNICAL SPECIFICATIONS AND SCHEDULE OF ITEMS.
4. FOR OTHER NOTES AND STD. DETAILS REF. DRG. PE-DG-508-600-C002 (9587-001-315-PVC-C-0002)
5. CONNECTION DETAILS SHOWN ARE INDICATIVE ONLY. SIZE & THICKNESS OF GUSSETS, NO. & DIA. OF CONNECTION BOLTS ETC. SHALL BE SHOWN IN CORRESPONDING FABRICATION DRG.
6. FOR GROUTING OF BASE PL. REF. DRG. NO PE-DG-508-611-C001 (9587-001-315-PVC-C-0035)
7. ALL ELEVATIONS ARE TO THE TOP OF STEEL (U.N.O.)
8. ALL BOLTED FIELD CONNECTIONS ARE TO BE DONE WITH HSFG BOLTS OF PROPERTY CLASS 8.8. (U.N)
9. FABRICATOR MUST CHECK THE WELD SIZES GIVEN IN TABLE -A FOR DESIGN AND MAXIMUM OF DESIGN VALUE AND VALUE GIVEN TO BE USED.
10. ALL END CONNECTIONS FOR BRACINGS SHALL BE DESIGNED FOR FULL TENSILE STRENGTH OF MEMBERS.
11. STRUCTURAL STEEL ROLLED SECTIONS SHALL CONFORM TO GRADE DESIGNATION E-250 & STRUCTURAL STEEL PLATES SHALL CONFORM TO GRADE DESIGNATION E-350.

ENGINEERING REFERENCE DRAWINGS :-

1. PE-DG-508-100-M003 (9587-001-110-PVM-F-049) - TG EQUIPMENT PLAN AT GROUND FLOOR
2. PE-DG-508-100-M004 (9587-001-110-PVM-F-050) - TG EQUIPMENT PLAN AT MEZZANINE FLOOR
3. PE-DG-508-100-M005 (9587-001-110-PVM-F-051) - TG EQUIPMENT PLAN AT OPERATING FLOOR
4. PE-DG-508-100-M006 (9587-001-110-PVM-F-052) - TG EQUIPMENT PLAN AT MISC FLOORS ABOVE OPERATING FLOOR IN BC BAY
5. PE-DG-508-100-M007 (9587-001-110-PVM-F-053) - CROSS SECTION OF MAIN PLANT (T.G. BUILDING)

CONSTRUCTION REFERENCE DRAWINGS :-

1. PE-DG-508-612-C008 (9587-001-315-PVC-C-0150) - MPH BLDG. -ROOF PURLIN DETAILS
2. PE-DG-508-611-C004 (9587-001-315-PVC-C-0038) - PH BLDG (AB BAY)- G.A. & RCC DETAILS OF METAL DECK ROOF
3. PE-DG-508-612-C001 (9587-001-315-PVC-C-0050) - PH BLDG-STRUCTURAL FRAMING ALONG A ROW (UNIT-3)
4. PE-DG-508-612-C002 (9587-001-315-PVC-C-0051) - PH BLDG-STRUCTURAL FRAMING ALONG B ROW (UNIT-3)
5. PE-DG-508-612-C012 (9587-001-315-PVC-C-0154) - MPH BLDG. - DETAILS OF GABLE END COLUMNS
6. PE-DG-508-612-C005 (9587-001-315-PVC-C-0147) - PH BLDG-CLADDING FRAMING ELEVATION ON AXIS A
7. PE-DG-508-612-C010 (9587-001-315-PVC-C-0152) - PH BLDG-CLADDING FRAMING ELEVATION ON AXIS B

LEGEND:

1. TOS = TOP OF STEEL
2. BOS = BOTTOM OF STEEL
3. TYP. = TYPICAL
4. B/S = BOTH SIDE
5. F/S = FAR SIDE
6. N/S = NEAR SIDE
7. UNO = UNLESS NOTED OTHERWISE
8. TH. = THICK
9. PL. = PLATE
10. T/T = TOE TO TOE

BHEL-PROJECT ENGINEERING MANAGEMENT (CIVIL)

THIS DRAWING MARKED(✓) IS RELEASED FOR
- ☑ COMMENTS/APPROVAL
- ☐ PLANNING/INFORMATION
- ☐ CONSTRUCTION

STAMP ALL PREVIOUS REVISION AS SUPERSEDED

ISSUED BY

NAME	AMIT THAKUR
SIGNATURE	
DATE	15/06/2024

JOB NO. 508

STATUS CONTRACT

DISTRIBUTION

REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD

NTPC DRG. NO. 9587-001-315-PVC-C-0148

OWNER: NTPC Limited (A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT: LARA SUPER THERMAL POWER PROJECT 2X800MW STAGE-II

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA (U.P.)

DEPT CODE: C

	NAME	SIGN	DATE
DRN	RPC	Sd/-	12.06.2024
DESN	NK	Sd/-	12.06.2024
CHD	AT	Sd/-	12.06.2024
APPD	DKM	Sd/-	12.06.2024

TITLE: MPH BUILDING
DETAILS OF ROOF GIRDERS

MPL	ELEC	C&I	MSE	MAX	DEPT.	SCALE -
					SIGN	
					DATE	

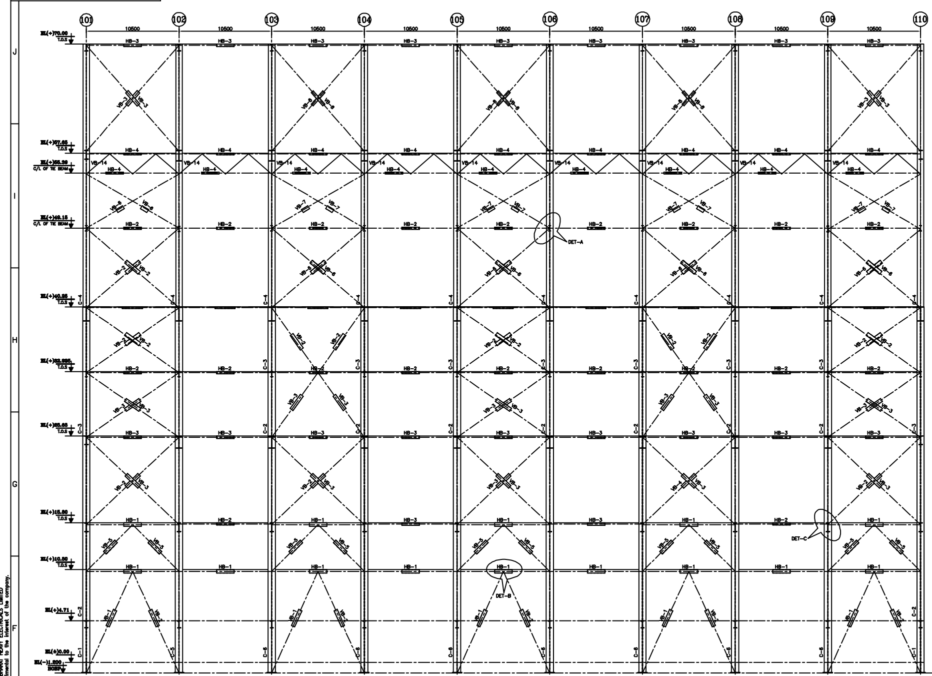
DRAWING NO. PE-DG-508-612-C006

SHEET OF REV. 0

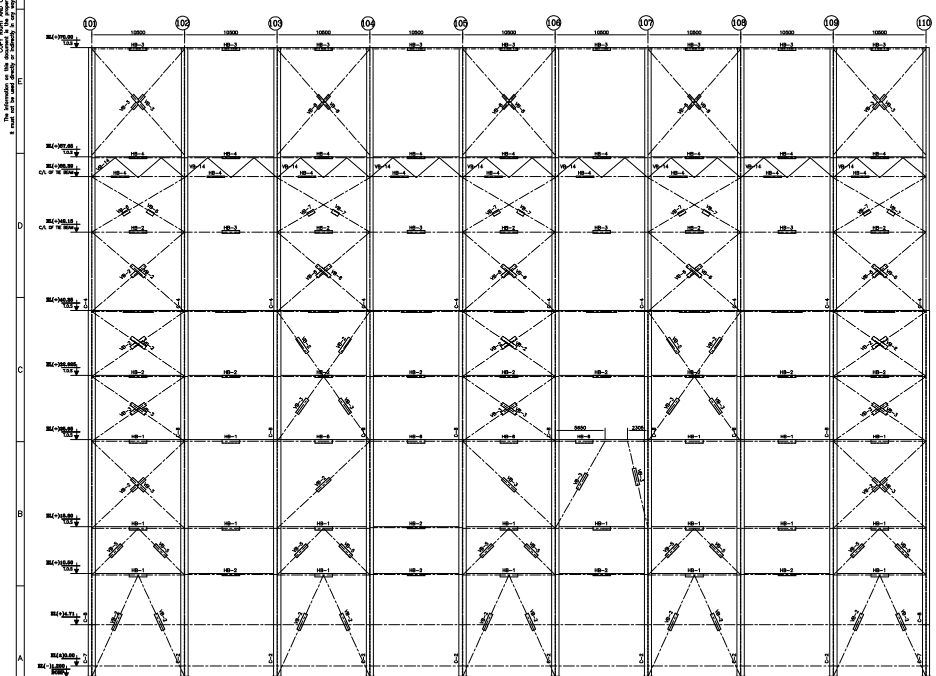
FORMAT SIZE A0

FIRST ANGLE PRJECTION

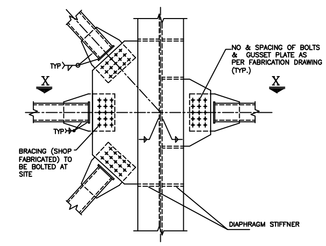
ALL DIMENSIONS ARE IN MM



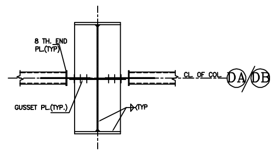
ELEVATION ON GRID DA



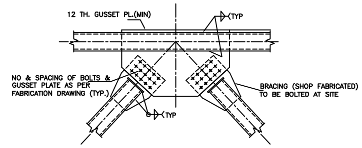
ELEVATION ON GRID DB



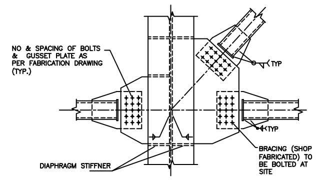
DETAIL-A



SECTION X-X



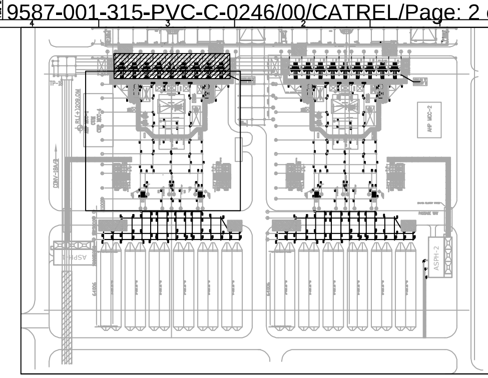
DETAIL-B



DETAIL-C

TABLE - A

(SHOWING SIZE OF WELD) PL. THICKNESS.	WW (SIZE OF WELD IN MM)	SW (SIZE OF WELD IN MM)
8 & 10	DOUBLE BEVEL BUTT WELD WITH REINFORCED FILLET WELD OF 6 MM THICK WHEREVER REQD.	6
12		8
16 & 20		12
25		14
28 & 32		20
36 & 40		20
45 & 50		25



KEY PLAN

NOTES: -

1. ALL DIMENSIONS ARE IN MM & ELEVATIONS IN METERS UNLESS STATED OTHERWISE.
2. ALL ELEVATIONS ARE REFERRED TO THE FINISHED FLOOR LEVEL OF POWER HOUSE BUILDING AS EL. 0.00 M WHICH CORRESPONDS TO RL.(+) 209.50 M.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH CONTRACT TERMS AND CONDITIONS, TECHNICAL SPECIFICATIONS AND SCHEDULE OF ITEMS.
4. FOR OTHER NOTES AND STD. DETAILS REF. DRG. PE-DG-508-600-C002 (9587-001-315-PVC-C-0002)
5. CONNECTION DETAILS SHOWN ARE INDICATIVE ONLY. SIZE & THICKNESS OF GUSSETS, NO. & DIA. OF CONNECTION BOLTS ETC. SHALL BE SHOWN IN CORRESPONDING FABRICATION DRG.
6. FOR GROUTING OF BASE PL. REF. DRG. NO PE-DG-508-611-C001 (9587-001-315-PVC-C-0035)
7. ALL ELEVATIONS ARE TO THE TOP OF STEEL (U.N.O.)
8. ALL BOLTED FIELD CONNECTIONS ARE TO BE DONE WITH HSFG BOLTS OF PROPERTY CLASS 8.8. (U.N)
9. FABRICATOR MUST CHECK THE WELD SIZES GIVEN IN TABLE -A FOR DESIGN AND MAXIMUM OF DESIGN VALUE AND VALUE GIVEN TO BE USED.
10. ALL END CONNECTIONS FOR BRACINGS SHALL BE DESIGNED FOR FULL TENSILE STRENGTH OF MEMBERS.
11. STRUCTURAL STEEL ROLLED SECTIONS SHALL CONFORM TO GRADE DESIGNATION E-250 & STRUCTURAL STEEL PLATES SHALL CONFORM TO GRADE DESIGNATION E-350.

ENGINEERING REFERENCE DRAWINGS : -

1. 9587-001-315-PVC-C-0240-(PE-DG-508-616-C001)-----MILL & BUNKER BAY - G.A. OF COLUMN FOUNDATIONS
2. 9587-001-315-PVC-C-0242-(PE-DG-508-616-C004)-----MILL & BUNKER BAY - R.C.C. DTLS OF FEEDER FLOOR
3. 9587-001-315-PVC-C-0243-(PE-DG-508-616-C005)-----MILL & BUNKER BAY - R.C.C. DTLS OF TRIPPER FLOOR
4. 9587-001-315-PVC-C-0244-(PE-DG-508-616-C006)-----MILL & BUNKER BAY - R.C.C. DTLS OF ROOF
5. 9587-001-315-PVC-C-0245-(PE-DG-508-616-C007)-----MILL & BUNKER BAY - BASE PLATE DETAILS
6. 9587-001-315-PVC-C-0247-(PE-DG-508-616-C010)-----MILL & BUNKER BAY - FRAMING PLAN OF FEEDER FLOOR
7. 9587-001-315-PVC-C-0248-(PE-DG-508-616-C011)-----MILL & BUNKER BAY - FRAMING PLAN OF TRIPPER FLOOR
8. 9587-001-315-PVC-C-0249-(PE-DG-508-616-C012)-----MILL & BUNKER BAY - FRAMING PLAN OF BUNKER ROOF
8. 9587-001-315-PVC-C-0250-(PE-DG-508-616-C013)-----MILL & BUNKER BAY - FRAMING PLAN OF BUNKER ROOF
8. 9587-001-315-PVC-C-0251-(PE-DG-508-616-C014)-----MILL & BUNKER BAY - G.A. OF BUNKERS & SUPPORTING DETAILS
8. 9587-001-315-PVC-C-0252-(PE-DG-508-616-C015)-----MILL & BUNKER BAY - DETAILS OF BUNKERS & SUPPORTING DETAILS

LEGEND:

1. TOS = TOP OF STEEL
2. BOS = BOTTOM OF STEEL
3. TYP. = TYPICAL

TOTAL QUANTITY OF STRUCTURAL STEEL : 3200 MT (APPROX FOR UNIT-1)

BHEL-PROJECT ENGINEERING MANAGEMENT (CIVIL)
THIS DRAWING MARKED(✓) IS RELEASED FOR
☑ COMMENTS/APPROVAL
☐ PLANNING/INFORMATION
☐ CONSTRUCTION
STAMP ALL PREVIOUS REVISION AS SUPERSEDED
ISSUED BY
NAME: AMIT THAKUR
SIGNATURE:
DATE: 14/06/2024

NTPC DRG. NO. 9587-001-315-PVC-C-0246

OWNER: NTPC Limited (A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT: LARA SUPER THERMAL POWER PROJECT 2X800MW STAGE-II

JOB NO. 508

STATUS: CONTRACT

DISTRIBUTION

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA (U.P.)

DEPT CODE: C

	NAME	SIGN	DATE
DRN	YSR	Sd/-	10.06.2024
DESN	MK	Sd/-	10.06.2024
CHD	AT	Sd/-	14.06.2024
APPD	DKM	Sd/-	14.06.2024

REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD

TITLE: MILL & BUNKER BAY GA & RC DETAILS OF COLUMNS & FOUNDATIONS - UNIT#1&2

MPL	ELEC	C&I	MSE	MAX	DEPT.
					SIGN
					DATE

SCALE 1:190

DRAWING NO. PE-DG-508-616-C008

SHEET 1 OF 2 REV. 0

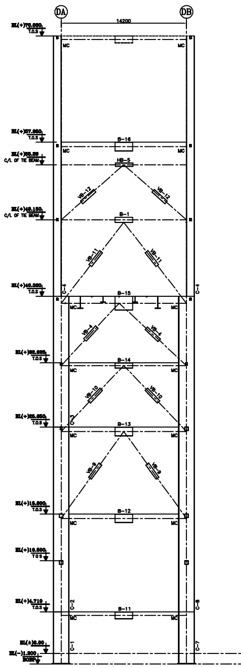
FORMAT SIZE A0

DRAWING NO. PE-DG-508-616-C001

FIRST ANGLE PRJECTION

ALL DIMENSIONS ARE IN MM

DRAWING NO. PE-DG-508-616-C001



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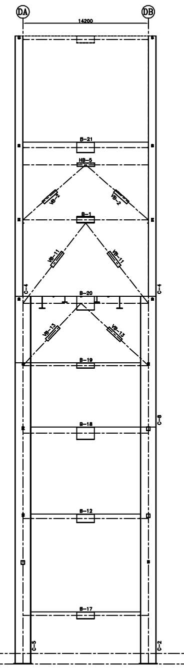

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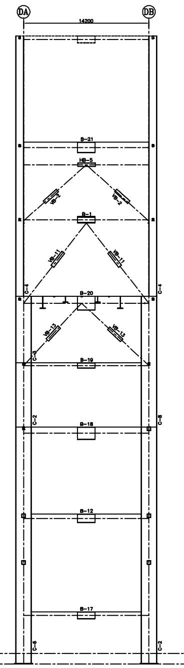

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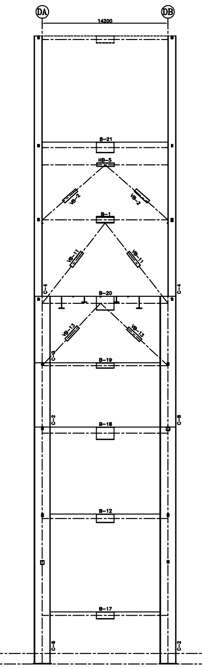

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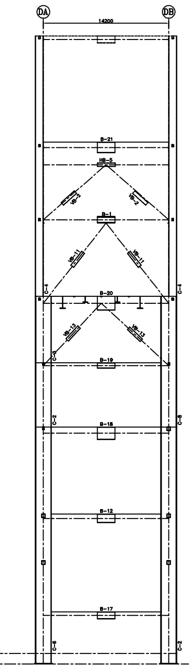

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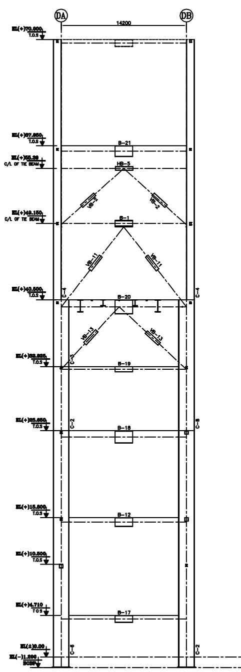

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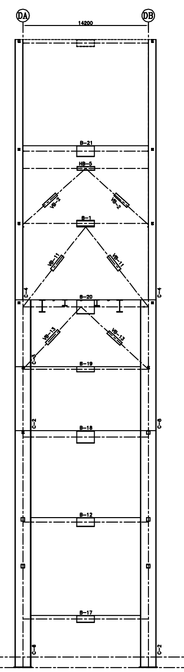

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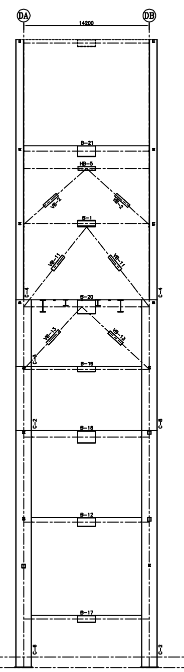

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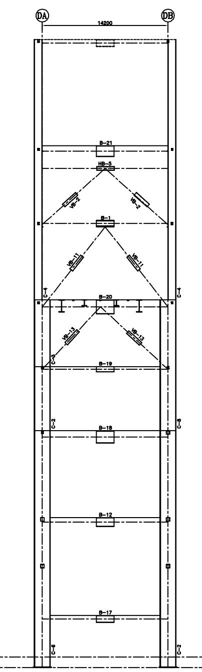
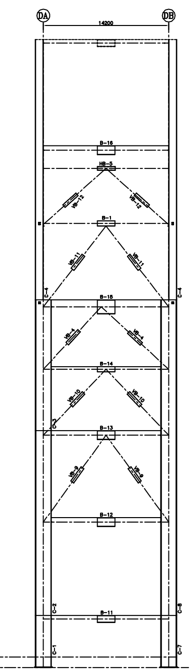


ELEVATION ON GRID 109



ELEVATION ON GRID 110

COLUMN SCHEDULE

MEMBER MKD	COLUMN SIZE				SHAPE
C-1	D=1800	FL. PL.-825X50	WEB PL.-50 TH.	RIB PL.-50 TH.	FL. PL. / WEB PL. / RIB PL. / FL. PL.
C-2	D=1800	FL. PL.-825X50	WEB PL.-50 TH.	RIB PL.-25 TH.	FL. PL. / WEB PL. / RIB PL. / FL. PL.
C-6	D=1800	FL. PL.-825X50	WEB PL.-50 TH.	RIB PL.-45 TH.	
C-5	D=1800	FL. PL.-825X50	WEB PL.-50 TH.	RIB PL.-40 TH.	FL. PL. / WEB PL. / RIB PL. / FL. PL.
C-7	D=1800	FL. PL.-825X50	WEB PL.-50 TH.	RIB PL.-50 TH.	
C-3	D=1800	FL. PL.-825X50	WEB PL.-50 TH.	-	FL. PL. / WEB PL. / FL. PL.
C-4	D=900	FL. PL.-740X32	WEB PL.-20 TH.	-	
C-8	D=1800	FL. PL.-825X50	WEB PL.-45 TH.	-	

BRACING / TIE BEAM SCHEDULE

MEMBER MKD	BEAM SECTION			SHAPE
B-1	NPB600X220X122.45			I
B-11	D=800	FL. PL.-350X32	WEB PL.-20 TH.	FL. PL. / WEB PL. / FL. PL.
B-12	D=1000	FL. PL.-400X36	WEB PL.-25 TH.	
B-13	D=1000	FL. PL.-400X25	WEB PL.-20 TH.	
B-14	D=800	FL. PL.-250X20	WEB PL.-16 TH.	
B-15	D=1600	FL. PL.-620X32	WEB PL.-20 TH.	
B-16	D=1000	FL. PL.-400X28	WEB PL.-20 TH.	
B-17	D=800	FL. PL.-360X28	WEB PL.-25 TH.	
B-18	D=1400	FL. PL.-620X45	WEB PL.-32 TH.	
B-19	D=800	FL. PL.-250X20	WEB PL.-20 TH.	
B-20	D=1600	FL. PL.-620X36	WEB PL.-28 TH.	
B-21	D=1200	FL. PL.-620X32	WEB PL.-20 TH.	

BRACING / TIE BEAM SCHEDULE

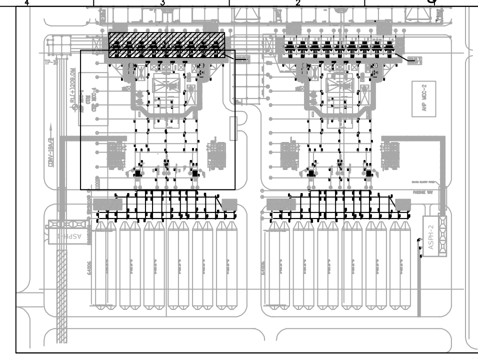
BRACING	BRACING SIZE	BRACING SECTION
VB-1	1-WEB. PLT 368X16 2-FLG PLT. 430X16	
VB-2	1-WEB. PLT 376X12 2-FLG PLT. 430X12	
VB-3	1-WEB. PLT 330X10 2-FLG PLT. 370X10	
VB-4	1-WEB. PLT 418X16 2-FLG PLT. 480X16	
VB-5	MC 400 BOX AT 50 MM GAP BETWEEN TOE + 10 THK. BATTEN PL.	
VB-6	MC 400 BOX AT 100 MM GAP BETWEEN TOE + 10 THK. BATTEN PL.	
VB-7	MC 300 BOX AT 100 MM GAP BETWEEN TOE + 10 THK. BATTEN PL.	
VB-8	MC 300 BOX	ISMC BOX (TOE TO TOE)
VB-9	1-WEB. PLT 460X20 2-FLG PLT. 550X20	
VB-10	1-WEB. PLT 284X8 2-FLG PLT. 320X8	
VB-11	1-WEB. PLT 334X8 2-FLG PLT. 370X8	
VB-12	1-WEB. PLT 380X10 2-FLG PLT. 430X10	
VB-13	1-WEB. PLT 510X20 2-FLG PLT. 600X20	
VB-14	L 100X100X8	

BRACING / TIE BEAM SCHEDULE

BRACING	BRACING SIZE	BRACING SECTION
HB-1	1-WEB. PLT 280X10 2-FLG PLT. 320X10	
HB-5	1-WEB. PLT 376X12 2-FLG PLT. 430X12	
HB-6	1-WEB. PLT 330X10 2-FLG PLT. 370X10	
HB-2	MC 250 BOX	ISMC BOX (TOE TO TOE)
HB-3	MC 300 BOX	
HB-4	MC 200 BOX	

TABLE - A

(SHOWING SIZE OF WELD) PL. THICKNESS.	WW (SIZE OF WELD IN MM)	SW (SIZE OF WELD IN MM)
8 & 10	DOUBLE BEVEL BUTT WELD WITH REINFORCED FILLET WELD OF 6 MM THICK WHEREVER REQD.	6
12		8
16 & 20		12
25		14
28 & 32		20
36 & 40		20
45 & 50		25



KEY PLAN

NOTES: -

1. ALL DIMENSIONS ARE IN MM & ELEVATIONS IN METERS UNLESS STATED OTHERWISE.
2. ALL ELEVATIONS ARE REFERRED TO THE FINISHED FLOOR LEVEL OF POWER HOUSE BUILDING AS EL. 0.00 M WHICH CORRESPONDS TO RL.(+) 209.50 M.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH CONTRACT TERMS AND CONDITIONS, TECHNICAL SPECIFICATIONS AND SCHEDULE OF ITEMS.
4. FOR OTHER NOTES AND STD. DETAILS REF. DRG. PE-DG-508-600-C002 (9587-001-315-PVC-C-0002)
5. CONNECTION DETAILS SHOWN ARE INDICATIVE ONLY. SIZE & THICKNESS OF GUSSETS, NO. & DIA. OF CONNECTION BOLTS ETC. SHALL BE SHOWN IN CORRESPONDING FABRICATION DRG.
6. FOR GROUTING OF BASE PL. REF. DRG. NO PE-DG-508-611-C001 (9587-001-315-PVC-C-0035)
7. ALL ELEVATIONS ARE TO THE TOP OF STEEL (U.N.O.)
8. ALL BOLTED FIELD CONNECTIONS ARE TO BE DONE WITH HSFG BOLTS OF PROPERTY CLASS 8.8. (U.N)
9. FABRICATOR MUST CHECK THE WELD SIZES GIVEN IN TABLE -A FOR DESIGN AND MAXIMUM OF DESIGN VALUE AND VALUE GIVEN TO BE USED.
10. ALL END CONNECTIONS FOR BRACINGS SHALL BE DESIGNED FOR FULL TENSILE STRENGTH OF MEMBERS.
11. STRUCTURAL STEEL ROLLED SECTIONS SHALL CONFORM TO GRADE DESIGNATION E-250 & STRUCTURAL STEEL PLATES SHALL CONFORM TO GRADE DESIGNATION E-350.

ENGINEERING REFERENCE DRAWINGS :-

1. 9587-001-315-PVC-C-0240-(PE-DG-508-616-C001)-----MILL & BUNKER BAY - G.A. OF COLUMN FOUNDATIONS
2. 9587-001-315-PVC-C-0242-(PE-DG-508-616-C004)-----MILL & BUNKER BAY - R.C.C. DTLS OF FEEDER FLOOR
3. 9587-001-315-PVC-C-0243-(PE-DG-508-616-C005)-----MILL & BUNKER BAY - R.C.C. DTLS OF TRIPPER FLOOR
4. 9587-001-315-PVC-C-0244-(PE-DG-508-616-C006)-----MILL & BUNKER BAY - R.C.C. DTLS OF ROOF
5. 9587-001-315-PVC-C-0245-(PE-DG-508-616-C007)-----MILL & BUNKER BAY - BASE PLATE DETAILS
6. 9587-001-315-PVC-C-0247-(PE-DG-508-616-C010)-----MILL & BUNKER BAY - FRAMING PLAN OF FEEDER FLOOR
7. 9587-001-315-PVC-C-0248-(PE-DG-508-616-C011)-----MILL & BUNKER BAY - FRAMING PLAN OF TRIPPER FLOOR
8. 9587-001-315-PVC-C-0249-(PE-DG-508-616-C012)-----MILL & BUNKER BAY - FRAMING PLAN OF BUNKER ROOF
8. 9587-001-315-PVC-C-0250-(PE-DG-508-616-C013)-----MILL & BUNKER BAY - FRAMING PLAN OF BUNKER ROOF
8. 9587-001-315-PVC-C-0251-(PE-DG-508-616-C014)-----MILL & BUNKER BAY - G.A. OF BUNKERS & SUPPORTING DETAILS
8. 9587-001-315-PVC-C-0252-(PE-DG-508-616-C015)-----MILL & BUNKER BAY - DETAILS OF BUNKERS & SUPPORTING DETAILS

LEGEND:

1. TOS = TOP OF STEEL
2. BOS = BOTTOM OF STEEL
3. TYP. = TYPICAL

BHEL-PROJECT ENGINEERING MANAGEMENT (CIVIL)
THIS DRAWING MARKED(✓) IS RELEASED FOR
☑ COMMENTS/APPROVAL
☐ PLANNING/INFORMATION
☐ CONSTRUCTION
STAMP ALL PREVIOUS REVISION AS SUPERSEDED
ISSUED BY
NAME: AMIT THAKUR
SIGNATURE:
DATE: 13/06/2024

REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD

JOB NO. 508
STATUS CONTRACT
DISTRIBUTION

NTPC DRG. NO. 9587-001-315-PVC-C-0246

OWNER: NTPC Limited (A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT: LARA SUPER THERMAL POWER PROJECT 2X800MW STAGE-II

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA (U.P.)

DEPT CODE: C

	NAME	SIGN	DATE
DRN	YSR	Sd/-	10.06.2024
DESN	MK	Sd/-	10.06.2024
CHD	AT	Sd/-	14.06.2024
APPD	DKM	Sd/-	14.06.2024

TITLE: MILL & BUNKER BAY LONGITUDINAL & TRANSVERSE FRAMING ARRANGEMENT

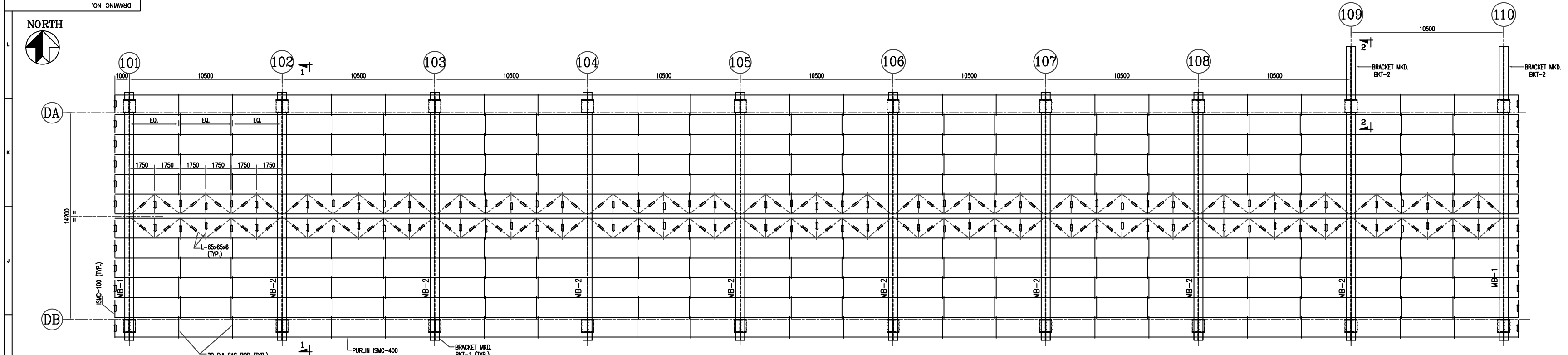
MPL	ELEC	C&I	MSE	MAX	DEPT.	SCALE 1:190
					SIGN / DATE	

DRAWING NO. PE-DG-508-616-C008
SHEET 2 OF 2 REV. 0

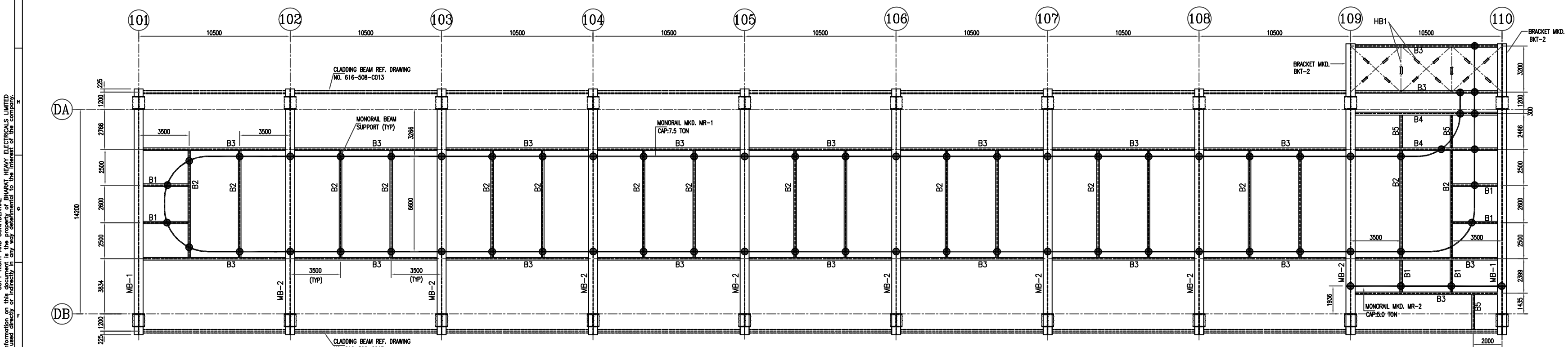
FORMAT SIZE A0

FIRST ANGLE PROJECTION

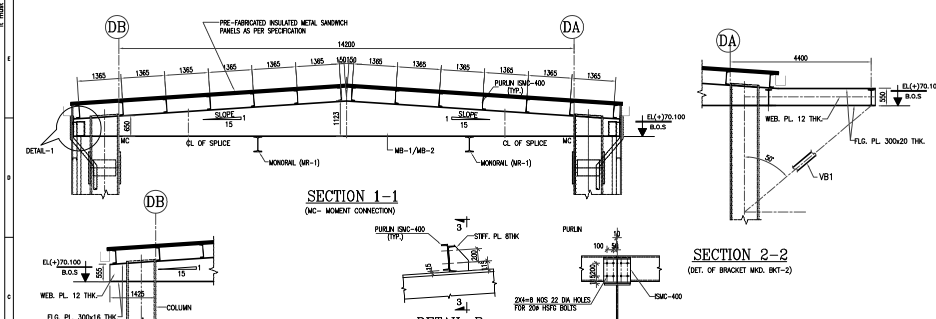
ALL DIMENSIONS ARE IN MM



FRAMING PLAN AT PURLIN LEVEL (UNIT#3)



FRAMING PLAN OF ROOF BEAM AT EL.(+)70.10 (B.O.S) (UNIT#3)



SECTION 1-1
(MC- MOMENT CONNECTION)

DETAIL-A
(DET. OF BRACKET MKD. BKT-1)

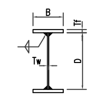
DETAIL-B
FIXING DETAIL OF PURLIN

SECTION 3-3
FIXING DETAIL OF PURLIN

SECTION 2-2
(DET. OF BRACKET MKD. BKT-2)

SCHEDULE OF MEMBERS

DESIGNATION	SECTION					REMARKS
	BUILT UP SECTION				SECTIONS	
	D	B	Tw	Tf		
B1	–	–	–	–	NPB 450x192x77.6	I
B2	–	–	–	–	NPB 450x192x92.36	I
B3	500	250	12	25		REF DET – X
B4	500	300	12	25		
B5	–	–	–	–	ISMB300	I
MR1	–	–	–	–	NPB 450X190X77.6 + EXTRA BOTTOM FLANGE 170 WIDE 8 THK	I
MR2	–	–	–	–	NPB 450X190X77.6 + EXTRA BOTTOM FLANGE 170 WIDE 8 THK	I
MB1	REFER SECTION 1-1	400	16	20		TAPERED I SECTION
MB2	REFER SECTION 1-1	400	16	25		
VB1	–	–	–	–	2-ISMC150(B/B) WITH 12 GAP	I
HB1	–	–	–	–	2L 90X90X8	



DETAIL-X

STRUCTURAL STEEL = 2x175= 350T

NOTES:-

1. ALL DIMENSIONS ARE IN MM & ELEVATIONS IN METERS UNLESS STATED OTHERWISE.
2. ALL ELEVATIONS ARE REFERRED TO THE FINISHED FLOOR LEVEL OF POWER HOUSE BUILDING AS EL.(±)0.00 M WHICH CORRESPONDS TO RL.(+)209.50M ABOVE M.S.L.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH CONTRACT TERMS AND CONDITIONS, TECHNICAL SPECIFICATIONS AND SCHEDULE OF ITEMS.
4. FOR OTHER NOTES AND STD. DETAILS REF. DRG. PE-DG-508-600-C002 (NTPC DRG NO. NTPC NO. 9587-001-315-PVC-C-0001)
5. CONNECTION DETAILS SHOWN ARE INDICATIVE ONLY. SIZE & THICKNESS OF GUSSETS, NO. & DIA. OF CONNECTION BOLTS ETC. SHALL BE SHOWN IN CORRESPONDING FABRICATION DRG.
6. ALL ELEVATIONS ARE TO THE TOP OF STEEL (U.N.O.)
7. ALL BOLTED FIELD CONNECTIONS ARE TO BE DONE WITH HSFG BOLTS (U.N)
8. STRUCTURAL STEEL ROLLED SECTIONS SHALL CONFORM TO GRADE DESIGNATION E-250 & STRUCTURAL STEEL PLATES SHALL CONFORM TO GRADE DESIGNATION E-350.

ENGINEERING REFERENCE DRAWINGS :-

1. BHEL DWG NO. PE-DG-508-100-M001 (NTPC DWG NO. 9587-001-301-POC-F-001) - PLOT PLAN
2. BHEL DWG NO. IS-1-GA-767-116-M032 (NTPC DWG NO. 9587-001-155-PVM-B-032) - LOAD DATA FOR BUNKER FLOORS OF UNIT#3 & 4 (SH-1 TO SH-4)

CONSTRUCTION REFERENCE DRAWINGS

1. BHEL DWG NO. PE-DG-508-616-C010 (NTPC DWG NO.9587-001-315-PVC-C-0247) -BUNKER BAY - FRAMING PLAN OF FEEDER FLOOR
2. BHEL DWG NO. PE-DG-508-616-C004 (NTPC DWG NO.9587-001-315-PVC-C-0242) -BUNKER'S BAY - R.C.C. DTLS OF FEEDER FLOOR
3. BHEL DWG NO. PE-DG-508-616-C011 (NTPC DWG NO.9587-001-315-PVC-C-0248) -BUNKER BAY - FRAMING PLAN OF TRIPPER FLOOR
4. BHEL DWG NO. PE-DG-508-616-C005 (NTPC DWG NO. NTPC NO. 9587-001-315-PVC-C-0243) -BUNKER'S BAY - R.C.C. DTLS OF TRIPPER FLOOR
5. BHEL DWG NO. PE-DG-508-616-C007 (NTPC DWG NO. 9587-001-315-PVC-C-0245) -BUNKER'S BAY- LONGITUDINAL FRAMING ARRANGEMENT.
6. BHEL DWG NO. PE-DG-508-616-C008 (NTPC DWG NO. 9587-001-315-PVC-C-0246) -BUNKER'S BAY- TRANSVERSE FRAMING ARRANGEMENT.
7. BHEL DWG NO. PE-DG-508-616-C014 (NTPC DWG NO. NTPC NO. 9587-001-315-PVC-C-0251) -BUNKER'S BAY- G.A. OF BUNKERS & SUPPORTING DETAILS .

BHEL-PROJECT ENGINEERING MANAGEMENT (CIVIL)
THIS DRAWING MARKED(✓) IS RELEASED FOR
☑ COMMENTS/APPROVAL
☐ PLANNING/INFORMATION
☐ CONSTRUCTION
STAMP ALL PREVIOUS REVISION AS SUPERSEDED

ISSUED BY	
NAME	AMIT THAKUR
SIGNATURE	-SD-
DATE	20.07.2024

JOB NO.	508
STATUS	CONTRACT

PRINT SCALE IN METRE

REV.	DATE	ALTD	CHD	APPD

NTPC DRG. NO.	9587-001-315-PVC-C-0249
CUSTOMER	NTPC LIMITED (A GOVERNMENT OF INDIA ENTERPRISE)
PROJECT	LARA SUPER THERMAL POWER PROJECT (2X800MW STAGE-II)
	BHARAT HEAVY ELECTRICALS LTD POWER SECTOR PROJECT ENGINEERING MANAGEMENT NOIDA (U.P.)
TITLE	MILL & BUNKER BAY (UNIT # 3 & 4) FRAMING PLAN OF BUNKER ROOF

DEPT CODE		NAME	SIGNATURE	DATE
C	DRN	YSR	--sd--	19.07.2024
	DESN	BKS	--sd--	19.07.2024
	CHD	AT	--sd--	19.07.2024
	APPD	KK	--sd--	19.07.2024

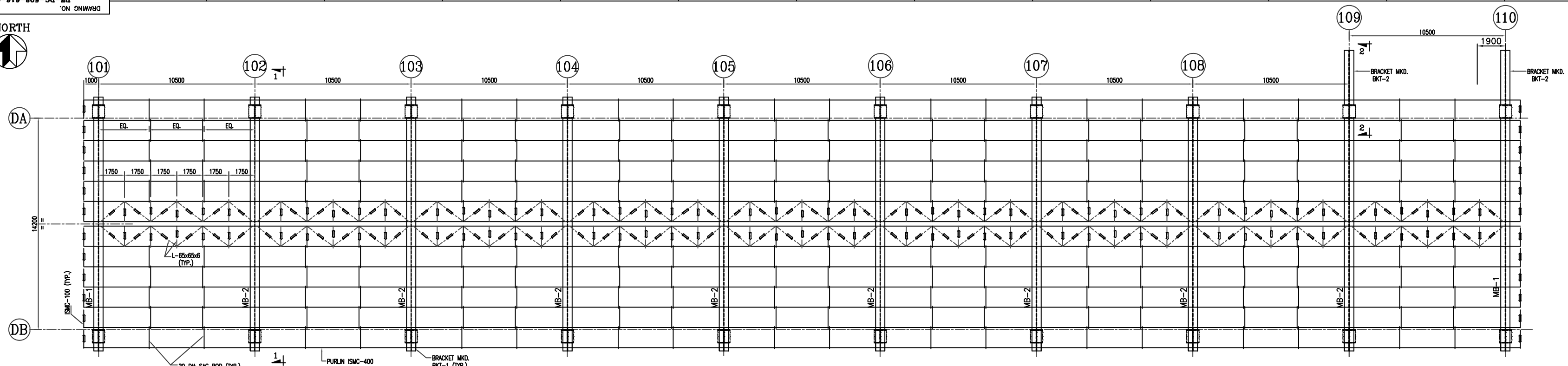
MPL	CIVIL	ELEC	C&I	MSE	MAX	DEPT.	SCALE-
						SIGN DATE	

DRAWING NO. PE-DG-508-616-C012
SHEET 1 OF 2 REV. R0

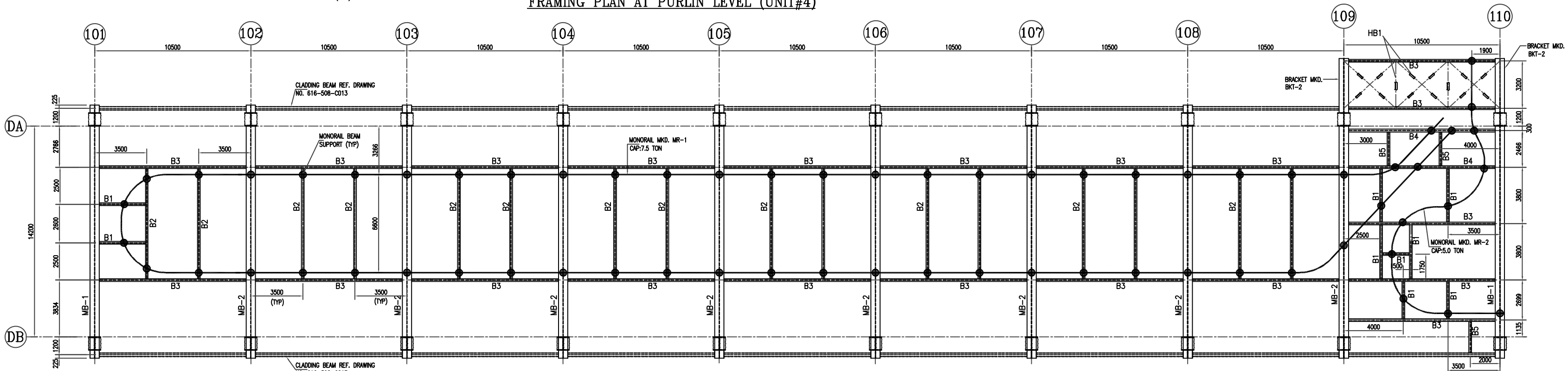
FORMAT SIZE A0

FIRST ANGLE PROJECTION

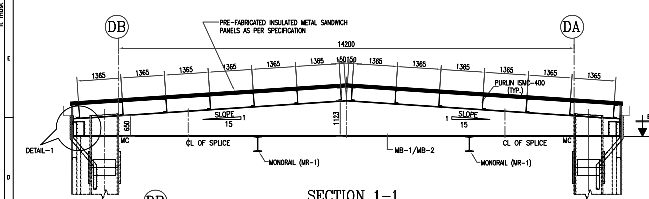
ALL DIMENSIONS ARE IN MM



FRAMING PLAN AT PURLIN LEVEL (UNIT#4)

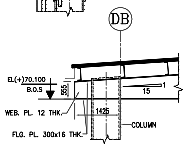


FRAMING PLAN OF ROOF BEAM AT EL.(+)70.10 (B.O.S) (UNIT#4)



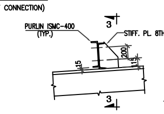
SECTION 1-1

(MC- MOMENT CONNECTION)



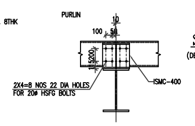
DETAIL-A

(DET. OF BRACKET MKD. BKT-1)



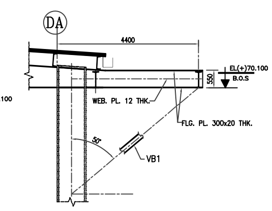
DETAIL-B

FIXING DETAIL OF PURLIN



SECTION 3-3

FIXING DETAIL OF PURLIN

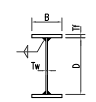


SECTION 2-2

(DET. OF BRACKET MKD. BKT-2)

SCHEDULE OF MEMBERS

DESIGNATION	SECTION					REMARKS
	BUILT UP SECTION				SECTIONS	
	D	B	Tw	Tf		
B1	-	-	-	-	NPB 450x192x77.6	I
B2	-	-	-	-	NPB 450x192x92.36	I
B3	500	250	12	25		REF DET - X
B4	500	300	12	25		
B5	-	-	-	-	ISMB300	I
MR1	-	-	-	-	NPB 450X190X77.6 + EXTRA BOTTOM FLANGE 170 WIDE 8 THK	I
MR2	-	-	-	-	NPB 450X190X77.6 + EXTRA BOTTOM FLANGE 170 WIDE 8 THK	I
MB1	REFER SECTION 1-1	400	16	20		TAPERED I SECTION
MB2	REFER SECTION 1-1	400	16	25		
VB1	-	-	-	-	2-ISMC150(B/B) WITH 12 GAP	I
HB1	-	-	-	-	2L 90X90X8	



DETAIL-X

NOTES:-

1. ALL DIMENSIONS ARE IN MM & ELEVATIONS IN METERS UNLESS STATED OTHERWISE.
2. ALL ELEVATIONS ARE REFERRED TO THE FINISHED FLOOR LEVEL OF POWER HOUSE BUILDING AS EL.(±)0.00 M WHICH CORRESPONDS TO RL.(+)209.50M ABOVE M.S.L.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH CONTRACT TERMS AND CONDITIONS, TECHNICAL SPECIFICATIONS AND SCHEDULE OF ITEMS.
4. FOR OTHER NOTES AND STD. DETAILS REF. DRG. PE-DG-508-600-C002 (NTPC DRG NO. NTPC NO. 9587-001-315-PVC-C-0001)
5. CONNECTION DETAILS SHOWN ARE INDICATIVE ONLY. SIZE & THICKNESS OF GUSSETS, NO. & DIA. OF CONNECTION BOLTS ETC. SHALL BE SHOWN IN CORRESPONDING FABRICATION DRG.
6. ALL ELEVATIONS ARE TO THE TOP OF STEEL (U.N.O.)
7. ALL BOLTED FIELD CONNECTIONS ARE TO BE DONE WITH HSFG BOLTS (U.N)
8. STRUCTURAL STEEL ROLLED SECTIONS SHALL CONFORM TO GRADE DESIGNATION E-250 & STRUCTURAL STEEL PLATES SHALL CONFORM TO GRADE DESIGNATION E-350.

ENGINEERING REFERENCE DRAWINGS :-

1. BHEL DWG NO. PE-DG-508-100-M001 (NTPC DWG NO. 9587-001-301-POC-F-001) - PLOT PLAN
2. BHEL DWG NO. IS-1-GA-767-116-M032 (NTPC DWG NO. 9587-001-155-PVM-B-032) - LOAD DATA FOR BUNKER FLOORS OF UNIT#3 & 4 (SH-1 TO SH-4)

CONSTRUCTION REFERENCE DRAWINGS

1. BHEL DWG NO. PE-DG-508-616-C010 (NTPC DWG NO.9587-001-315-PVC-C-0247) -BUNKER BAY - FRAMING PLAN OF FEEDER FLOOR
2. BHEL DWG NO. PE-DG-508-616-C004 (NTPC DWG NO.9587-001-315-PVC-C-0242) -BUNKER'S BAY - R.C.C. DTLS OF FEEDER FLOOR
3. BHEL DWG NO. PE-DG-508-616-C011 (NTPC DWG NO.9587-001-315-PVC-C-0248) -BUNKER BAY - FRAMING PLAN OF TRIPPER FLOOR
4. BHEL DWG NO. PE-DG-508-616-C005 (NTPC DWG NO. NTPC NO. 9587-001-315-PVC-C-0243) -BUNKER'S BAY - R.C.C. DTLS OF TRIPPER FLOOR
5. BHEL DWG NO. PE-DG-508-616-C007 (NTPC DWG NO. 9587-001-315-PVC-C-0245) -BUNKER'S BAY- LONGITUDINAL FRAMING ARRANGEMENT.
6. BHEL DWG NO. PE-DG-508-616-C008 (NTPC DWG NO. 9587-001-315-PVC-C-0246) -BUNKER'S BAY- TRANSVERSE FRAMING ARRANGEMENT.
7. BHEL DWG NO. PE-DG-508-616-C014 (NTPC DWG NO. NTPC NO. 9587-001-315-PVC-C-0251) -BUNKER'S BAY- G.A. OF BUNKERS & SUPPORTING DETAILS .

BHEL-PROJECT ENGINEERING MANAGEMENT (CIVIL)
THIS DRAWING MARKED(✓) IS RELEASED FOR
☑ COMMENTS/APPROVAL
☐ PLANNING/INFORMATION
☐ CONSTRUCTION
STAMP ALL PREVIOUS REVISION AS SUPERSEDED
ISSUED BY
NAME: AMIT THAKUR
SIGNATURE: -SD-
DATE: 20.07.2024

JOB NO. 508
STATUS CONTRACT
PRINT SCALE IN METRE

NTPC DRG. NO. 9587-001-315-PVC-C-0249

CUSTOMER: NTPC LIMITED (A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT: LARA SUPER THERMAL POWER PROJECT (2X800MW STAGE-II)

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA (U.P.)

DEPT CODE: C

	NAME	SIGNATURE	DATE
DRN	YSR	--sd--	19.07.2024
DESN	BKS	--sd--	19.07.2024
CHD	AT	--sd--	19.07.2024
APPD	KK	--sd--	19.07.2024

TITLE: MILL & BUNKER BAY (UNIT # 3 & 4) FRAMING PLAN OF BUNKER ROOF

MPL	CIVIL	ELEC	C&I	MSE	MAX	DEPT.

SIGN
DATE
SCALE-

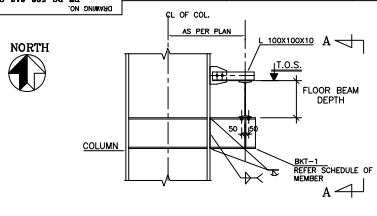
DRAWING NO. PE-DG-508-616-C012

SHEET 2 OF 2 REV. R0

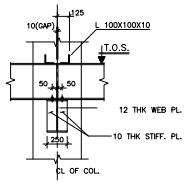
FORMAT SIZE A0

DRAWING NO. PE-DG-508-616-C011

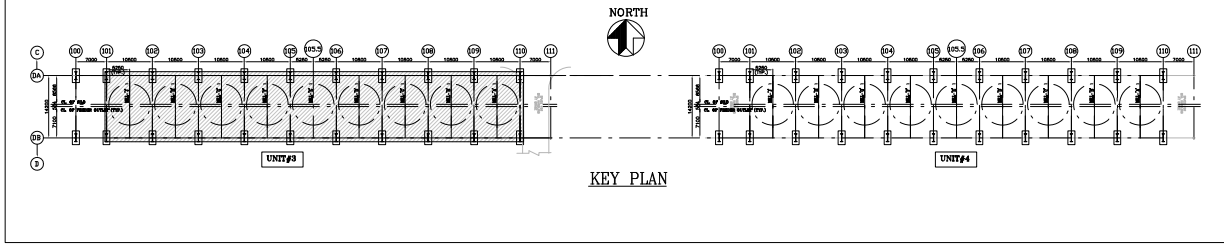
FIRST ANGLE PROJECTION | ALL DIMENSIONS ARE IN MM



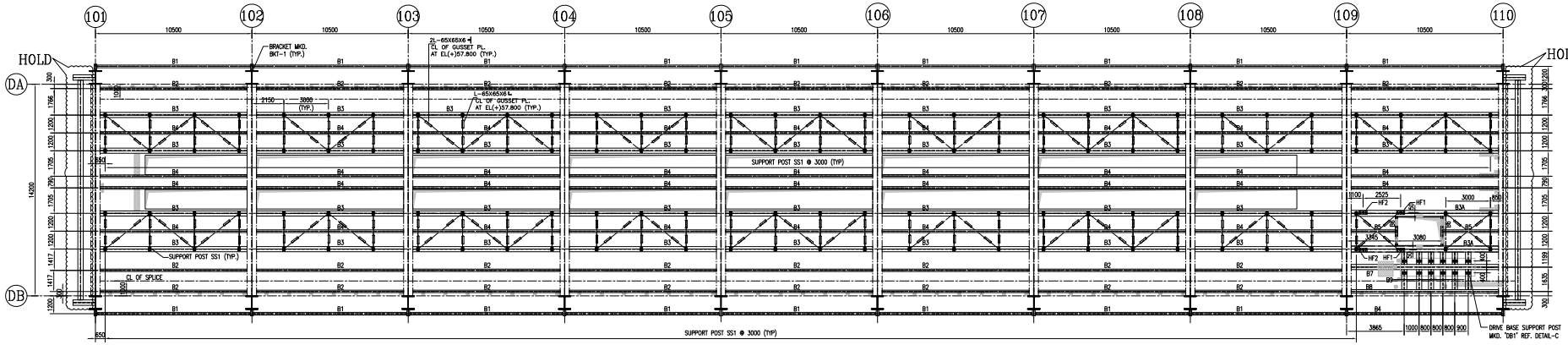
DETAILS OF BRACKET MKD BKT-1



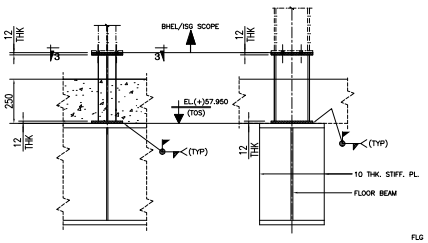
SECTION A-A



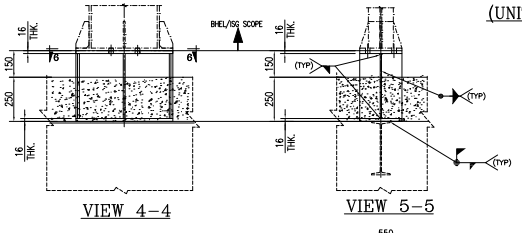
KEY PLAN



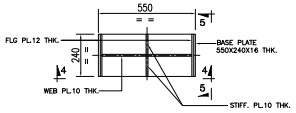
FRAMING PLAN OF TRIPPER FLOOR AT EL.(+)57.950 (T.O.S)
(UNIT#3)



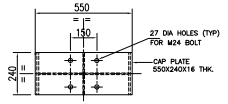
VIEW 1-1 VIEW 2-2



VIEW 4-4 VIEW 5-5



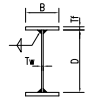
PLAN

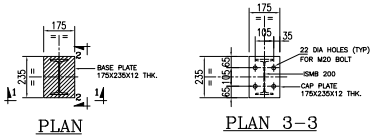


PLAN 6-6

SCHEDULE OF MEMBERS

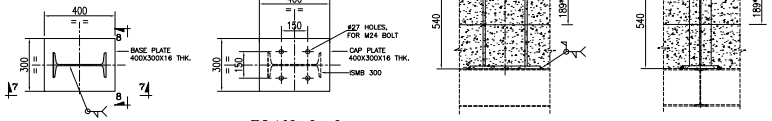
DESIGNATION	SECTION				SECTIONS	REMARKS
	BUILT UP SECTION D	B	Tw	Tf		
B1	-	-	-	-	MB-500	I
B2	MB 500 + FLG. PL. 150 X 8 THK. (TOP)					REF DET - A
B3	850	350	12	28		REF DET - B
B3A	850	400	12	25		
B4	-	-	-	-	MB-500	I
B5	-	-	-	-	MB-300	
B6	-	-	-	-	MB-400	
B7	850	300	12	25		REF DET - B
B8	700	250	12	25		
B9	350	350	10	12		
BKT-1	500	250	12	16		





PLAN PLAN 3-3

DETAIL OF POST SUPPORT MKD. SS1



PLAN PLAN 9-9 VIEW 7-7 VIEW 8-8

DETAIL OF POST SUPPORT MKD. HF1 & HF2

DETAIL-C (AT DRIVE BASE SUPP. POST 'DB1')

NOTES:-

1. ALL DIMENSIONS ARE IN MM & ELEVATIONS IN METERS UNLESS STATED OTHERWISE.
2. ALL ELEVATIONS ARE REFERRED TO THE FINISHED FLOOR LEVEL OF POWER HOUSE BUILDING AS EL.(+)0.00 M WHICH CORRESPONDS TO RL.(+)209.50M ABOVE M.S.L.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH CONTRACT TERMS AND CONDITIONS, TECHNICAL SPECIFICATIONS AND SCHEDULE OF ITEMS.
4. FOR OTHER NOTES AND STD. DETAILS REF. DRG. PE-DG-508-600-C002 (NTPC DRG NO. NTPC NO. 9587-001-315-PVC-C-0001)
5. CONNECTION DETAILS SHOWN ARE INDICATIVE ONLY. SIZE & THICKNESS OF GUSSETS, NO. & DIA. OF CONNECTION BOLTS ETC. SHALL BE SHOWN IN CORRESPONDING FABRICATION DRG.
6. ALL ELEVATIONS ARE TO THE TOP OF STEEL (U.N.O.)
7. ALL BOLTED FIELD CONNECTIONS ARE TO BE DONE WITH HSFG BOLTS (U.N)
8. STRUCTURAL STEEL ROLLED SECTIONS SHALL CONFORM TO GRADE DESIGNATION E-250 & STRUCTURAL STEEL PLATES SHALL CONFORM TO GRADE DESIGNATION E-250.

ENGINEERING REFERENCE DRAWINGS :-

1. BHEL DWG NO. PE-DG-508-100-M001 (NTPC DWG NO. 9587-001-301-POC-F-001) - PLOT PLAN
2. BHEL DWG NO. IS-1-GA-767-116-M032 (NTPC DWG NO. 9587-001-155-PVM-B-032) - LOAD DATA FOR BUNKER FLOORS OF UNIT#3 & 4 (SH-1 TO SH-4)

CONSTRUCTION REFERENCE DRAWINGS

1. BHEL DWG NO. PE-DG-508-616-C010 (NTPC DWG NO.9587-001-315-PVC-C-0247) -BUNKER BAY - FRAMING PLAN OF FEEDER FLOOR
2. BHEL DWG NO. PE-DG-508-616-C004 (NTPC DWG NO.9587-001-315-PVC-C-0242) -BUNKER'S BAY - R.C.C. DTLS OF FEEDER FLOOR
3. BHEL DWG NO. PE-DG-508-616-C005 (NTPC DWG NO. NTPC NO. 9587-001-315-PVC-C-0243) -BUNKER'S BAY - R.C.C. DTLS OF TRIPPER FLOOR
4. BHEL DWG NO. PE-DG-508-616-C012 (NTPC DWG NO. NTPC NO. 9587-001-315-PVC-C-0249) -BUNKER BAY - FRAMING PLAN OF BUNKER ROOF.
5. BHEL DWG NO. PE-DG-508-616-C006 (NTPC DWG NO. NTPC NO. 9587-001-315-PVC-C-0244) -BUNKER'S BAY - R.C.C. DTLS OF BUNKER ROOF.
6. BHEL DWG NO. PE-DG-508-616-C007 (NTPC DWG NO. 9587-001-315-PVC-C-0245) -BUNKER'S BAY- LONGITUDINAL FRAMING ARRANGEMENT.
7. BHEL DWG NO. PE-DG-508-616-C008 (NTPC DWG NO. 9587-001-315-PVC-C-0246) -BUNKER'S BAY- TRANSVERSE FRAMING ARRANGEMENT.
8. BHEL DWG NO. PE-DG-508-616-C014 (NTPC DWG NO. NTPC NO. 9587-001-315-PVC-C-0251) -BUNKER'S BAY- G.A. OF BUNKERS & SUPPORTING DETAILS .

STRUCTURAL STEEL (UNIT#3) =190 MT
STRUCTURAL STEEL (UNIT#4) =183 MT
TOTAL STRUCTURAL STEEL =373 MT

BHEL-PROJECT ENGINEERING MANAGEMENT (PEM)
THIS DRAWING MARKED(✓) IS RELEASED FOR
☑ COMMENTS/APPROVAL
☐ PLANNING/INFORMATION
☐ CONSTRUCTION
STAMP ALL PREVIOUS REVISION AS SUPERSEDED
ISSUED BY
NAME: AMIT THAKUR
SIGNATURE: -SD-
DATE: 06.07.2024

JOB NO. 508
STATUS CONTRACT
PRIME SCALE IN METRE

NTPC DRG. NO. 9587-001-315-PVC-C-0248

CUSTOMER: NTPC LIMITED (A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT: LARA SUPER THERMAL POWER PROJECT (2X800MW STAGE-II)

BHARAT HEAVY ELECTRICALS LTD POWER SECTOR PROJECT ENGINEERING MANAGEMENT NOIDA (U.P.)

DESIGN CODE		NAME	SIGNATURE	DATE
C	DRN	YSH	-SD-	03.07.2024
	DESN	BKS	-SD-	03.07.2024
	CHD	AS	-SD-	03.07.2024
	APPD	AK	-SD-	03.07.2024

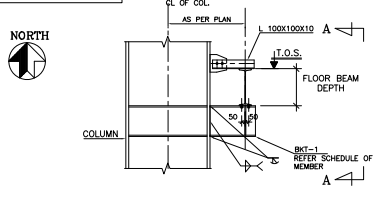
TITLE: MILL & BUNKER BAY (UNIT # 3 & 4)
FRAMING PLAN OF TRIPPER FLOOR

MPL | CIVIL | ELEC | C&I | MSE | MAX | DEPT. | SCALE:- | DRAWING NO. PE-DG-508-616-C011
SIGN / DATE | SHEET 1 OF 2 | REV. R0

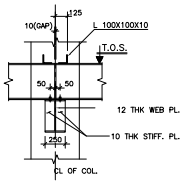
FORMAT SIZE A0

DRAWING NO. PE-DG-508-616-C011

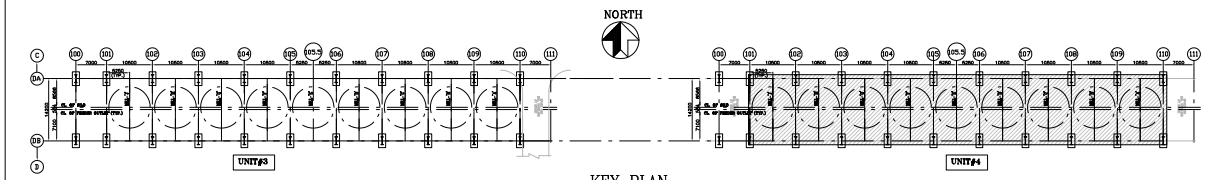
FIRST ANGLE PROJECTION | ALL DIMENSIONS ARE IN MM



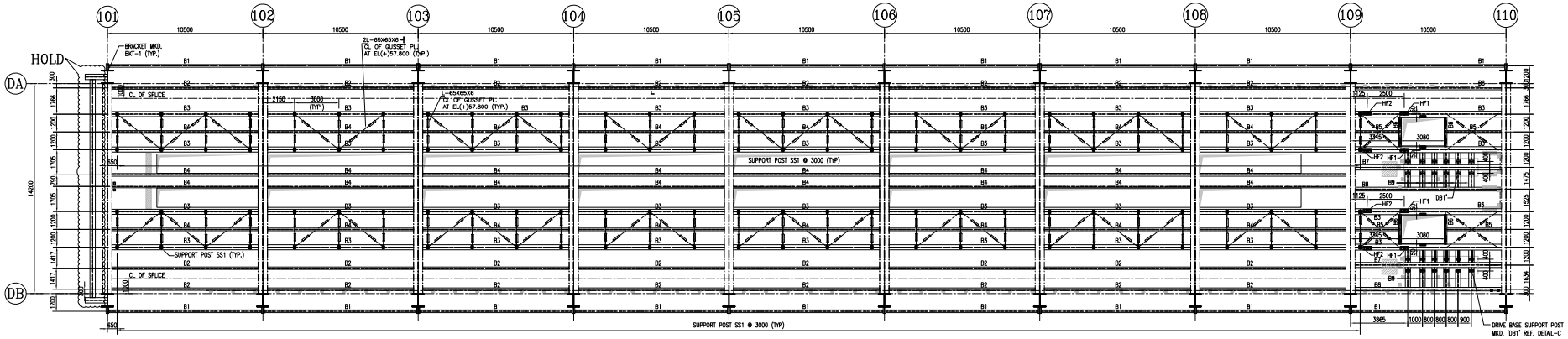
DETAILS OF BRACKET MKD BKT-1



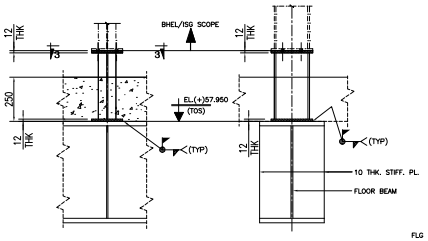
SECTION A-A



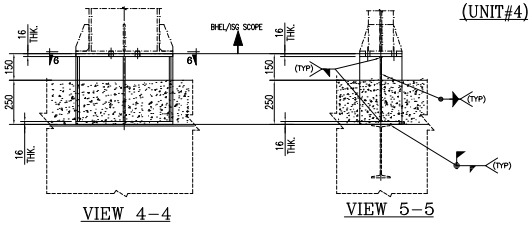
KEY PLAN

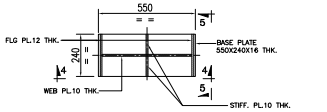


FRAMING PLAN OF TRIPPER FLOOR AT EL.(+)57.950 (T.O.S)
(UNIT#4)

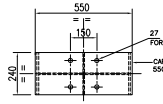


VIEW 1-1 VIEW 2-2



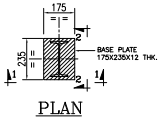


PLAN

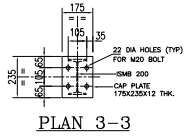


PLAN 6-6

DETAIL OF POST SUPPORT MKD. HF1 & HF2

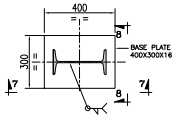


PLAN

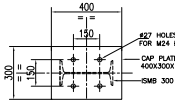


PLAN 3-3

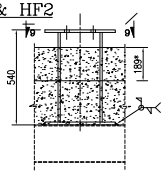
DETAIL OF POST SUPPORT MKD. SS1



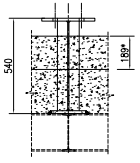
PLAN



PLAN 9-9



VIEW 7-7



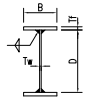
VIEW 8-8

DETAIL-C (AT DRIVE BASE SUPP. POST 'DB1')

SCHEDULE OF MEMBERS

DESIGNATION	SECTION BUILT UP SECTION D	B	Tw	Tf	SECTIONS	REMARKS
B1	-	-	-	-	MB-500	I
B2	MB 500 + FLG. PL. 150 X 8 THK. (TOP)					REF DET - A
B3	850	350	12	28		REF DET - B
B3A	850	400	12	25		
B4	-	-	-	-	MB-500	I
B5	-	-	-	-	MB-300	
B6	-	-	-	-	MB-400	
B7	850	300	12	25		REF DET - B
B8	700	250	12	25		
B9	350	350	10	12		
BKT-1	500	250	12	16		

DETAIL-A



DETAIL-B

NOTES:-

1. ALL DIMENSIONS ARE IN MM & ELEVATIONS IN METERS UNLESS STATED OTHERWISE.
2. ALL ELEVATIONS ARE REFERRED TO THE FINISHED FLOOR LEVEL OF POWER HOUSE BUILDING AS EL.(±)0.00 M WHICH CORRESPONDS TO RL.(+)209.50M ABOVE M.S.L.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH CONTRACT TERMS AND CONDITIONS, TECHNICAL SPECIFICATIONS AND SCHEDULE OF ITEMS.
4. FOR OTHER NOTES AND STD. DETAILS REF. DRG. PE-DG-508-600-C002 (NTPC DRG NO. NTPC NO. 9587-001-315-PVC-C-0001)
5. CONNECTION DETAILS SHOWN ARE INDICATIVE ONLY. SIZE & THICKNESS OF GUSSETS, NO. & DIA. OF CONNECTION BOLTS ETC. SHALL BE SHOWN IN CORRESPONDING FABRICATION DRG.
6. ALL ELEVATIONS ARE TO THE TOP OF STEEL (U.N.O.)
7. ALL BOLTED FIELD CONNECTIONS ARE TO BE DONE WITH HSFG BOLTS (U.N)
8. STRUCTURAL STEEL ROLLED SECTIONS SHALL CONFORM TO GRADE DESIGNATION E-250 & STRUCTURAL STEEL PLATES SHALL CONFORM TO GRADE DESIGNATION E-250.

ENGINEERING REFERENCE DRAWINGS :-

1. BHEL DWG NO. PE-DG-508-100-M001 (NTPC DWG NO. 9587-001-301-POC-F-001) - PLOT PLAN
2. BHEL DWG NO. IS-1-GA-767-116-M032 (NTPC DWG NO. 9587-001-155-PVM-B-032) - LOAD DATA FOR BUNKER FLOORS OF UNIT#3 & 4 (SH-1 TO SH-4)

CONSTRUCTION REFERENCE DRAWINGS

1. BHEL DWG NO. PE-DG-508-616-C010 (NTPC DWG NO.9587-001-315-PVC-C-0247) -BUNKER BAY - FRAMING PLAN OF FEEDER FLOOR
2. BHEL DWG NO. PE-DG-508-616-C004 (NTPC DWG NO.9587-001-315-PVC-C-0242) -BUNKER'S BAY - R.C.C. DTLS OF FEEDER FLOOR
3. BHEL DWG NO. PE-DG-508-616-C005 (NTPC DWG NO. NTPC NO. 9587-001-315-PVC-C-0243) -BUNKER'S BAY - R.C.C. DTLS OF TRIPPER FLOOR
4. BHEL DWG NO. PE-DG-508-616-C012 (NTPC DWG NO. NTPC NO. 9587-001-315-PVC-C-0249) -BUNKER BAY - FRAMING PLAN OF BUNKER ROOF.
5. BHEL DWG NO. PE-DG-508-616-C006 (NTPC DWG NO. NTPC NO. 9587-001-315-PVC-C-0244) -BUNKER'S BAY - R.C.C. DTLS OF BUNKER ROOF.
6. BHEL DWG NO. PE-DG-508-616-C007 (NTPC DWG NO. 9587-001-315-PVC-C-0245) -BUNKER'S BAY- LONGITUDINAL FRAMING ARRANGEMENT.
7. BHEL DWG NO. PE-DG-508-616-C008 (NTPC DWG NO. 9587-001-315-PVC-C-0246) -BUNKER'S BAY- TRANSVERSE FRAMING ARRANGEMENT.
8. BHEL DWG NO. PE-DG-508-616-C014 (NTPC DWG NO. NTPC NO. 9587-001-315-PVC-C-0251) -BUNKER'S BAY- G.A. OF BUNKERS & SUPPORTING DETAILS .

BHEL-PROJECT ENGINEERING MANAGEMENT (EMD)
THIS DRAWING MARKED(✓) IS RELEASED FOR
☑ COMMENTS/APPROVAL
☐ PLANNING/INFORMATION
☐ CONSTRUCTION
STAMP ALL PREVIOUS REVISION AS SUPERSEDED
ISSUED BY
NAME: AMIT THAKUR
SIGNATURE: -SD-
DATE: 06.07.2024

JOB NO. 508
STATUS CONTRACT
PRIME SCALE IN METRE

NTPC DRG. NO. 9587-001-315-PVC-C-0248

CUSTOMER: NTPC LIMITED (A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT: LARA SUPER THERMAL POWER PROJECT (2X800MW STAGE-II)

BHARAT HEAVY ELECTRICALS LTD POWER SECTOR PROJECT ENGINEERING MANAGEMENT NOIDA (U.P.)

DESIGN CODE		NAME	SIGNATURE	DATE
C	DRN	YSH	-sd-	03.07.2024
	DESN	BKS	-sd-	03.07.2024
	CHD	AS	-sd-	03.07.2024
	APPD	AK	-sd-	03.07.2024

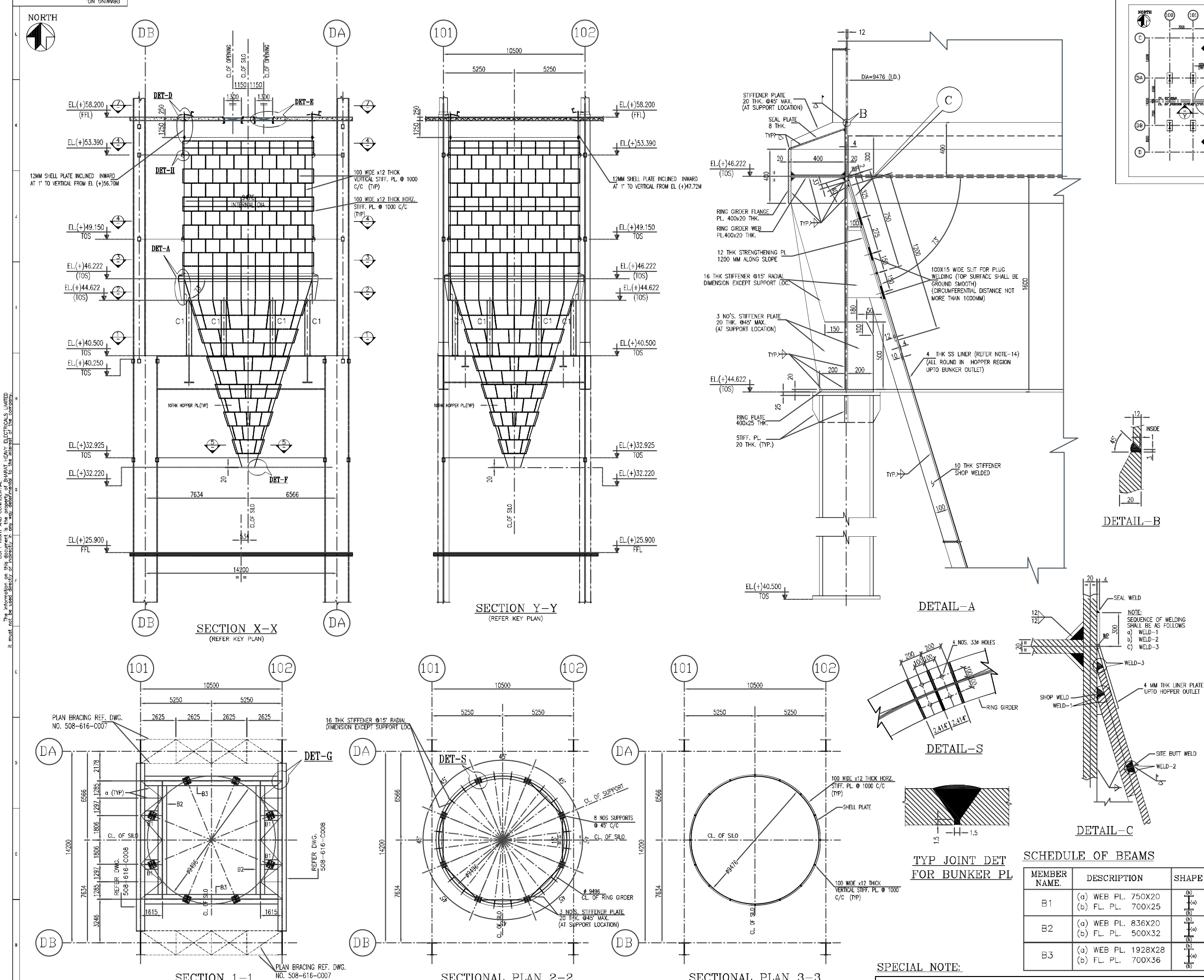
TITLE: MILL & BUNKER BAY (UNIT # 3 & 4)
FRAMING PLAN OF TRIPPER FLOOR

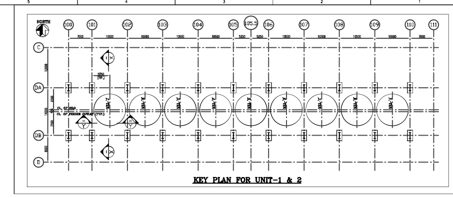
MPL | CIVIL | ELEC | C&I | MSE | MAX | DEPT. | SCALE:- | DRAWING NO. PE-DG-508-616-C011
SIGN / DATE | SHEET 2 OF 2 | REV. R0

FORMAT SIZE A0

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM





NOTES:-

1. ALL DIMENSIONS ARE IN MM & ELEVATIONS IN METERS UNLESS STATED OTHERWISE.
2. ALL ELEVATIONS ARE REFERRED TO THE FINISHED FLOOR LEVEL OF POWER HOUSE BUILDING AS EL.(±)0.00 M WHICH CORRESPONDS TO RL.(+)209.50M ABOVE M.S.L.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH CONTRACT TERMS AND CONDITIONS, TECHNICAL SPECIFICATIONS AND SCHEDULE OF ITEMS.
4. FOR OTHER NOTES AND STD. DETAILS REF. DRG. PE-DG-508-600-C002 (NTPC DRG NO. NTPC NO. 9587-001-315-PVC-C-0001)
5. CONNECTION DETAILS SHOWN ARE INDICATIVE ONLY. SIZE & THICKNESS OF GUSSETS, NO. & DIA. OF CONNECTION BOLTS ETC. SHALL BE SHOWN IN CORRESPONDING FABRICATION DRG.
7. ALL ELEVATIONS ARE TO THE TOP OF STEEL (U.N.O.)
8. ALL BOLTED FIELD CONNECTIONS ARE TO BE DONE WITH HSFG BOLTS OF PROPERTY CLASS 8.8.(U.N)
9. PROPER CARE SHALL BE TAKEN IN WELDING OF BUNKER PLATES. HORIZONTAL & VERTICAL JOINTS IN BUNKER & HOPPER SHALL BE SUBJECT TO NDT AS PER FQP.
10. VERTICAL JOINTS IN BUNKER PL SHALL BE STAGGERED.
11. PLATE SHALL BE CUT TO MAX WIDTH TO REDUCE NUMBER OF JOINTS.
12. BEFORE COMMENCING REGULAR FABRICATION OF THE BUNKER TRIAL ASSEMBLY AT SITE OF THE BUNKER INCLUDING HOPPER SHALL BE MADE ATLEAST FOR ONE BUNKER.
13. ALL END CONNECTIONS FOR BRCG SHALL BE DESIGNED FOR FULL TENSILE STRENGTH OF MEMBERS.
14. MINIMUM THICKNESS OF STAINLESS STEEL LINERS ON THE ENTIRE INNER SURFACE OF HOPPER WALL SHALL BE 4MM CONFORMING TO ASTM A240 S304 (TYPE 304) WITH MILL FINISH GRADE 2B COLD ROLLED, ANNEALED, DESCALED (PICKLED) AND SKIN PASSED.
15. PLUG WELD IN SST LINER PLATE SHALL BE GROUND SMOOTH TO MATCH WITH PLATE PROFILE.
16. ALL BUTT WELD OF BUNKER SUPPORTING STRUCTURE SHALL BE 100% RADIOGRAPHED. ELECTRODE E308L FOR WELD JOINTS BET SST PLATES & E309L FOR WELD JOINTS BETWEEN SST PL & MS PLATE.
17. SPOT RADIOGRAPHY FOR BUTT WELDS SHALL BE CARRIED OUT IN TENSION ZONE AND IN COMPRESSION ZONE AS PER FQP.
18. ALL SITE FILLET WELDS OF BUNKER AND BUNKER SUPPORTING GIRDERS/BEAMS AS PER FQP.
19. ADEQUATE TEMPORARY STIFFENER TO BE PRORATED TO AVOID BUCKLING DISTORTION OF BUNKER STRUCTURE DURING FABRICATION, HANDLING AND ERECTION STAGE.
20. VERTICAL JOINT IN SIDE PLATE SHALL BE STAGGERED.
21. 100% TESTING OF SITE BUTT WELDS REQUIRED .
22. UNLESS NOTED OTHERWISE ALL STRUCTURAL STEEL WORK SHALL BE OF MILD STEEL (Fe 350) CONFORMING TO IS:2062.
23. ALL STRUCTURAL ROLLED STEEL SECTIONS SHALL BE OF MILD STEEL (E-250) CONFORMING TO IS:2062. (U.N.O.)
24. STRUCTURAL STEEL PLATE SECTIONS SHALL CONFORM TO GRADE DESIGNATION E-350. (U.N.O.)

ENGINEERING REFERENCE DRAWINGS :-

1. BHEL DWG NO. PE-DG-508-100-M001 (NTPC DWG NO. 9587-001-301-POC-F-001) ----- PLOT PLAN
2. BHEL DWG NO. 0-00-022-77784 (NTPC DWG NO. 9587-001-102-PVM-B-007) GENERAL ARRANGEMENT OF BOILER - PLAN "A-A"
3. BHEL DWG NO. CB-1S ----- BUNKER PROFILE
4. BHEL DWG NO. IS-1-GA-767-100-M032 (NTPC DWG NO. 9587-001-155-PVM-B-M032) LOAD DATA FOR BUNKER FLOORS OF UNIT#1,2

CONSTRUCTION REFERENCE DRAWINGS

1. BHEL DWG NO. PE-DG-508-616-C004 (NTPC DWG NO.9587-001-315-PVC-C-0242) -BUNKER'S BAY- R.C.C. DETAILS OF FEEDER FLOOR.
2. BHEL DWG NO. PE-DG-508-616-C005 (NTPC DWG NO. 9587-001-315-PVC-C-0243) -BUNKER'S BAY- R.C.C. DETAILS OF TRIPPER FLOOR.
3. BHEL DWG NO. PE-DG-508-616-C006 (NTPC DWG NO. 9587-001-315-PVC-C-0244) -BUNKER'S BAY - R.C.C. DTLS OF ROOF.
4. BHEL DWG NO. PE-DG-508-616-C007 (NTPC DWG NO. 9587-001-315-PVC-C-0245) -BUNKER'S BAY- LONGITUDINAL FRAMING ARRANGEMENT.
5. BHEL DWG NO. PE-DG-508-616-C008 (NTPC DWG NO. 9587-001-315-PVC-C-0246) -BUNKER'S BAY- TRANSVERSE FRAMING ARRANGEMENT.
6. BHEL DWG NO. PE-DG-508-616-C010 (NTPC DWG NO. 9587-001-315-PVC-C-0247) -BUNKER'S BAY- FRAMING PLAN OF FEEDER FLOOR.
7. BHEL DWG NO. PE-DG-508-616-C011 (NTPC DWG NO. 9587-001-315-PVC-C-0248) -BUNKER'S BAY- FRAMING PLAN OF TRIPPER FLOOR.
8. BHEL DWG NO. PE-DG-508-616-C012 (NTPC DWG NO. 9587-001-315-PVC-C-0249) -BUNKER'S BAY- RAMING PLAN OF BUNKER ROOF..
9. BHEL DWG NO. PE-DG-508-616-C013 (NTPC DWG NO. 9587-001-315-PVC-C-0250) -BUNKER'S BAY- CLADDING AND MIS.DETAILS

READ THIS DRAWING IN CONJUNCTION WITH SH 2 OF 2

TOTAL STRUCTURAL STEEL = 2x1160= 2320 T
TOTAL 4mm THICK SS LINER = 2x91= 182 T

LEGEND:

1. TOS = TOP OF STEEL
2. BOS = BOTTOM OF STEEL
3. C/C = CENTRE TO CENTRE
4. PL = PLATE
5. TH. = THICK
6. UNO = UNLESS NOTED OTHERWISE
7. TYP. = TYPICAL
8. ℄ = CENTER LINE
9. EL = ELEVATION
10. LVL = LEVEL

SCHEDULE OF BEAMS

MEMBER NAME.	DESCRIPTION	SHAPE
B1	(a) WEB PL. 750X20 (b) FL. PL. 700X25	
B2	(a) WEB PL. 836X20 (b) FL. PL. 500X32	
B3	(a) WEB PL. 1928X28 (b) FL. PL. 700X36	

SPECIAL NOTE:

BHEL HEREBY CONFIRMS THAT THIS DRAWING MEETS ALL THE CONTRACT REQUIREMENTS INCLUDING SAFETY & STATUARY REQUIREMENTS& FACILITATE EASE OF OPERATION & MAINTENANCE. IN CASE ANY DEVIATION IS FOUND,THE CONTRACTOR SHALL CARRY OUT ALL REQUIRED CHANGES/MODIFICATIONS WITHOUT ANY COST IMPLICATIONS TO NTPC.

BHEL-PROJECT ENGINEERING MANAGEMENT(CIVIL)
THIS DRAWING MARKED(✓) IS RELEASED FOR
☑ COMMENTS/APPROVAL ☐ FABRICATION
☐ PLANNING ☐ INFORMATION
☐ CONSTRUCTION ☐ AS BUILT DRAWING
STAMP ALL PREVIOUS REVISION AS SUPERSEDED
ISSUED BY
NAME: AMIT THAKUR
SIGNATURE: -Sd-
DATE: 28.05.2024

NTPC DRG. NO.: NTPC NO. 9587-001-315-PVC-C-0251

CUSTOMER: NTPC LIMITED (A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT: LARA SUPER THERMAL POWER PROJECT (2X800MW STAGE-II)

JOB NO. 508
STATUS CONTRACT
PRINT SCALE IN METRE

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA (U.P.)

DEPT CODE: C

	NAME	SIGNATURE	DATE
DRN	VIKAS	--sd--	21.05.2024
DESN	BKS	--sd--	20.05.2024
CHD	AT	--sd--	22.05.2024
APPD	KK	--sd--	24.05.2024

TITLE: MILL BUNKER BUILDING STRUCTURES
G.A. OF BUNKERS & SUPPORTING DETAILS

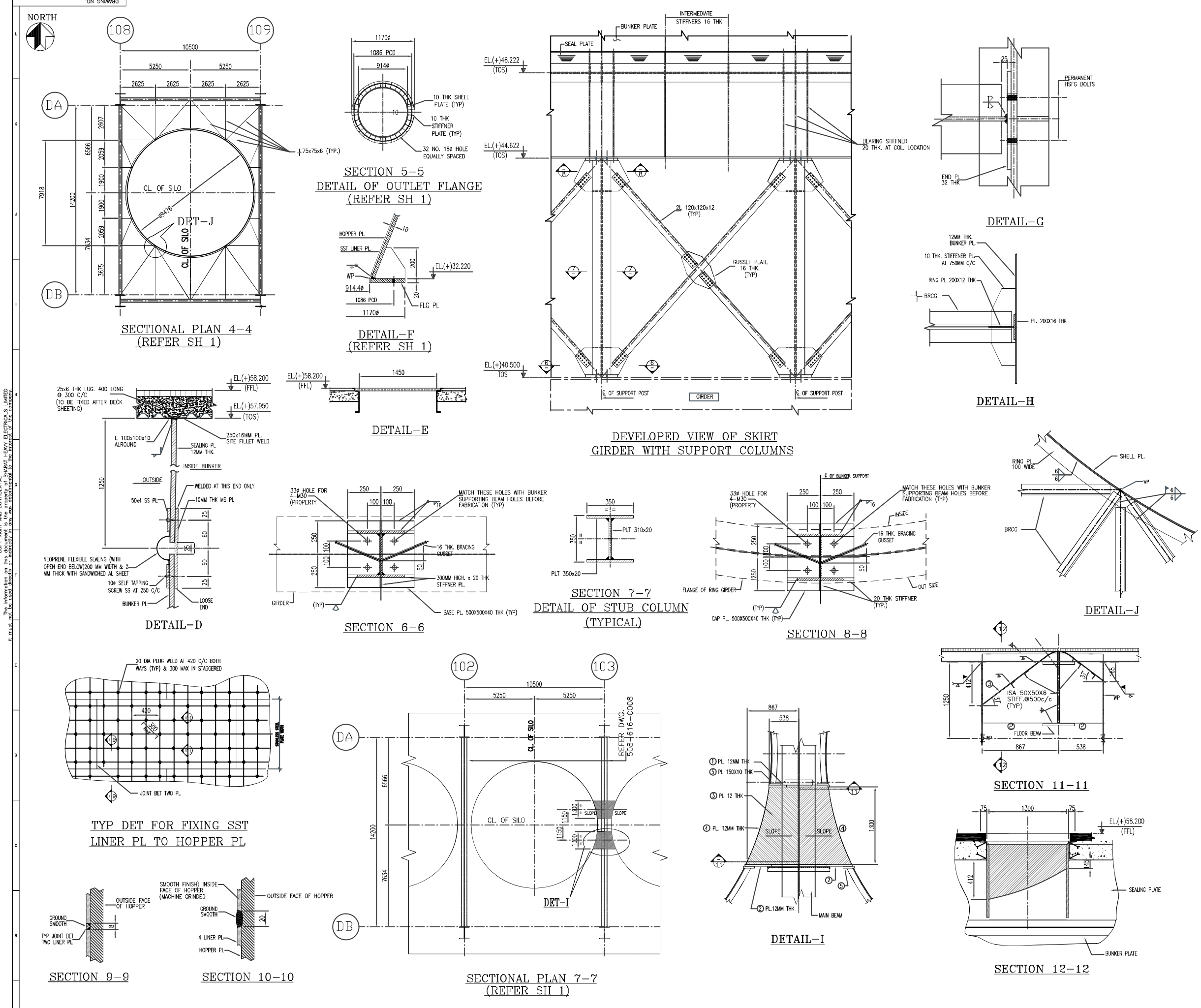
DRAWING NO. PE-DG-508-616-C014
SHEET 1 OF 2 REV. R0

FORMAT SIZE A0

May 28, 2024 - 5:29pm

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM



FOR NOTES REFER SHEET 1 OF 2

READ THIS DRAWING IN CONJUNCTION WITH SH 1 OF 2

BHEL-PROJECT ENGINEERING MANAGEMENT(CIVIL)

THIS DRAWING MARKED(✓) IS RELEASED FOR

- [x] COMMENTS/APPROVAL
- [ ] FABRICATION
- [ ] PLANNING
- [ ] INFORMATION
- [ ] CONSTRUCTION
- [ ] AS BUILT DRAWING

STAMP ALL PREVIOUS REVISION AS SUPERSEDED

ISSUED BY

NAME	AMIT THAKUR
SIGNATURE	-Sd-
DATE	28.05.2024

NTPC DRG. NO. NTPC NO. 9587-001-315-PVC-C-0251

CUSTOMER: NTPC LIMITED (A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT: LARA SUPER THERMAL POWER PROJECT (2X800MW STAGE-II)

JOB NO. 508

STATUS CONTRACT

PRINT SCALE IN METRE

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA (U.P.)

DEPT CODE C

	NAME	SIGNATURE	DATE
DRN	VIKAS	--sd--	21.05.2024
DESN	BKS	--sd--	20.05.2024
CHD	AT	--sd--	22.05.2024
APPD	KK	--sd--	24.05.2024

TITLE: MILL BUNKER BUILDING STRUCTURES
G.A. OF BUNKERS & SUPPORTING DETAILS

MPL	CIVIL	ELEC	C&I	MSE	MAX	DEPT.	SCALE-
						SIGN DATE	

DRAWING NO. PE-DG-508-616-C014

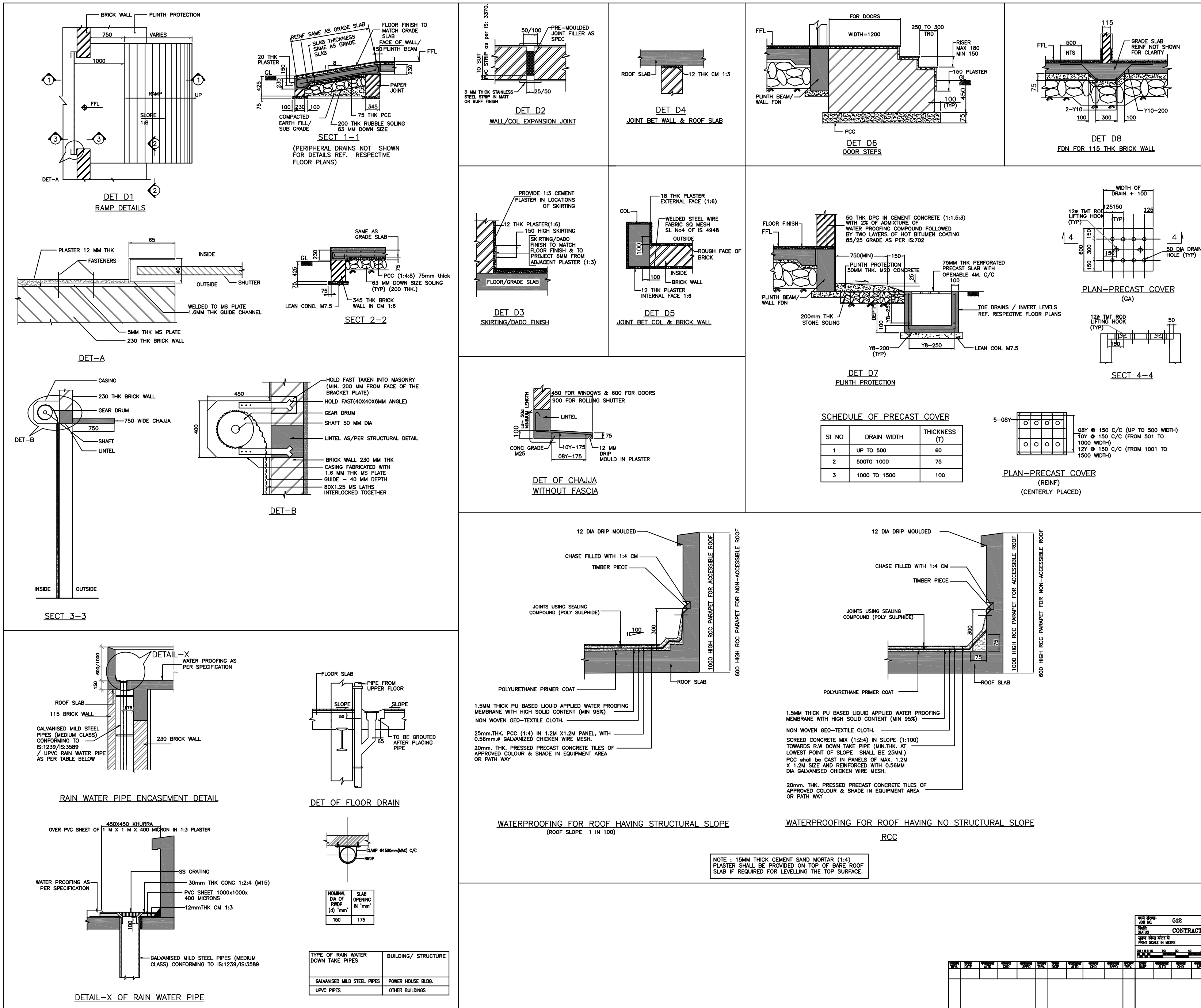
SHEET 2 OF 2 REV. R0

FORMAT SIZE A0

May 28, 2024 - 5:29pm

फर्स्ट एंगल प्रोजेक्शन/FIRST ANGLE PROJECTION

सभी माप मि मी में हैं/ALL DIMENSIONS ARE IN MM



SCHEDULE OF PRECAST COVER

SI NO	DRAIN WIDTH	THICKNESS (T)
1	UP TO 500	60
2	500TO 1000	75
3	1000 TO 1500	100

NOMINAL DIA OF RWDP (d) 'mm'	SLAB OPENING IN 'mm'
150	175

TYPE OF RAIN WATER DOWN TAKE PIPES	BUILDING/ STRUCTURE
GALVANISED MILD STEEL PIPES	POWER HOUSE BLDG.
UPVC PIPES	OTHER BUILDINGS

NOTES

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH CONTRACT TERMS AND CONDITIONS, TECHNICAL SPECIFICATIONS AND SCHEDULE OF ITEMS.
2. ALL DIMENSIONS ARE IN MILLIMETRES & LEVELS ARE IN METRES, UNLESS STATED OTHERWISE..

SYMBOL & ABBREVIATION

&	AND	FC.	FALSE CEILING
@	AT	GA	GENERAL ARRANGEMENT
AL.	ALUMINIUM	GL.	GROUND LEVEL
ARCH.	ARCHITECTURAL	GGL	GRADED GROUND LEVEL
AW	ALUMINIUM WINDOW	HPP	HIGHEST POINT OF PAVEMENT
AC	AIR CONDITIONING	LVL	LEVEL
BLDG.	BUILDING	MS	MILD STEEL
C.I	CAST IRON	MH	MAN HOLE
CM	CEMENT MORTAR	N	NORTH
COL.	COLUMN	NGL	NATURAL GROUND LEVEL
CONC.	CONCRETE	N.T.S	NOT TO SCALE
DET.	DETAIL	PCC	PLAIN CEMENT CONCRETE
DIA.	DIAMETER	RCC	REINFORCED CEMENT CONCRETE
DN.	DOWN	RL	REDUCED LEVEL
DPC	DAMP PROOF COURSE	RWDP	RAIN WATER DOWN TAKE PIPE
DWG.	DRAWING	SEC	SECTION
D	DOOR	THK.	THICKNESS
E	EAST	TYP.	TYPICAL
EL.	ELEVATION (HEIGHT)	TOP	TOP OF PARAPET
ENT.	ENTRANCE	TOFF	TOP OF FALSE FLOORING
EQ.	EQUAL	TOR	TOP OF ROAD
FFL	FINISHED FLOOR LEVEL	V	VENTILATOR
FGL	FINISHED GROUND LEVEL	W	WINDOW
FL.	FLOOR	WPC	WATER PROOFING COURSE
FF.	FALSE FLOORING		

BHEL-PROJECT ENGINEERING MANAGEMENT(CIVIL)
THIS DRAWING MARKED(✓) IS RELEASED FOR
☑ COMMENTS/APPROVAL ☐ FABRICATION
☐ PLANNING ☐ INFORMATION
☐ CONSTRUCTION ☐ AS BUILT DRAWING
STAMP ALL PREVIOUS REVISION AS SUPERSEDED
ISSUED BY
NAME: SACHIN JAIN
SIGNATURE: -Sd-
DATE: 05.07.2024

ग्राहक ड्राइंग संख्या / CUSTOMER DRAWING NO. 1150-001-315-PVC-C-0151A

ग्राहक/CUSTOMER: एन टी पी सी लिमिटेड / N T P C LIMITED

जॉब संख्या / JOB NO. 512 — स्थिति / STATUS: CONTRACT

परियोजना / PROJECT: 2x800 मेगावाट सिंगरौली सुपर थर्मल पावर परियोजना चरण-III / 2x800MW SINGRAULI SUPER THERMAL POWER PROJECT STAGE-III

भारत हेवी इलेक्ट्रिकल्स लिमिटेड / BHARAT HEAVY ELECTRICALS LTD
पावर सेक्टर/POWER SECTOR
परियोजना अभियांत्रिकी प्रबंधन / PROJECT ENGINEERING MANAGEMENT
नोएडा (उ॰प्र॰)/NOIDA (U.P.)

DEPT CODE: C

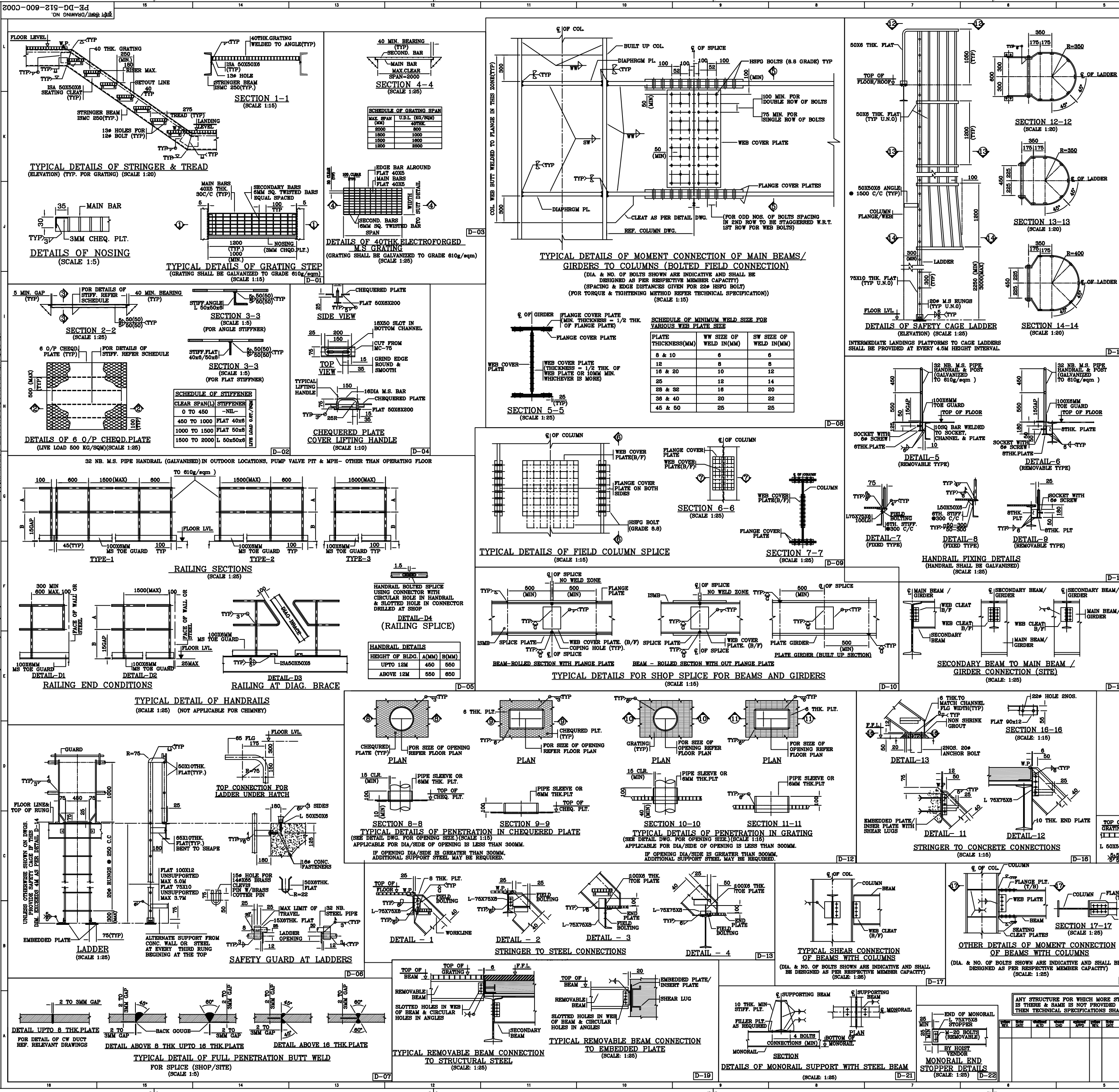
	नाम NAME	हस्ताक्षर SIGNATURE	दिनांक DATE
तैयारकर्ता/DRN	OM	-sd-	05.07.2024
डिजाइनकर्ता/DESN	AR	-sd-	05.07.2024
जाँचकर्ता/CHD	SJ/AR	-sd-	05.07.2024
अनुमोदनकर्ता/APPD	KK/DKM	-sd-	05.07.2024

शीर्षक/TITLE: POWER HOUSE BUILDING
GENERAL NOTES AND STANDARD DETAILS FOR ARCHITECTURAL WORKS

ड्राइंग संख्या / DRAWING NO. PE-DG-512-600-C003
शीट / SHEET 1 OF 1 — पुनरीक्षण / REV. 0

फर्स्ट एंगल प्रोजेक्शन/FIRST ANGLE PROJECTION

सभी माप मि मी में है/ALL DIMENSIONS ARE IN MM



GENERAL NOTES FOR STRUCTURAL STEEL AND MISCELLANEOUS STEEL WORKS

1.0 GENERAL

1. ALL DIMENSIONS ARE IN MILLIMETERS EXCEPT FLOOR ELEVATIONS AND PLANT GRID WHICH ARE IN METERS, UNLESS STATED OTHERWISE.
2. EL(+)0.000 REFERS TO FINISHED FLOOR LEVEL OF POWER HOUSE BUILDING WHICH CORRESPONDS TO RL(+)276.500 M.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT ARCHITECTURAL, CIVIL AND STRUCTURAL DRAWINGS, SPECIFICATIONS & SCHEDULE OF ITEMS.
4. ALL CONSTRUCTION WORKS SHALL CONFORM TO THE REQUIREMENTS OF RELATED SPECIFICATIONS AND DRAWINGS BEFORE START OF WORK.
5. ALL BIS CODES REFERED IN THIS DRAWING SHALL BE THE LATEST ISSUE INCLUSIVE OF ALL OFFICIAL AMENDMENTS.
6. THE FABRICATION & ERECTION OF STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH IS 800:2007 CODE OF PRACTICE FOR GENERAL CONSTRUCTION IN STEEL AND NBC 2016 AND AS SPECIFIED IN THE CONTRACT TECHNICAL SPECIFICATIONS.

2.0 MATERIAL SPECIFICATION

1. ALL STRUCTURAL STEEL SHALL BE STRAIGHT, SOUND, FREE FROM TWISTS, BURRS, RUST, CRACKS, FLAWS AND ALL OTHER DEFECTS BEFORE ERECTION.
2. ALL STRUCTURAL STEEL AND PLATES SHALL CONFORM TO IS: 2062:2011 (REFER NOTE 9). DIFFERENT GRADES AS PER SPECIFICATION SHALL BE USED APPROPRIATELY.
3. ALL MILD STEEL BLACK BOLTS SHALL BE OF PROPERTY CLASS 4.6 CONFIRMING TO IS: 1367& GRADE C CONFIRMING TO IS:1363.
4. ALL HIGH STRENGTH STRUCTURAL BOLTS SHALL BE OF PROPERTY CLASS 8.8& CLASS 10.9 CONFIRMING TO IS: 1367 AND SHALL BE SUPPLIED CONFORMING TO IS: 3757: 1985.
5. ALL NUTS SHALL BE OF HEAVY DUTY HEXAGONAL TYPE AND SHALL BE COMPATIBLE WITH THE BOLTS. MS NUTS SHALL BE OF CARBON STEEL PRODUCT GRADE-C OF IS: 1363 AND OF PROPERTY CLASS 5 OF IS: 1367.
6. ALL NUTS & WASHERS FOR HIGH STRENGTH BOLTS (H.S.F.G.) SHALL CONFORM TO IS: 6623 & IS: 6649 RESPECTIVELY.
7. WASHERS FOR MILD STEEL BOLTS SHALL BE OF MILD STEEL CONFORMING TO IS: 5369 / IS: 5372 / IS: 5374 OR IS; 2016 AS THE CASE MAY BE.
8. ALL ANCHOR BOLTS SHALL BE OF MILD STEEL OF GRADE 4.6 CONFORMING TO IS: 5624.
9. UNLESS NOTED OTHERWISE IN DRAWINGS ALL SHOP FABRICATED STRUCTURAL AND MISCELLANEOUS STEEL WORK (EXCEPT BUNKER & CHIMNEY FLUE CONE) SHALL CONFORM TO FOLLOWING GRADE & INDIAN STANDARDS.

STRUCTURAL MEMBER TYPE	CODE / GRADE
ROLLED STEEL MEMBERS (SEMI KILLED / KILLED)	IS: 2062 - (GRADE E-250 , QUALITY A/BR)
ROLLED STEEL MEMBERS (FULLY KILLED)	IS: 2062 - (GRADE E-350 , QUALITY B0)
PLATES UPTO 12 MM THICK (FULLY KILLED)	IS: 2062 - (GRADE E-250 , QUALITY BR) / IS: 2062 - (GRADE E-350 , QUALITY B0)
PLATES BETWEEN 12 MM-40MM THICK (FULLY KILLED / NORMALIZED ROLLED)	IS: 2062 - (GRADE E-250 , QUALITY BR) / IS: 2062 - (GRADE E-350 , QUALITY B0)
PLATES BEYOND 40 MM THICK (FULLY KILLED / FURNACE NORMALIZED / VACUUM DEGASSED / UST TESTED	IS: 2062 - (GRADE E-250 , QUALITY BR) / IS: 2062 - (GRADE E-350 , QUALITY B0)
STRUCTURAL HOLLOW SECTIONS (SQUARE/ RECTANGLE) MIN. THK. 4MM.	IS: 4923 - (GRADE Yst 240)
CHEQUERED PLATE (MIN. 6 MM THK.)	CONFORM TO IS: 3502 IS: 2062 - (GRADE E 250A-SEMI KILLED)
STEEL TUBES	IS: 1161
RAIN WATER DOWN TAKE PIPES	IS: 1239 / IS 3589 (GALVANIZED MEDIUM CLASS MILD STEEL PIPES)

IS: 2062 - (PLATES OF GRADE E-250 , QUALITY BR) SHALL BE TESTED FOR IMPACT RESISTANCE AT ROOM TEMP.

10. UNLESS NOTED OTHERWISE IN DRAWINGS ALL SITE FABRICATED STRUCTURAL STEEL WORK (BUNKER, CHIMNEY FLUE & MISCELLANEOUS STRUCTURES NOT COVERED IN NOTE NO. 9) SHALL CONFORM TO FOLLOWING GRADE & INDIAN STANDARDS.

STRUCTURAL MEMBER TYPE	CODE / GRADE
ROLLED STEEL MEMBERS (SEMI KILLED / KILLED)	IS: 2062 - (GRADE E-250 , QUALITY A/BR)
ROLLED STEEL MEMBERS (FULLY KILLED)	IS: 2062 - (GRADE E-350 , QUALITY B0)
PLATES UPTO 12 MM THICK (FULLY KILLED)	IS: 2062 - (GRADE E-250 , QUALITY BR) / IS: 2062 - (GRADE E-350 , QUALITY B0)
PLATES BETWEEN 12 TO 40MM THICK (FULLY KILLED / NORMALIZED ROLLED)	IS: 2062 - (GRADE E-250 , QUALITY BR) / IS: 2062 - (GRADE E-350 , QUALITY B0)
PLATES BEYOND 40 MM THICK (FULLY KILLED / FURNACE NORMALIZED / VACUUM DEGASSED / UST TESTED	IS: 2062 - (GRADE E-250 , QUALITY BR) / IS: 2062 - (GRADE E-350 , QUALITY B0)
STAINLESS STEEL LINER OF BUNKER (4MM THK.)	ASTM A240 S304 (TYPE 304)

IS: 2062 - (PLATES OF GRADE E-250 , QUALITY BR) SHALL BE TESTED FOR IMPACT RESISTANCE AT ROOM TEMP.

3.0 JOINTS & CONNECTIONS

1. ALL CONNECTIONS SHALL BE DEVELOPED IN LINE WITH GOOD ENGINEERING PRACTICE AND SHALL BE SUBJECT TO THE APPROVAL OF ENGINEER.
2. ALL SHOP CONNECTIONS SHALL BE WELDED, UNLESS OTHERWISE NOTED.
3. ALL FIELD CONNECTIONS SHALL BE BOLTED WITH HIGH STRENGTH FRICTION GRIP (H.S.F.G.) BOLTS OF GRADE 8.8 & 10.9 CONFORMING TO IS:1367 FOR ALL MAJOR CONNECTIONS. ALL NOMINAL CONNECTIONS IN THE FIELD LIKE PURLINS, STAIRS, WALL BEAMS ETC. SHALL BE DONE USING M.S. BLACK BOLTS OF GRADE 4.6 CONFORMING TO IS:1367.
4. FOR BOLTED CONNECTIONS, IS:4000, IS:3757, IS:6623 & IS:6649 SHALL BE FOLLOWED AND FOR WELDING OF STRUCTURES IS:814, IS:816, IS:1024, IS:4353 & IS:9595 SHALL BE FOLLOWED. RESPONSE REDUCTION FACTOR FOR EARTHQUAKE CONDITION FOR SPECIAL MOMENT RESISTING FRAME WILL BE TAKEN AS PER IS:1893.
5. THE BOLTED JOINTS SHALL BE DESIGNED FOR THE FRICTION GRIP OR BEARING TYPE. FOR FRICTION GRIP TYPE CONNECTIONS, BOLTS SHALL BE TIGHTENED TO DEVELOP THE REQUIRED PRETENSION DURING THEIR INSTALLATION.
6. ALL BOLTED CONNECTIONS SHALL HAVE MINIMUM TWO BOLTS AND SHALL HAVE BOLTS OF MINIMUM 16 MM DIA.
7. THE HIGH STRENGTH FRICTION GRIP BOLTS SHALL NOT BE LESS THAN 20 MM DIA. AND M.S. BOLTS SHALL NOT BE LESS THAN 16MM DIA.UNLESS NOTED OTHERWISE.
8. ALL SPLICING WORK SHALL BE FULL STRENGTH. FIELD SPLICING SHALL BE DONE WITH WEB AND FLANGE COVER PLATES FOR FULL STRENGTH. SHOP SPLICING FOR ALL SECTIONS OTHER THAN ROLLED SHALL BE CARRIED OUT BY FULL PENETRATION BUTT WELDS WITH NO COVER PLATES. SPLICING FOR ALL ROLLED SECTIONS SHALL BE CARRIED OUT USING FLANGE AND WEB COVER PLATES.
9. MOMENT CONNECTIONS BETWEEN BEAMS& COLUMNS SHALL BE DESIGNATED AS MC. IT IS TO BE DESIGNED FOR THE FULL MOMENT CAPACITY OF THE BEAM SECTION IN ADDITION TO THE AXIAL FORCE INDICATED OR AS CALCULATED BASED ON PROVISIONS OF IS 800:2007 WHICHEVER IS HIGHER.
10. SHEAR CONNECTIONS SHALL BE DESIGNED FOR 60% OF SECTION STRENGTH FOR ROLLED SECTIONS AND 80% OF SECTION STRENGTH FOR BUILT UP SECTIONS OR ROLLED SECTIONS WITH COVER PLATES OR AS CALCULATED BASED ON PROVISIONS OF IS 800:2007 WHICHEVER IS HIGHER.
11. CONNECTIONS OF VERTICAL BRACING MEMBERS AND DIAGONALS OF TRUSS MEMBERS SHALL BE DESIGNED FOR FULL TENSILE CAPACITY OF THE BRACING UNLESS ACTUAL LOADS ARE INDICATED ON THE DRAWING OR AS CALCULATED BASED ON PROVISIONS OF IS 800:2007 WHICHEVER IS HIGHER.
12. THE CONNECTIONS BETWEEN TOP FLANGE AND WEB OF CRANE GIRDER SHALL BE FULL PENETRATION BUTT WELD. BOTTOM FLANGE CONNECTION WITH WEB CAN BE FILLET WELD OR BUTT WELD AS DIRECTED BY ENGINEER.
13. CONNECTION OF BASE PLATE AND ASSOCIATED STIFFENERS WITH THE COLUMNS SHALL BE DESIGNED CONSIDERING THE TOTAL LOAD TRANSFERED THROUGH WELDS. HOWEVER MINIMUM WELD SIZE (DOUBLE FILLET) SHALL NOT BE LESS THAN 0.6 TIMES THE THICKNESS OF STIFFENER.
14. ALL REMOVABLE MEMBERS SHALL HAVE BOLTED CONNECTIONS.
15. WELDING OF STRUCTURAL STEEL SHALL BE DONE BY AN ELECTRIC ARC PROCESS AND SHALL CONFORM TO IS: 816, IS: 9595, IS: 814, IS: 2014,IS: 4354 & INDIAN STANDARD HANDBOOK FOR METAL ARC WELDING ETC.
16. ALL BUTT WELDS SHALL BE FULL PENETRATION BUTT WELD AND SHALL BE ADOPTED TO FULL WIDTH OF THE PLATE.
17. SIZE OF FILLET WELD FOR FLANGE TO WEB CONNECTION FOR BUILT UP SECTIONS SHALL BE AS FOLLOWS:
   a) FOR BUILT UP BOX SECTION WELD SIZE SHALL BE DESIGNED FOR FULL SHEAR CAPACITY OR ACTUAL SHEAR WHICHEVER IS MORE.
   b) FOR BUILT UP I-SECTION WELD SIZE SHALL BE DESIGNED FOR 80% FULL SHEAR CAPACITY OR ACTUAL SHEAR (IF INDICATED IN DRAWING) WHICHEVER IS MORE. HOWEVER WELD SIZE SHALL NOT BE LESS THAN 0.5 TIMES THE WEB THICKNESS. WELD SHALL BE DOUBLE FILLET
18. GUSSET / END PLATES SHALL BE OF FOLLOWING MINIMUM THICKNESS SUBJECT TO DESIGN REQUIREMENTS UNLESS SPECIFIED OTHERWISE:
   a) FOR BEAMS OF DEPTH LESS THAN 450MM : 8MM
   b) FOR BEAMS OF DEPTH 450MM TO 600MM : 10MM
   c) TRUSS / BRACINGS WITH MEMBER THICKNESS 8MM OR LESS : 8MM
   d) TRUSS / BRACINGS WITH MEMBER THICKNESS 10MM OR MORE : 12MM
19. COLUMN SPLICE SHALL BE DESIGNED FOR FULL CAPACITY PLUS 5% ADDITIONAL CAPACITY OF LOWER SECTIONS.
20. ALL WELDS SHALL BE CONTINUOUS AND THE MINIMUM SIZE OF FILLET WELD SHALL BE 6 MM. UNLESS NOTED OTHERWISE.
21. THE LENGTH OF THE FILLET WELDS SHALL BE NOT BE LESS THAN FOUR TIMES THE NOMINAL SIZE OF THE WELD OR 40 MM. WHICHEVER IS HIGHER.
22. FILLET WELDS TERMINATING AT ENDS OR SIDES OF PARTS OR MEMBERS MUST HAVE RETURNS AROUND CORNERS FOR A DISTANCE NOT LESS THAN TWICE THE SIZE OF THE WELD.
23. WELDING ELECTRODES SHALL BE OF LOW HYDROGEN TYPE FOR PLATE THICKNESS ABOVE 20MM..
24. PROPER PRE-HEATING TEMPERATURE SHALL BE MAINTAINED AS PER SPECIFICATIONS DURING WELDING FOR PLATE THICKNESS ABOVE 20MM.
25. THE WELDING SEQUENCE / PROCESS SHALL BE SO ADOPTED THAT NO ACCUMULATION OF RESIDUAL WELDING STRESSES TAKES PLACE IN THE MEMBERS.
26. THE DIAMETER OF BOLT HOLES SHALL ATLEAST BE 2MM MORE THAN DIAMETER OF BOLT UNLESS NOTED OTHERWISE.
27. THE ERECTION CLEARANCE FOR END OF MEMBERS SHALL NOT BE MORE THAN 5MM AT EACH END UNLESS STATED OTHERWISE.
28. IN ALL CASES THE UNTHREADED PORTION OF THE BOLT SHALL BEAR ON THE MEMBER'S CONNECTED. A WASHER OF ADEQUATE THICKNESS MAY BE PROVIDED TO EXCLUDE THE THREAD FROM THE BEARING THICKNESS IF A LARGER GRIP BOLT HAS TO BE USED FOR THIS PURPOSE.
29. FOR ERECTION & TEMPORARY ASSEMBLY M.S. BOLTS SHALL BE USED WHICH SHALL BE REMOVED AFTER ERECTION AND ALL ERECTION BOLT HOLES SHALL BE SUITABLY PLUGGED.
30. FOR COLUMN FOUNDATION BOLTS, AT LEAST DOUBLE NUTS SHALL BE PROVIDED.
31. GRATINGS / CHEQUERED PLATES SHALL BE IMMEDIATELY CONNECTED UPON PLACEMENT (NOT TO LEFT LOOSE) FROM SAFETY CONSIDERATIONS.

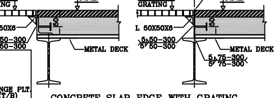
4.0 PAINTING

PAINTING OF STEEL STRUCTURES OTHER THAN THOSE EMBEDDED IN CONCRETE

1. **PRIMER COAT**
   ALL STEEL SURFACES SHALL BE PROVIDED WITH TWO COMPONENT MOISTURE CURING ZINC (ETHYL) SILICATE PRIMER COAT (HAVING MINIMUM 80% OF METALLIC ZINC CONTENT IN DRY FILM, SOLID BY VOLUME MINIMUM 60% ± 2%) OF MINIMUM 70 MICRON DFT TO BE APPLIED OVER BLAST CLEANED SURFACE CONFORMING TO Sa 2½ FINISH OF ISO 8501-1 WITH SURFACE PROFILE 40-60 MICRON. THE PRIMER COAT SHALL BE APPLIED IN SHOP IMMEDIATELY AFTER BLAST CLEANING BY AIRLESS SPRAY TECHNIQUE. ZINC DUST COMPOSITION & PROPERTIES SHALL BE TYPE II AS PER ASTM D520-00.
2. **INTERMEDIATE COAT**
   PRIMER COAT SHALL BE FOLLOWED WITH THE APPLICATION OF INTERMEDIATE COAT OF TWO COMPONENT POLYAMIDE CURED EPOXY WITH MIO CONTENT (CONTAINING LAMELLAR MIO MINIMUM 30% ON PIGMENT, SOLID BY VOLUME MINIMUM 80% ± 2%) OF MINIMUM 100 MICRON DFT. THIS COAT SHALL BE APPLIED AFTER AN INTERVAL OF MINIMUM 24 HOURS (FROM THE APPLICATION OF PRIMER COAT) BY AIRLESS SPRAY TECHNIQUE.
3. **FINAL COAT**
   INTERMEDIATE COAT SHALL BE FOLLOWED WITH THE APPLICATION OF FINISH COAT OF TWO-PACK ALIPHATIC ISOCYANATE CURED ACRYLIC FINISH PAINT (SOLID BY VOLUME MINIMUM 55% ± 2%) WITH GLOSS RETENTION (SSPC PAINT SPEC. NO 36, ASTM D 4587, D 2244, D523) OF LEVEL 2 (AFTER MINIMUM 1000 HOURS OF EXPOSURE, GLOSS LOSS LESS THAN 30 AND COLOR CHANGE LESS THAN 2.0 ΔE) AND MINIMUM 70 MICRON DFT. THIS COAT SHALL BE APPLIED IN SHOP AFTER AN INTERVAL OF MINIMUM 10 HOURS AND WITHIN6 MONTHS (FROM THE COMPLETION OF INTERMEDIATE COAT). COLOR AND SHADE OF THE COAT SHALL BE AS APPROVED BY THE EMPLOYER.
4. **PAINTING OF STEEL STRUCTURES EMBEDDED IN CONCRETE**
   FOR THE PORTION OF STEEL SURFACES EMBEDDED IN CONCRETE, THE SURFACE SHALL BE PREPARED BY MANUAL CLEANING AND PROVIDED WITH PRIMER COAT OF CHLORINATED RUBBER BASED ZINC PHOSPHATE PRIMER OF MINIMUM 50 MICRON DFT.
5. BEFORE DISPATCHING THE FABRICATED STRUCTURAL MEMBERS TO SITE, IT SHALL BE ENSURED THAT ALL PARTS IN THE ASSEMBLY FIT ACCURATELY TOGETHER BY CARRYING OUT PRE-ASSEMBLY OF FABRICATED STRUCTURAL MEMBERS HAVING BOLTED JOINTS IN THE FACTORY.
6. FOR PARTS TO BE BOLTED, THE SURFACES IN CONTACT SHALL BE PROVIDED WITH ETHYL ZINC SILICATE PRIMER AND SHALL BE FREE OF OIL, DIRT, LOOSE RUST, BURRS & OTHER DEFECTS, WHICH WOULD PREVENT PROPER SEATING OF THE PARTS.
7. SURFACES INACCESSIBLE AFTER SHOP ASSEMBLY SHALL RECEIVE THE FULL-SPECIFIED PROTECTIVE TREATMENT BEFORE ASSEMBLY. HOWEVER, BOX-SECTIONS SHALL BE WELDED THROUGHOUT AND SHALL BE PROVIDED WITH END DIAPHRAGM PLATES FOR PROPER SEALING AGAINST INGRESS OF AIR AND MOISTURE AND SO THE INTERIOR SURFACES OF BOX-SECTIONS NEED NOT BE PAINTED.
8. ALL MILD STEEL PARTS COMING IN CONTACT WITH WATER OR WATER VAPOUR SHALL BE HOT DIP GALVANISED. THE MINIMUM COATING OF ZINC SHALL BE 610 G/ SQ.M. FOR GALVANISED STRUCTURES AND SHALL COMPLY WITH IS: 4759 AND OTHER RELEVANT CODES. GALVANISING SHALL BE CHECKED AND TESTED IN ACCORDANCE WITH IS: 2629.
9. ALL GRATINGS SHALL BE BLAST CLEANED TO SA 2 ½ FINISH OR CLEANED BY ACID PICKLING AS PER ISO 8501-1 AND SHALL BE HOT DIP GALVANIZED AT THE RATE OF 610 G/SQ.M.
10. WHERE STEEL IS FULLY ACCESSIBLE FOR CLEANING AND REPAINTING AND WHERE IT IS FEASIBLE TO FOLLOW DESIGN CRITERIA GIVEN IN ISO 12944 PART 3, MINIMUM THICKNESS OF STRUCTURAL STEEL ELEMENTS SHALL BE AS FOLLOWS

Structural Sections	Minimum thickness (mm)	Minimum Flange thickness (mm)	Minimum Web thickness (mm)
Plates	6		
Builtup Sections		6	6
Angle Sections	6		
ISMB / ISMC		6	4.5
NPB / WPB		6	4.5
RHS/ SHS /Tubular Sections	4		
All dimensions in mm			

WHERE STEEL SURFACES ARE INACCESSIBLE FOR CLEANING AND REPAINTING (SUCH AS BACK TO BACK SECTIONS, LAP JOINTS ETC.) OR WHERE IT IS NOT FEASIBLE TO FOLLOW DESIGN CRITERIA GIVEN IN ISO 12944 PART 3, CORROSION ALLOWANCE OF 1.5 MM SHALL BE KEPT IN THICKNESS (OVER THE DESIGN THICKNESS OR MINIMUM THICKNESS SPECIFIED ABOVE, WHICHEVER IS MORE). THE MINIMUM THICKNESS CRITERIA SHALL APPLY FOR BOTH WEB AND FLANGE. ALSO, MINIMUM ANGLE SECTION TO BE USED IS ISA 50X50X6.



ग्राहक ड्राइंग संख्या CUSTOMER DRAWING NO. 1150-001-315-PVC-C-0089A

ग्राहक/CUSTOMER: एन टी पी सी लिमिटेड N T P C LIMITED

परियोजना PROJECT: 2x800 मेगावाट सिंगरौली सुपर थर्मल पावर परियोजना चरण-III 2x800MW SINGRAULI SUPER THERMAL POWER PROJECT STAGE-III

भारत हेवी इलेक्ट्रिकल्स लिमिटेड BHARAT HEAVY ELECTRICALS LTD
पावर सेक्टर/POWER SECTOR
परियोजना अभियांत्रिकी प्रबंधन PROJECT ENGINEERING MANAGEMENT
नोएडा (उ॰प्र॰)/NOIDA (U.P.)

कार्य संख्या- JOB NO. 512 | स्थिति STATUS CONTRACT | DEPT CODE C

	नाम NAME	हस्ताक्षर SIGNATURE	दिनांक DATE
तैयारकर्ता/DRN	SACHIN	-sd-	28/06/2024
डिज़ाइनकर्ता/DESN	KA	-sd-	28/06/2024
जाँचकर्ता/CHD	KK/SJ	-sd-	28/06/2024
अनुमोदनकर्ता/APPD	DKM	-sd-	28/06/2024

शीर्षक/TITLE: GENERAL NOTES FOR STRUCTURAL STEEL WORKS.

ड्राइंग संख्या/ DRAWING NO. PE-DG-512-600-C002 | शीट SHEET 1 OF 1 | पुनरीक्षण REV. 0

Jul 03, 2024 – 2:25pm R0 फॉर्मेट साइज A0 FORMAT SIZE A0

CORPORATE QUALITY ASSURANCE

VENDOR'S PROPOSAL CUM EVALUATION REPORT

ANNEXURE- 4 ***(P4F1R0)***

****Supplier has to submit all the documents as per the annexures cited here and naming philosophy must be as prescribed in this document***

Ref No:			***Date:***	
i.	***Main Contractor***	Bharat Heavy Electricals Limited		
ii.	***Project***	2X800 MW Singrauli Project		
iii.	***Package Name***	Main Power House Structure fabrication and Supply	***Package No***	
iv.	***Proposed Item/Scope of Sub-contracting***	Main Power House Structure fabrication and Supply		
v.	***Item covered under***	***Schedule-1*** ☐	***As per contract clause No-***	
		Schedule-2 ☐		
vi.	***If item is Schedule-1 and proposed sub-vendor is indigenous, Main Contractor to explain how the contractual provisions will be fulfilled***			
vii.	***Name and Address of the proposed Sub-vendor's works: -***			
viii.	***PO placement date/ Start of manufacturing (if self-manufactured) as per L2 network***		***Under evaluation***	

ix.	***Item Description (Type/Size/Rating/Scope of Sub-Contracting)***	***Total quantity of proposed item envisaged in this package (Nos/ Running Meters/ Kgs/ Tons etc)***	***Quantity proposed to be procured from proposed sub-vendor (Nos/ Running Meters /Kgs /Tons etc)***	***Timeline for quantity requirements as per project schedule & whether the proposed Sub-vendor equipped with adequate capacity to supply proposed order quantity in time***
	Main Power House Structure fabrication and Supply	30071 MT	16521 MT	26 Months contract period; Sub vendor is equipped to supply the proposed quantity.

x. Supply experience of the proposed sub-vendor (including supplies to Main Contractor, if any) for similar item/scope of sub-contracting, for last 3 years (Note:- Only relevant experience details w.r.t. proposed item/scope of subcontracting to be brought out here)

Project/Package	***Customer Name***	***Supplied Item (Type/Rating/Model /Capacity/Size etc)***	***PO ref no/date***	***Supplied Quantity***	***Date of Supply***

We confirm that as per our assessment, the proposed sub-vendor has requisite capabilities & supply experience and is suitable for supplying the proposed item/scope of sub-contracting.

Name :		***Desig:***		***Contact No:***		***Sign:***		***Date:***	

Company's Seal/Stamp:-

CORPORATE QUALITY ASSURANCE
VENDOR QUESTIONNAIRE

ANNEXURE-5 ***(P4F2R0)***

****Supplier has to submit all the documents as per the annexures cited here and naming philosophy must be as prescribed in this document***

i.	***Item/Scope of Sub-contracting***	Main Power House Structure fabrication and Supply		
ii.	***Address of the registered office***		***Details of Contact Person*** ***(Name, Designation, Mobile, Email)***	
iii.	***Name and Address of the proposed Sub-vendor's works where item is being manufactured***		***Details of Contact Person:*** ***(Name, Designation, Mobile, Email)***	
iv.	***Annual Production Capacity for proposed item/scope of sub-contracting***			
v.	***Annual production for last 3 years for proposed item/scope of sub-contracting***			
vi.	***Details of proposed works***			
1.	***Year of establishment of present works***			
2.	***Year of commencement of manufacturing at above works***			
3.	***Details of change in Works address in past (if any)***			
4.	***Total Area***			
	Covered Area			
5.	***Factory Registration Certificate***		***(Details to be attached as Annexure – F2.1)***	
6.	***Design/ Research & development set-up (No. of manpower, their qualification, machines & tools employed etc.)***		***Applicable / Not applicable if manufacturing is as per Main Contractor/purchaser design) (Details to be attached as Annexure – F2.2) (if applicable)***	
7.	***Overall organization Chart with Manpower Details (Design/Manufacturing/Quality etc.)***		***(Details to be attached as Annexure – F2.3)***	

8.	***After sales service set up in India, in case of foreign sub-vendor*** ***(Location, Contact Person, Contact details etc.)***	***Applicable / Not applicable*** ***(Details to be attached as Annexure – F2.4)***
9.	***Manufacturing process execution plan with flow chart indicating various stages of manufacturing from raw material to finished product including outsourced process, if any.***	***(Details to be attached as Annexure – F2.5)***
10.	***Sources of Raw Material/Major Bought Out Item***	***(Details to be attached as Annexure – F2.6)***
11.	***Quality Control exercised during receipt of raw material/BOI, in-process, Final Testing, packing***	***(Details to be attached as Annexure – F2.7)***
12.	***Manufacturing facilities*** ***(List of machines, special process facilities, material handling etc.)***	***(Details to be attached as Annexure – F2.8)***
13.	***Testing facilities*** ***(List of testing equipment)***	***(Details to be attached as Annexure – F2.9)***
14.	***If manufacturing process involves fabrication then-*** ***List of qualified Welders*** ***List of qualified NDT personnel with area of specialization***	***(Details to be attached as Annexure – F2.10)*** ***(if applicable)***
15.	***List of out-sourced manufacturing processes with Sub-Vendors' names & addresses***	***Applicable / Not applicable*** ***(Details to be attached as Annexure –F2.11)*** ***(if applicable)***
16.	***Supply reference list including recent supplies***	***Details to be attached as Annexure – F2.12*** ***(as per format given below)***

Project/ package	*Customer Name*	*Supplied Item (Type/Rating/Model /Capacity/Size etc)*	*PO ref no/date*	*Supplied Quantity*	*Date of Supply*

17.	***Product satisfactory performance feedback letter/certificates/End User Feedback***	***(Details to be attached as Annexure - F2.13)***

18.	***Summary of Type Test Report (Type Test Details, Report No, Agency, Date of testing) for the proposed product (similar or higher rating)*** ***Note: - Reports need not to be submitted***	***Applicable / Not applicable*** ***(Details to be attached as Annexure – F2.14)*** ***(if applicable)***
19.	***Statutory / mandatory certification for the proposed product***	***Applicable / Not applicable*** ***(Details to be attached as Annexure – F2.15)*** ***(if applicable)***
20.	***Copy of ISO 9001 certificate (if available)***	***(Details to be attached as Annexure – F2.16)***
21.	***Product technical catalogues for proposed item (if available)***	***(Details to be attached as Annexure – F2.17)***

Name:		***Desig:***		***Sign:***		***Date:***	

Company's Seal/Stamp:-