BTG & AUXILIARIES

adani	**OWNER** MAHAN ENERGEN LIMITED(MEL) 2x800 MW ULTRA SUPER CRITICAL THERMAL POWER PROJECT, MAHAN (PHASE-II), SINGRAULI, M.P.
TATA	**OWNER'S ENGINEER** TATA CONSULTING ENGINEERS LIMITED
BHEL	**BTG CONTRACTOR** BHARAT HEAVY ELECTRICALS LTD. **CUSTOMER NO: U8-1832/1833, UNIT – I & II**
LOGO	**SUB-CONTRACTOR / SUB-SUPPLIER** Not Applicable

PLANT	**HIGH PRESSURE BOILER PLANT, TIRUCHIRAPPALLI**
DOCUMENT TITLE	**PAINTING SCHEDULE**
OWNER DOC. NO.	**552H-E-BTG-BOA-DM-S-V-0001**
CONTRACTOR / SUPPLIER DOC. NO.	**PL:C3-PS/1832**
PACKAGE DISCIPLINE	BTG & AUXILIARIES
PREPARED BY	**K. Srinivasan**
REVIEWED BY	**K. Raj Mohan**
APPROVED BY	**A. Santha Kumari**

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Revision Control History

Sr. No.	Revision No.	Date	Reasons for Change
1	0	24-10-23	Prepared in line with Annexure-1, ADANI's Technical Specification for painting & coating of equipment & structures and BHEL standard painting system.
2	1	27-11-23	Modified as per TCEL comments dt. 26.10.2023 on painting schedule submitted for approval
3	2	19-12-23	Modified as per TCEL comments dt. 01.12.2023 on painting schedule submitted for approval

Paint shade shall be as per colour coding specified in contract specification (Clause no. 9.3 of Annexure 1 - Painting & Coating of Equipment & Structures)

TATA CONSULTING ENGINEERS LIMITED
CONTRACTOR DOCUMENT REVIEW STATUS

- ☑ 1 — Approved, Further work can Proceed
- ☐ 1* — Approved with minor comments. No resubmission is required. To be incorporated in As-Built. Good for Manufacturing/Construction / Fabrication subject to incorporation of comments.
- ☐ 2 — Approved with comments. Work can proceed subject to incorportaion of comments
- ☐ 3 — Not Approved. Revise according to comments & resubmit
- ☐ 4 — Retained for Information
- ☐ 4* — Incorporate Comments & resubmit for Information & records

Approval conveyed herein neither relieves CONTRACTOR of his contractual obligations and his responsibilities for correctness of dimensions, materials of construction, weights, quantities, design details, assembly fits, system / performance requirements and conformity of supplies with National/ international statutory laws as may be applicable , nor does it limit the Employer's rights under the contract.

Reviewed by: DN Date: 22-12-2023

adani

Essakkiappan M — Digitally signed by Essakkiappan M Date: 2023.12.22 18:39:08 +05'30'

Reviewer

Pravin Kadbe — Digitally signed by Pravin Kadbe Date: 2023.12.22 19:38:46 +05'30'

Approver

Categories:

- ☑ Cat-I — Approved. Good for Manufacturing/Construction/Fabrication.
- ☐ Cat-I* — Approved with minor comments. No resubmission is required. To be incorporated in As-Built. Good for Manufacturing/ Construction/ Fabrication subject to incorporation of comments.
- ☐ Cat-II — Resubmission is required. Approved & Released for Manufacturing/ fabrication/ construction subjected to incorporation of comments.
- ☐ Cat-III — Not Approved. Revise & Resubmit for Approval
- ☐ Cat-IV — For Information & Records.
- ☐ Cat-IV* — Incorporate Comments & resubmit for Information & records.

Note: "Approval of this document does not absolve the Contractor/ Supplier/Fabricator from fulfilling Contractual obligations in any way"

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Sl. No.	PGMA / Description	Surface Preparation & Surface Profile	Primer coat		Intermediate coat		Finish coat			Total DFT µm (min)
			Paint	No. of coats	Paint	No. of coats	Paint	No. of coats	Shade	
1 PS1AC	**Collector & Separator Vessels (Except Internals), Supports** 04 –321,323;	SSPC-SP3/ Power Tool Cleaning	Red Oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744 DFT= 30µm per coat	1	--	--	Synthetic Enamel paint (Long Oil Alkyd) to IS 2932 DFT= 20µm per coat	2	International orange Shade No: 592 of IS5	70
2 PS5	**Collector & Separator Vessels internals and** Dd items (threaded and machined surfaces only) 04-347;07-302,303,331,360,361,362,393; 08-911,912,913; 09-304; 12-306,314; 12-317,324,327,328,344,348,354,393; 17-304,306,319;19-306,307;21-602,605,700; 24-352,700,803,813,818,827,842,968; 28-700;32-700;34-721to726,730to733; 35-190, 721to727,730; 36-721to727,731to735; 39-700;41-710; 42-700,710;43-710; 45-710;47-710; 48-019,700; 65-710;67-710; **Foundation materials**: 35-010, 39-010,012	SSPC – SP3 Power Tool Cleaning	Rust Preventive Fluid to PR: CHEM: 09 – 04 DFT=25µm per coat	1	--	--	--	--	--	25
3 PS19C9	**Buck stays** 08-001,003,006,007,111,380,400, 08-501,503,901,910; **Boiler supporting structures, Columns, Girders, Bracings** 34-101 to 106,200,300,390, 34-441 to 446, 511, to 516, 35-131 to 137, 141 to 147, 151 to 157, 35-181 to 187, 211to214, 35-221,222,231,232,311,312,321, 35-322,331,332,341,342,351,352,361,362, 35-372, 381 to 387, 390, 35-441 to 447, 451 to 457, 511 to 517;	Blast cleaning to SA2 ½ (Near white metal) conforming to ISO 8501-1 with surface profile 50-75 µm	Inorganic Ethyl Zinc Silicate Primer DFT=75µm per coat (refer sheet 12 Sl.no.11 for details)	1	High Build Epoxy MIO coating cured with polyamide hardnener coat DFT = 100µm per coat (refer sheet 12 Sl.no.10 for details)	1	High Build gloss Aliphatic acrylic Polyurethane paint DFT = 50µm per coat. (refer sheet 12 Sl.no.2 for details)	1	Dark admiralty grey to Shade No. 632 of IS 5.	225

For structural steel, all coats shall be applied at shop.

S. No.	PGMA / Description	Surface Preparation & Surface Profile	Primer coat		Intermediate coat		Finish coat			Total DFT µm (min)
			Paint	No. of coats	Paint	No. of coats	Paint	No. of coats	Shade	
3 PS19C9 (Contd.)	35-521 to 527; 35-531 to 537, 995; Galleries, Stair-ways & inter connecting Walkways 36-111to115,151to155, 36-311to316, 36-321to326,331to338,341to347, 36-351to356,361to366, 36-391 to 395, 36-610,613,620,740; 38-210,299,310,381,410,510,610, 710; ID system structures. 39-101,102,141,142,150,299,300,301, 39-304,305,306; Duct supports 48-015,115,145,205,225,235,265,345,355,365, 48-385,435,465,485,495,665; (Refer note 23 for handrails, step treads released under PGMA of this Sl.No.3) (Refer note 25 for bunker structures)	Blast cleaning to SA2 ½ (Near white metal) conforming to ISO 8501-1 with surface profile 50-75 µm	Inorganic Ethyl Zinc Silicate Primer DFT=75µm per coat (refer sheet 12 Sl.no.11 for details)	1	High Build Epoxy MIO coating cured with polyamide hardnener coat DFT 100µm per coat (refer sheet 12 Sl.no.10 for details)	1	High Build gloss Aliphatic acrylic Polyurethane paint DFT 50µm (refer sheet 12 Sl.no.2 for details)	1	Dark admiralty grey to Shade No. 632 of IS 5.	225
4 PS3	Components >95° C Insulated other than components in Sl.No.7 &9 Ring Headers, Down Comers, Hot air Headers outside the gas path etc. (Refer Note 8) 05-137,147,155,227,231,251,327,330,350; 07-102,110,125,223,231,232,317; 12-178, 850,852, 900; 17-776,807; 18-001,010,701; 19-701,702,903;21-600;24-811,824,828; 24-836,837;	SSPC-SP3/ Power Tool Cleaning	Red Oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744 DFT= 30µm per coat	2	--	--	No paint	No paint	Red oxide	60
For structural steel, all coats shall be applied at shop.										

Sl. No.	PGMA / Description	Surface Preparation & Surface Profile	Primer coat		Intermediate Coat		Finish coat			Total DFT µm (min)
			Paint	No. of coats	Paint	No. of coats	Paint	No. of coats	Shade	
4 PS3 (Contd.)	**Hot Air:** **48-018, 022,116,202,204,207,208,** **48-212,214,222,224, 262,264,267,662,** **48-664,667;** **Flue Gas:** **48-342,344,352,354,362,364,372, 48-382,384,386,** **432,434,462,464,482,484,492, 48-494,496,498;**	SSPC-SP3/ Power Tool Cleaning	Red Oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744 DFT= 30µm per coat	2	--	--	No paint	No paint	Red oxide	60
5 PS 9	**<u>Components >95° C uninsulated other than components coming in gas path.</u>** **Temp: >95°C & <400°C** **24-807,820,860,865,867;** **42-200,300;** **Instrument tappings, doors: 48-200,915;**	SSPC-SP3/ Power Tool Cleaning	Heat Resistant Aluminium Paint to IS 13183 Gr. II DFT 20µm per coat	1	--	--	Heat Resistant Aluminium Paint to IS 13183 Gr. II DFT 20µm per coat	1	Aluminum	40
6 PS 10	**Components uninsulated other than components coming in gas path.** **(Temp: >400°C & <600°C)** **09-003,004,005; 28-220;** **Components insulated (Temp: >400°C & <600°C)** **RH & SH headers** **10-135,174,176,178,191,235,274,276,278,283,** **10-284,285,291; 15-136, 178,236,278;**	SSPC-SP3/ Power Tool Cleaning	Heat Resistant Aluminium Paint to IS 13183 Gr. I DFT 20 µm per coat	1	--	--	Heat Resistant Aluminium Paint to IS 13183 Gr. I DFT 20 µm per coat	1	Aluminum	40
7 PS2	**<u>Loose tubes, SH, RH & Eco. coils</u>** **11-074,078,374,378,406,467,469,** **11-487,491,494,606,608,684,694,716,717,718,** **11-767,768,769,787,791,916,917,918,967,968,** **11-969,987,991;12-179,181,184,187,368,** **12-403,405,514,515,524,544,554;** **12-800,803,805,903,914,917,924,927,928,944,948,** **12-954,968; 16-079,201,202,203,278,379;** **19-092,402,804,814,824,853,884,914,924,984**;	SSPC – SP2 or SSPC – SP3 Hand tool / Power tool cleaning	Red Oxide Zinc Phosphate Dip coat primer to PR: CHEM: 09 – 03 DFT=35µm per coat	1*	--	--	No paint	No paint	Red Oxide	35

*-In lieu of dip painting, 2 coats of brush painting of Red oxide Zinc Phosphate primer to a coating thickness of 60µ is also permitted in line with Sr.No.9.

Sl. No.	PGMA / Description	Surface Preparation & Surface Profile	Primer coat		Intermediate Coat		Finish coat			Total DFT µm (min)
			Paint	No. of coats	Paint	No. of coats	Paint	No. of coats	Shade	
8 PS1A	**Miscellaneous and casing sheets** **07-409,431,460,461,462,502,503,509,531,560;** **12-506,906,907,916; 17-919; 21-601,604,606;** **24-350,351,354, 800,801,804,805,806,808,809,** **24-810,814,815,817,821,825,826,835,840,841,855,** **24-950,955,960;30-233,234;** **36-396; 39-302;** **04-147, 547** **Fuel firing: 41-350,390,500;** **Steam blowing piping** **42-001,002,005,010,046,065,070,152,154,157;** **43-004,104, 200;** **45-200,801,802, 804,805,858;** **47-261,263, 858;** **Duct plates, expansion joints** **48-911,912;** **Coal Feeding:** **65-736; 67-204,272,277, 283,801,802,803;** **95-088,089,091,485;97-585, 592;** **$Handling equipment:** **99-099,100,300,400,502,600;** **Nitrogen blanketing system:24-966,967,969;** **Seal air ducting: 43-005, 105;** **Cold Air duct:48-012,014, 112,114, 141** **Tempering Air: 48-142,144** **(Refer note 22 for chequered plates)**	**SSPC-SP3/ Power Tool Cleaning**	**Red Oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744 DFT= 30µm per coat**	**1**	**--**	**--**	**Synthetic Enamel paint (Long Oil Alkyd) to IS 2932 DFT= 20µm per coat**	**2**	**Smoke Grey Shade No: 692 of IS5**	**70**

$ - Final Shade is Golden yellow for Under hung crane, Chain Pulley Block, Ratchet Lever and Trolley with hoist. Black shade for Hook.

Sl. No.	PGMA / Description	Surface Preparation & Surface Profile	Primer coat		Intermediate coat		Finish coat			Total DFT µm (min)
			Paint	No. of coats	Paint	No. of coats	Paint	No. of coats	Shade	
9 PS3	**Components >95° C coming in the gas path, Headers, Commissioning Spares &erection Materials etc.,** 06-400,401,431,434,437,441,444, 06-447,451,452,453,455,500,501,515,731,732, 06-734,735,737,741,744,745,747,751,752,753, 06-755, 759; 07-309,315,316,318,423,993; 10-182,183,184,185; 11-416,474,484; 12-993;17-174,504,506,900,903,993; 19-753,763,783,793,802,850,851,852; 21-987,988; 24-822,823, 987,988, 989, 993; 30-103,105, 212,215,219,223,224,235; 31-010,104; 32-010,210,810; 35-993; 37-010;38-993; 39-993; 41-997; 42-858,997; 43-997;45-997;47-997;48-993; 65-200,997; 67-200,997; 96-193; 97-282,590; 99-501; 41-988; 42-988; (Refer note 20 for info about 32-210)	SSPC-SP3/ Power Tool Cleaning	Red Oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744 DFT= 30µm per coat	2	--	--	No paint	No paint	Red oxide	60
10 PS1AB	**Hand rails and posts, ladders / rungs** 34-820,850; 35-821,822,823,851; 36-820,821, 851,852,853; 38-820,850;39-820,850;	SSPC-SP3/ Power Tool Cleaning	Red Oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744 DFT= 30µm per coat	1	--	--	Synthetic Enamel paint (Long Oil Alkyd) to IS 2932 DFT= 20µm per coat	2	BLACK	70
11 PS6	**Floor Grills, Step treads** 34-810; 35 – 811,812;36-811,812,813,814 38 – 810, 39 – 810;	SSPC – SP8/ Acid pickling	Hot dip Galvanizing to a coating weight of 610 g/m^2 (minimum) and to a coating thickness of 85µm. Refer Notes given below **							

Notes **: Guard plates shall be painted as per painting scheme prescribed in Sl. No: 03.

PAINTING SCHEME FOR VALVES

Sl.No.	PGMA / Description	Surface Preparation & Surface Profile	Primer coat		Intermediate coat		Finish coat			Total DFT µm (min)
			Paint	No. of coats	Paint	No. of coats	Paint	No. of coats	Shade	
12 @PS 9/10	Cast carbon steel valves (Conventional) Cast alloy steel valves (Conventional) All API valves, QCNRV, SV & SRV Silencers, 21-800,825, 24-885; Safety valves & ERV 21-850; 24-880,881,883;	SSPC-SP3/ Power Tool Cleaning	Heat Resistant silicone Aluminium Paint to IS 13183 Gr.II/I DFT= 20µm per coat	1	--	--	Heat Resistant silicone Aluminium Paint to IS 13183 Gr.II/I DFT= 20µm per coat	1	Aluminum	40
	Forged valves	Chemical cleaning	Phosphating to a coating weight of 1500 mg per Sq.ft.	--	--	--	--	--	--	--
1AS2	Soot Blower components 20-051,054,201,204,511,794,962. (Refer note 19 for valve head assembly)	SSPC-SP3/ Power Tool Cleaning	Red Oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744 DFT= 30µm per coat	2	--	--	Syn. Enamel paint (Long Oil Alkyd) to IS 2932 DFT= 20µm per coat	2	Verdigris Green Shade No. 280 of IS5	100
	HP / LP system	SSPC-SP3/ Power Tool Cleaning	Heat Resistant Aluminium Paint to IS 13183 Gr.I DFT= 20µm per coat	1	--	--	Heat Resistant Aluminium Paint to IS 13183 Gr.I DFT= 20µm per coat	1	Aluminum	40

@ Heat resistant silicone based aluminum paint to IS 13183 Gr.II shall be applied for temperature up to 400 deg.C, Gr. I shall be applied for temperature >400 deg.C and up to 600 deg.C.

Sl. No.	PGMA / Description	Surface Preparation & Surface Profile	Primer coat		Intermediate coat		Finish coat			Total DFT µm (min)
			Paint	No. of coats	Paint	No. of coats	Paint	No. of coats	Shade	
13 PS15	**For CLH & VLH*** PGs 07,08,12,17,19,21,24,47,48 &80 07-402 to 405,505;12-517,528; 17-904,906 19-506,507,904,905, 906,907; 24-353; 48-206,395;	Blast cleaning to SA2½ (Near white metal) with surface profile 35-40 µm	Epoxy zinc rich primer To IS 14589 Gr. II (latest) %VS=35, (min) DFT=40 microns per coat	1	--	--	Aliphatic acrylic Poly-urethane paint to IS13213 (latest) %VS=40.0 (min) DFT= 30.0 microns per coat	1	Phirozi Blue Shade No. 176 of IS5	70
14 PS8C	Components > 95°C & <200°C, un-insulated Fuel pipes 47-200, 267,269;	SSPC-SP3/ Power Tool Cleaning	Heat Resistant Aluminium Paint to IS 13183 Gr. III DFT 20µm per coat	1	--	--	Heat Resistant Aluminium Paint to IS 13183 Gr. III DFT 20µm per coat	1	Aluminum	40
15 PS5	All Columns below '0' level (embedded in concrete) PGs 34,35,36,38, 39	SSPC-SP3/ Power Tool Cleaning	Rust Preventive Fluid to PR: CHEM: 09 – 04 DFT=25µm per coat	1	--	--	--	--	--	25

*- For components other than CLH & VLH, Painting scheme shall be as given in Sl. No. 8.

NOTES:

1. **Rust Preventive Coating should be given on HSFG Bolt and nut threads.**

2. Machined surfaces and all retainers are to be applied with a coating of Temporary Rust Preventive oil.

3. All threaded and other surfaces of foundation bolts and its materials, insulation pins, Anchor channels, Sleeves, shall be coated with Temporary Rust Preventive Fluid and during execution of civil works; the dried film of coating shall be removed using organic solvents.

4. Ground shade/ Colour of Finish paints & identification tag/Band for equipments, pipings pipe service, boiler supporting structures and other boiler components shall be followed as per Anneure-1, ADANI'S Technical specification for painting & coating of equipment.

5. PGMAs under Sub-Vendor items are not indicated. For all bought-out and sub-vendors items including PGMAs mentioned above falling under the scope of BHEL the same scheme as for main equipment as covered in this document shall be followed. Vendor standard practice has to be followed for PGMA not specified in this document.

6. This painting Schemes is valid for only Customer No: U8/1832 & 1833, MAHAN USTPP - 2X800 MW.

7. No painting is required for Stainless Steel, non-ferrous & galvanized components.

08. Wherever inside surfaces of components under PGMA 48 – XXX & others, need protection till erection, two coats of Red-oxide zinc phosphate primer paint to IS12744 to a DFT of 60 microns shall be applied, after power tool cleaning.

09. The Temporary Rust Preventive coating that already been applied on any components, tubes, pipes etc., shall be visually inspected for good adherence. If the coating is intact, direct coating of alkyd based red oxide paints over the coating is permitted. In case, the coating has peeled off over a large area, then the coating is to be removed by suitable solvents / heating to 350 –400 °C for an hour before primer paint application –but, in this case, it should be ensured that the minimum surface cleanliness required for primer paint application shall be SSPC – SP2 (equivalent – Hand Tool cleaning).

10. In components, wherever plates / sheets of thickness less than or equal to 5 mm and rods of ≤25mm/tubes/drain pipes & bent rods are used, power tool / hand tool cleaning to SSPC – SP3 / SP2 shall be followed and the painting shall be done as described in Sl.No.8.

11. For all commissioning components-erection materials (xx-993) two coats of Red oxide Zinc Phosphate Primer shall be applied to meet the temporary protection till erection, after power tool cleaning.

12. Touch-up paintings, making good any damaged shop painting and completing any unfinished portion of the shop coat shall be carried out as per clause 5.0- repair of damaged areas, annexure-1, technical specification.

13. All components covered under different PGMA's are to be painted. In case any component is left out, the same shall be deemed to be included under the relevant section based on paint logic approved.

14. For very small components like clamps etc. which are not having feasible dimensions for blast cleaning, painting scheme of Sl.No.8 shall be followed.

15. For very small components with weldable primer at edges, the entire component shall be applied with weldable primer. Structural members having welded connections at site, relevant area can be painted with primer paint instead of Weldable primer.

16. Painting scheme for all temporary structures like 04-196 shall be PS 1AE i.e. 1 coat of Red oxide Zinc Phosphate primer (Alkyd Base) to IS 12744-DFT-30µ and 2 coats of Synthetic Enamel paint (Long Oil Alkyd) to IS 2932-DFT-2X20µ Shade Yellow –Shade No. 356 of IS 5- Total DFT 70µ. These are to be cut & removed at site after erection. (It excludes components covered under Sr. No. 3 & 9 of description table).

17. For internal protection of Pipes, tubes, headers and other pressure parts, Volatile Corrosion Inhibitor (VCI) pellets shall be put (after sponge testing/ draining/ or drying) and subsequently end capped. The dosage of VCI pellets shall be approximately 100 g/ Cu.m. For tubes typically 4 – 5 tablets per end are to be put. For C & I items the dosage of self-indicating Silica Gel (colourless) shall be 250 g/ cu.m. (About 2 to 3 bags weighing approximately 100 grams each). VCI pellets shall not be used for stainless steel components and its composite associates.

18. All threaded components of spring assemblies and turnbuckles shall be galvanized and achromatized to 15 microns minimum thickness.

19. Soot blower components i.e Valve head assembly having high surface temperature (> 200 and <600 deg. C) shall be applied with protective coating as per PS9 (up to 400 deg.C) and PS10 (up to 600 deg.C)

20. Corner plate, sheet channel and fixing pins of PGMA 32-210, SD-210 shall be painted as per scheme PS3 to total DFT of 60 microns.

21. It is mandatory that for finish coat each layer shall have a permanent DFT and free from any paint defects like sags, wrinkles etc. Total DFT of a component correspond to respective painting scheme has to be ensured and recorded by inspection agency as per QP.

22. For chequered plates, surface preparation can be power tool cleaning to St3 and painting shall be in line with PS1A.

23. Handrails of PGMA under Sl. No. 3 need to be painted in line with scheme for handrails (i.e. Sl .No. 10). Step treads of PGMA under Sl. No. 3 need to be galvanized in line with scheme of Sl .No. 11.

24. Inside surfaces of fabricated structure (e.g. Box type column) shall be painted with two coats of red oxide primer paint during fit up stage.

25. Painting of bunker structures to be in line with painting scheme of supporting structures (Sl. No. 3).

26. All steel structures shall be provided with painting as given in the specification. Further, painting system shall also meet the requirements of corrosivity category C4 as per ISO 12944.

27. For items meant for Spares and subcontracting where no further processing is involved, the painting scheme selected shall be the same as that of similar product configuration/ description.

28. DFT of the coating system shall be determined in accordance with SSPC-PA2 in line with the following procedure.

- **a. Ten readings shall be taken for every $10m^2$ of painted areas.**
- **b. 90% of all readings shall be within the specified dry film thickness.**

c. Where total dry film thickness accordance with the above procedure falls below the specified minimum, an additional coat of finish paint shall be applied.

Inspection and testing shall comply to 6.0 INSPECTION AND TESTING in ADANI's Technical specification for painting and coating of equipment. Following parameters to be inspected for surface preparation and painting of components.

Components	Surface preparation	Painting
Structures, CLH/VLH (Sl. No. 3,13)	**a) Roughness – by comparator or stylus instrument (ISO 8503) b) Cleanliness – Visual comparator for blast cleaning to Sa2.5 level. c) Salt test – by using salt contamination kit**	**Visual examination & dry film thickness of each coat.**
	Ambient and steel temperature, relative humidity, dew point to be recorded prior to blasting & painting	
Pressure parts, ducts, etc. (Sl. No. 1,2,4,5,6,7,8,9,10,12,14,15)	**Cleanliness of power tool cleaned surfaces.**	**Visual examination & dry film thickness of each coat.**

Painting Scheme – Details for procurement & application purposes

Sl. No.	Generic nature of paint	Theoretical Covering Capacity Sq.m per Litre.	No. of pack	Volume solids, % (min)	DFT in microns per coat (approx.)	Shade	Shade No. to IS5	Mode of appln.	Over coating interval, Hrs.
1	Epoxy Zinc rich primer to IS14589 Gr.II (latest)	8	2	35	40	Grey	--	Spray	24
2	High Build gloss Aliphatic acrylic Polyurethane paint.	12	2	62	50	Dark admiralty grey	632 of IS5	Airless Spray	24
3	Heat resistant Aluminium paint to IS 13183 Grade I/II/III (latest)	10	1	-	20	--	--	Brush / Spray	24
4	Red oxide zinc phosphate primer paint to IS 12744 (latest)	10	1	--	30	-	--	Brush / Spray	12
5	Red oxide Zinc Phosphate Dip coat primer paint to PR: CHEM: 09-03	10	1	--	35	--	---	Dip	12
6	Long oil alkyd synthetic enamel finish paint to IS2932 (latest)	17	1	--	20	Reqd. shade	Corrpdg. Shade no.	Brush / Spray	12
7	Temporary Rust preventive fluid to PR: CHE: 09 – 04	10	1	--	25	--	--	--	12
8	General purpose Aluminium paint to IS 2339 (latest)	10	2	--	20	Aluminum	--	Brush	12
9	Self- priming surface tolerant high build epoxy paint	8	2	80	100	--	--	Brush / Spray	12

10	High Build Epoxy MIO coating cured with polyamide hardener, intermediate coat as per IS 16943. (containing lamellar MIO minimum 50% in the dry film)	6	2	60	100 (min)	Brown	--	Airless Spray	24
11	Inorganic ethyl self-curing zinc silicate primer as per IS 14946, metallic Zinc content 75% (min) in the dry film by weight, Zinc dust quality shall be as per ASTM D 520 Type 2.	8	2	60	75 (min)	Grey	--	Airless Spray	24

The covering capacity of paints specified is only approximate. The paints and Rust Preventive fluid shall be procured from BHEL's approved suppliers.

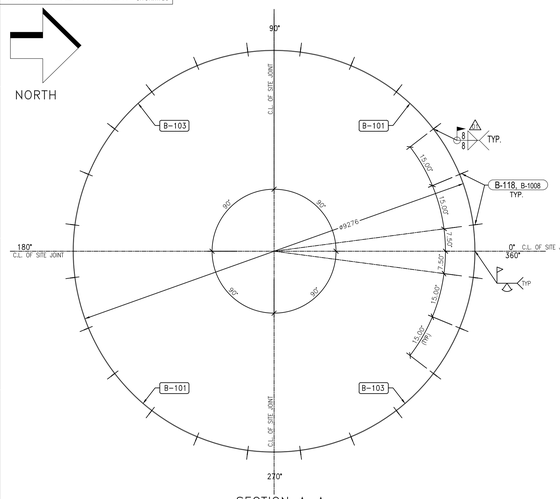
Painting of Damaged Areas

(Areas where the paint has deteriorated badly by erosion and areas where the paint film has lost its adhesion and where the steel has rusted appreciably, should be repainted as follows)

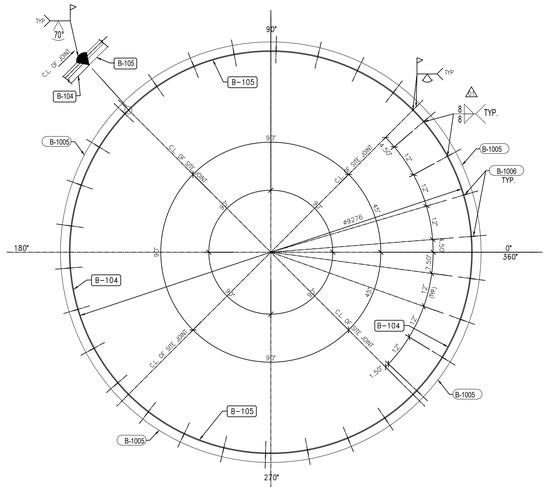
Sl.No.	Components	Surface Prepa-ration	Primer coat		Intermediate coat		Finish coat			Total DFT µm
			Paint	No. of coats	Paint	No. of coats	Paint	No. of coats	Shade	
1	Paint damaged components fall under Sl.no: 3	Power tool cleaning of minimum 25mm of surrounding areas to bare metal	Epoxy based surface tolerant paint	2 Total DFT 175µ (min)	--	--	As given in scheme	1	As given in scheme	As given in scheme
2	Paint damaged components fall under Sl.no: 1,2,4,5,6,7,8,9,10,12,13,14,15	Power tool cleaning to bare metal	As given in scheme							

0-66-102-U0028 ON DNWW0

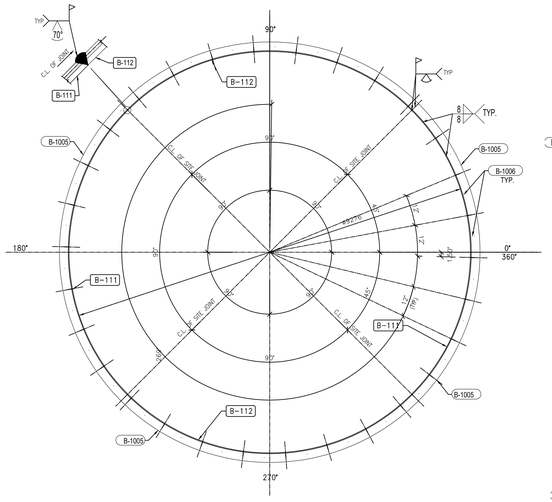
NORTH



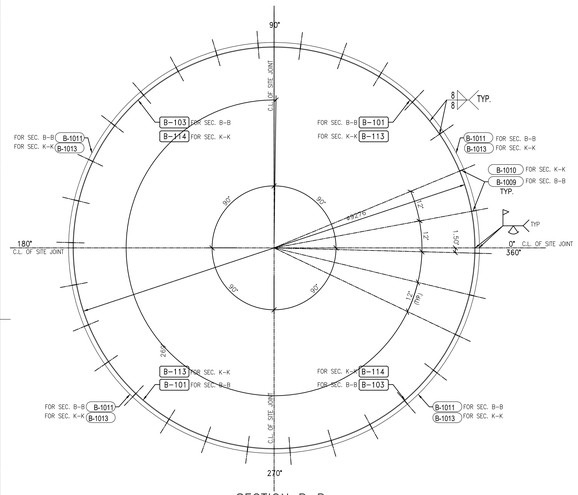
SECTION A–A



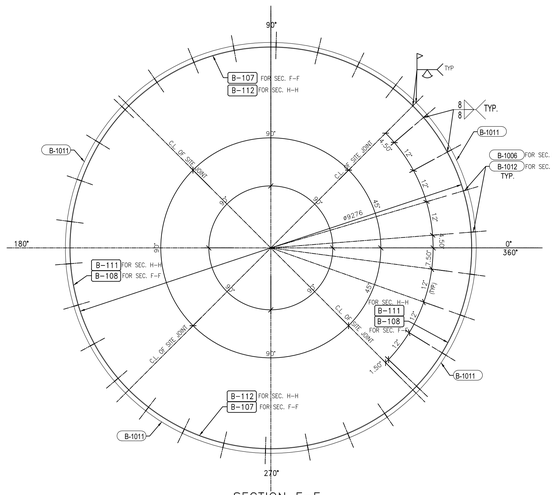
SECTION D–D



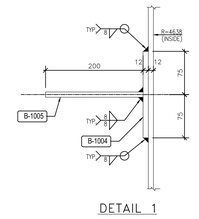
SECTION J–J



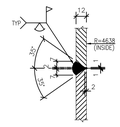
SECTION B–B
SECTION K–K



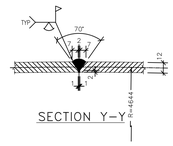
SECTION F–F
SECTION H–H



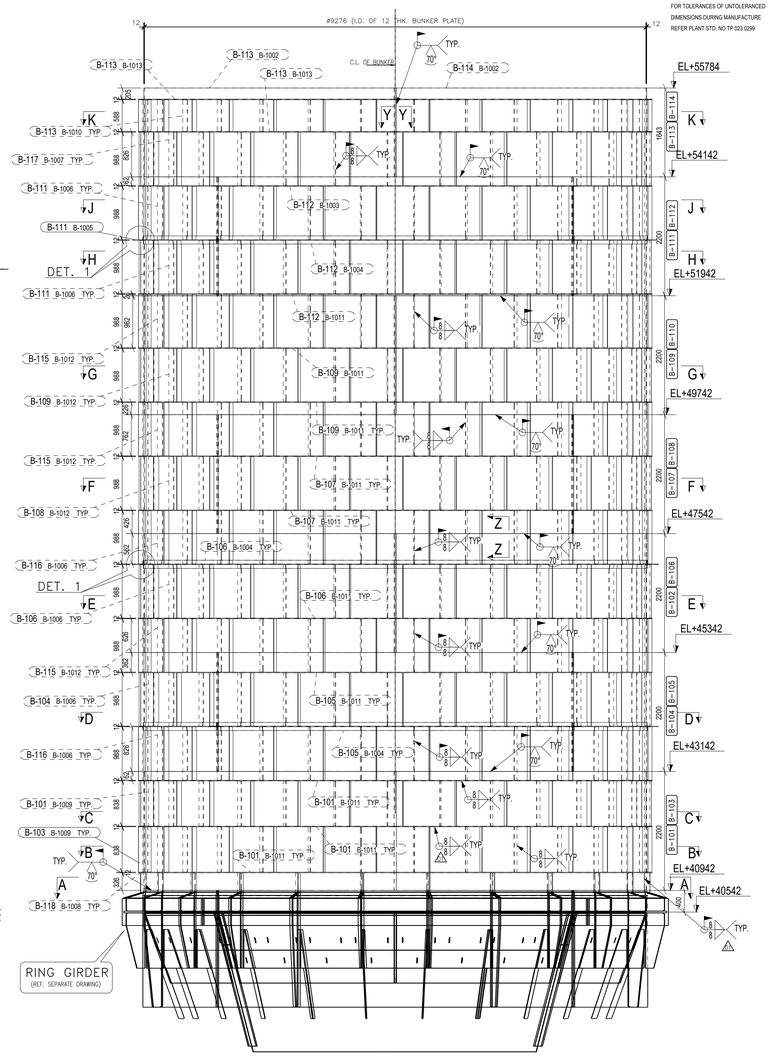
DETAIL 1



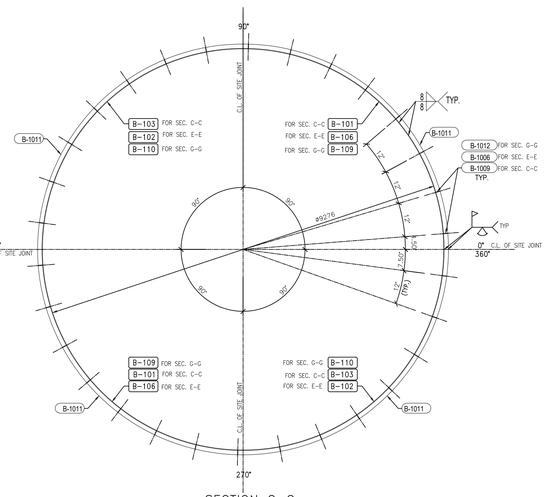
SECTION Z–Z



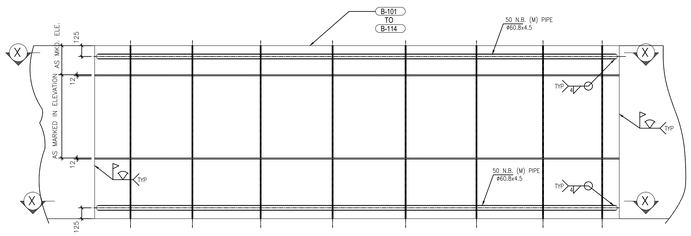
SECTION Y–Y



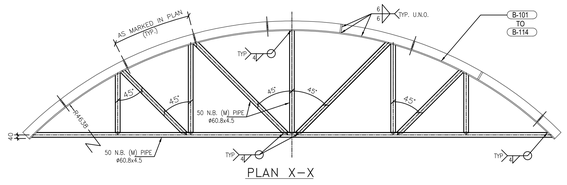
ASSEMBLY GA OF SILO BUNKER SHELL AS MARKED
(ELEVATION)



SECTION C–C
SECTION E–E
SECTION G–G



TYP. TRANSPORT STIFFENER ARRANGEMENT DETAIL OF BUNKER PART



PLAN X–X

GENERAL NOTES:–

1. ALL DIMENSIONS ARE IN MM & ELEVATIONS IN METERS UNLESS STATED OTHERWISE.
2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH CONTRACT TERMS AND CONDITIONS, TECHNICAL SPECIFICATIONS AND SCHEDULE OF ITEMS.
3. FOR OTHER NOTES AND STD. DETAILS REF. DRG. PE–DG–504–600–C002
4. ALL ELEVATIONS ARE TO THE TOP OF STEEL (U.N.O.)
5. ALL BOLTED FIELD CONNECTIONS ARE TO BE DONE WITH HSFG BOLTS OF PROPERTY CLASS 8.8.(U.N)
6. PROPER CARE SHALL BE TAKEN IN WELDING OF BUNKER PLATES. HORIZONTAL & VERTICAL JOINTS IN BUNKER & HOPPER SHALL BE SUBJECT TO NDT AS PER FQP.
7. VERTICAL JOINTS IN BUNKER PL SHALL BE STAGGERED.
8. PLATE SHALL BE CUT TO MAX WIDTH TO REDUCE NUMBER OF JOINTS.
9. BEFORE COMMENCING REGULAR FABRICATION OF THE BUNKER TRIAL ASSEMBLY AT SHOP OF THE BUNKER INCLUDING HOPPER SHALL BE MADE ATLEAST FOR ONE BUNKER.
10. SIZE OF INCLINED MEMBERS/PLATE TO BE VERIFIED BY FULL SCALE SHOP LAYOUT BEFORE FABRICATION.
11. THIS DRAWING IS NOT BE SCALED, ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
12. STAINLESS STEEL LINER IN THE COAL HOPPER & SILO SHALL BE OF 5.0MM THICKNESS OF GRADE SS 304 AND SHALL BE PROVIDED ON THE INNER FACE OF INCLINED PORTION OF HOPPERS UP TO BOTTOM 300 MM OF VERTICAL PORTION OF SILO, WITHOUT ALLOWING ANY PROJECTIONS IN COAL FLOW PATH.
13. PLUG WELD IN SST LINER PLATE SHALL BE GROUND SMOOTH TO MATCH WITH PLATE PROFILE.
14. 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.
15. SPOT RADIOGRAPHY FOR BUTT WELDS SHALL BE CARRIED OUT IN TENSION ZONE AND IN COMPRESSION ZONE AS PER FQP.
16. ALL SITE FILLET WELDS OF BUNKER AND BUNKER SUPPORTING GIRDERS/BEAMS AS PER FQP.
17. ADEQUATE TEMPORARY STIFFENER TO BE PRORATED TO AVOID BUCKLING DISTORTION OF BUNKER STRUCTURE DURING FABRICATION, HANDLING AND ERECTION STAGE.
18. 100% TESTING OF SITE BUTT WELDS REQUIRED .
19. FOR SINGLE V WELDING REFER RELEVANT QUALITY PROCEDURE FOR BACK GOUGING&FINISH WELDING DETAIL.

NOTES FOR TRANSPORT ARRANGEMENT

01. NECESSARY CUTTING AND WELDING ON TRANSPORT STIFFENERS ARE TO BE AT SHOP.
02. THE LOOSE ERECTION MEMBERS ARE TO BE SUPPLIED IN A BUNDLED MANNER. THE NECESSARY BOX ARRANGEMENTS ARE TO BE DONE AT SHOP.
03. LOOSE ITEMS TO BE PROPERLY TIED BEFORE DESPATCH.
04. WHILE SHIPPING, IF REQUIRED ADDITIONAL TRANSPORT STIFFENER / SPIDER SHALL BE PROVIDED.

HIRARCHY NUMBER	ITEM NUMBER	DESCRIPTION	STD	PEM DRAWING NO / HPVP DRAWING NO	ITEM NO	MATERIAL CODE	ASSP	UNIT	UNIT WEIGHT	GS ZONE
					VAR NO	MATERIAL SPECN		DI	QUANTITY	
	18	B-118 PL12*100		3-66-102-A0018 / 3-66-102-U0004			No		3.372	
									24	
	17	B-117 PL12*100		3-66-102-A0020 / 3-66-102-U0003			No		9.296	
									30	
	16	B-116 PL12*100		3-66-102-A0019 / 3-66-102-U0002			No		9.202	
									60	
	15	B-115 PL12*100		3-66-102-A0017 / 3-66-102-U0001			No		9.286	
									120	
	14	B-114 PL12*1643		2-66-102-A0016 / 2-66-102-U0037			No		1376.872	
									2	
	13	B-113 PL12*1643		2-66-102-A0015 / 2-66-102-U0036			No		1380.640	
									2	
	12	B-112 PL12*2200		2-66-102-A0014 / 2-66-102-U0035			No		2032.592	
									2	
	11	B-111 PL12*2200		2-66-102-A0013 / 2-66-102-U0034			No		2032.592	
									2	
	10	B-110 PL12*2200		2-66-102-A0012 / 2-66-102-U0033			No		1863.940	
									2	
	9	B-109 PL12*2200		2-66-102-A0011 / 2-66-102-U0032			No		1854.654	
									2	
	8	B-108 PL12*2200		2-66-102-A0010 / 2-66-102-U0031			No		1789.067	
									2	
	7	B-107 PL12*2200		2-66-102-A0009 / 2-66-102-U0030			No		1788.983	
									2	
	6	B-106 PL12*2200		2-66-102-A0008 / 2-66-102-U0029			No		1963.653	
									2	
	5	B-105 PL12*2200		2-66-102-A0007 / 2-66-102-U0028			No		1963.066	
									2	
	4	B-104 PL12*2200		2-66-102-A0006 / 2-66-102-U0027			No		1963.066	
									2	
	3	B-103 PL12*2200		2-66-102-A0005 / 2-66-102-U0026			No		1858.214	
									2	
	2	B-102 PL12*2200		2-66-102-A0004 / 2-66-102-U0025			No		1963.737	
									2	
	1	B-101 PL12*2200		2-66-102-A0003 / 2-66-102-U0024			No		1858.214	
									2	

REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD
1	22-08-24	GOWTHAM	NV REDDY	NV REDDY	2	19-09-2024	PRAVEENA.K	NV REDDY	NV REDDY																			
	FILLET SIZE IS CORRECTED FROM 6MM TO 8MM INLINE WITH DETAIL DRAWING25					SECTION A–A IS CORRECTED																						

CONTRACTOR: Bharat Heavy Electricals Ltd, POWER SECTOR, PROJECT ENGINEERING MANAGEMENT, NEW DELHI
SUB CONTRACTOR: Bharat Heavy Electricals Ltd, HIGH PRESSURE BOILER PLANT, TRICHY
DETAILER:

CUSTOMER NO : ADANI POWER LIMITED
PROJECT NAME : 2x800MW ULTRA SCTPP-MAHAN (PH-II)

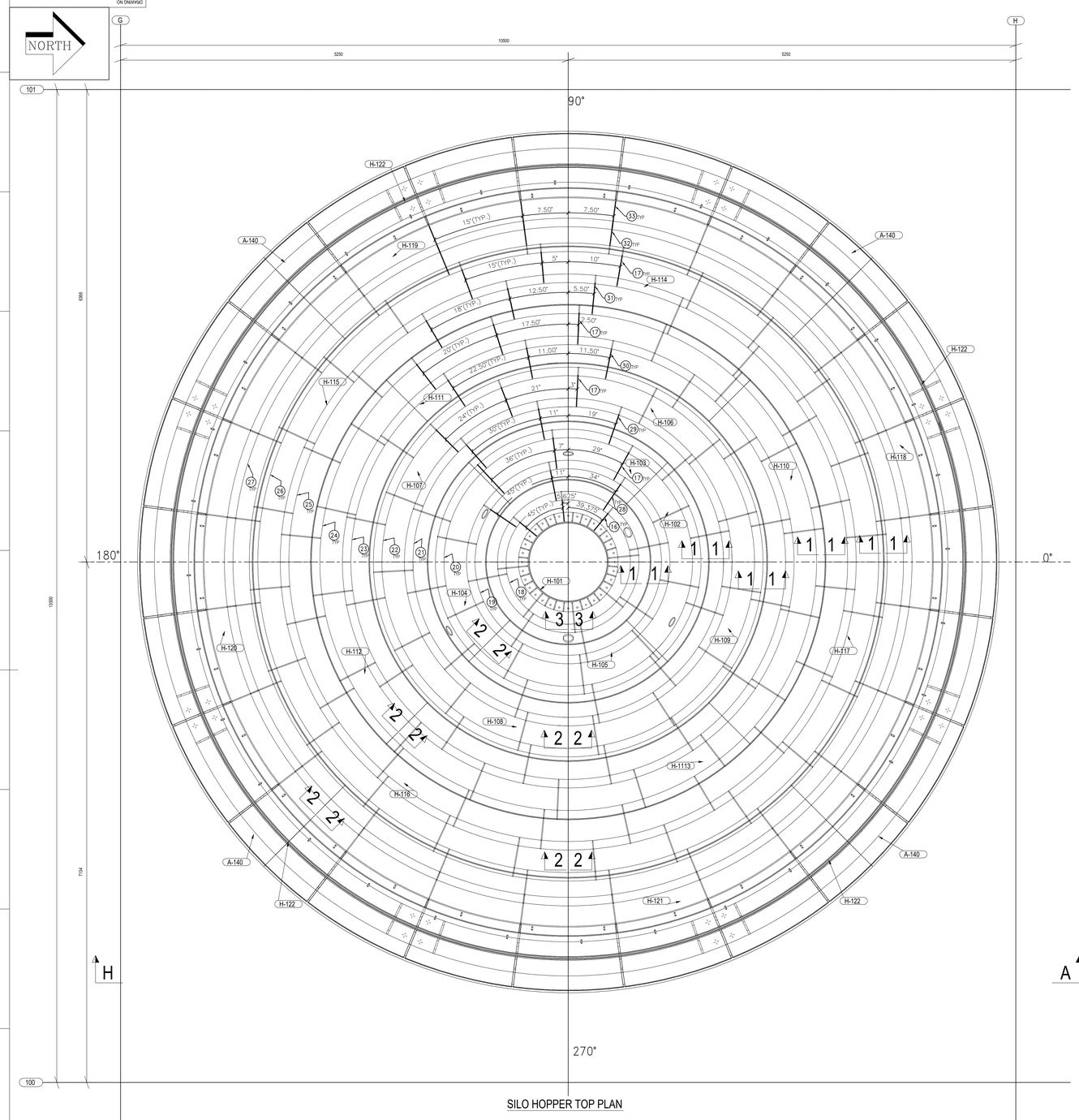
	NAME	SIGNATURE	DATE
DRN	RPC		14.05.2024
CHD	LPPP		14.05.2024
APPD	TMBR		14.05.2024

DEPT: ST | CODE: 122 | TITLE: GA OF SILO BUNKER SHELL ABOVE HOPPER
ALL DIMENSIONS ARE IN MM | PROJECTION | SCALE: NTS | WEIGHT (Kg): 51378.579
REF TO ASSY / OLD DWG

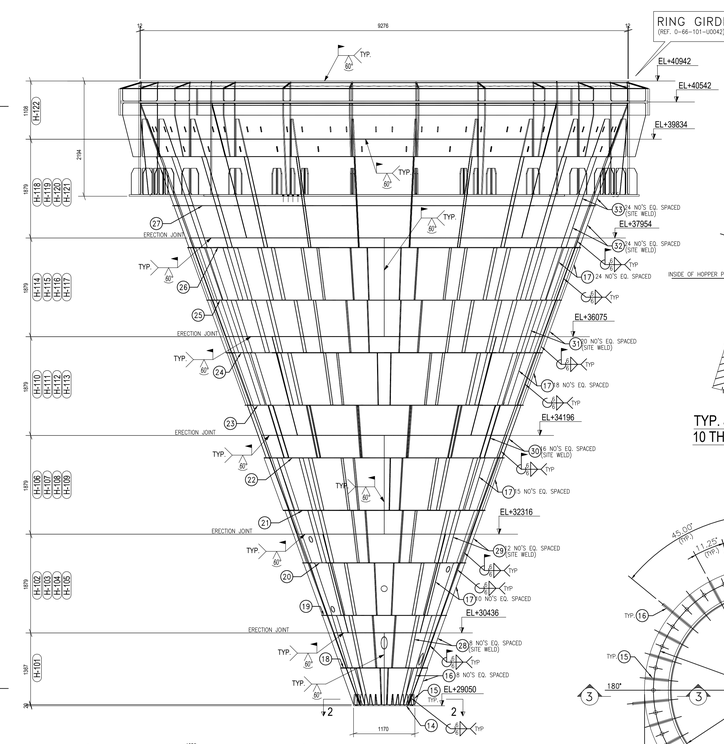
PEM DRAWING NO : 0-66-102-A0002
HPVP DRAWING NO : 0-66-102-U0028
REV. 02

DRAWING NO. 0-66-101-U0039

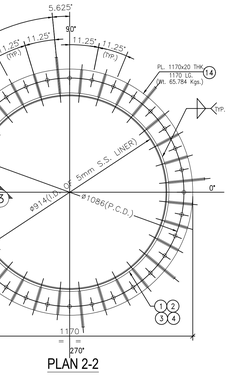
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP-323-0299



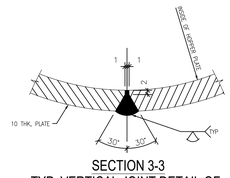
SILO HOPPER TOP PLAN



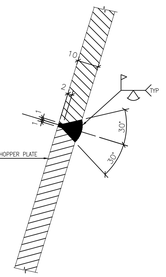
A - A



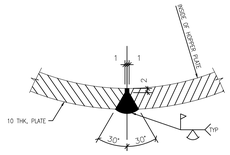
PLAN 2-2



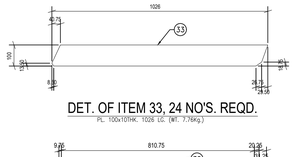
SECTION 3-3
TYP. VERTICAL JOINT DETAIL OF 10 THK. HOPPER PLATE



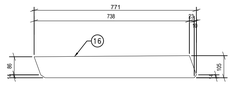
SECTION 1-1
TYP. JOINT DETAIL OF 10 THK. HOPPER PLATE



SECTION 2-2
TYP. VERTICAL JOINT DETAIL OF 10 THK. HOPPER PLATE



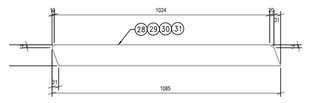
DET. OF ITEM 33, 24 NO'S. REQD.
PL. 100x10THK. 1026 LG. (WT. 7.76Kg.)



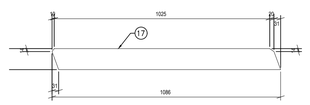
DET. OF ITEM 16, 8 NO'S. REQD.
PL. 105x10THK. 771 LG. (WT. 5.95Kg.)

DET. OF ITEM 32, 24 NO'S. REQD.
PL. 100x10THK. 872 LG. (WT. 6.58Kg.)

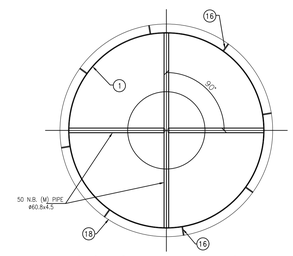
DET. OF ITEM 15
24 NO'S. REQD.
PL. 107x10THK. 200 LG. (WT. 1.12Kg.)



DET. OF ITEM 28, 8 NO'S. REQD.
DET. OF ITEM 29, 12 NO'S. REQD.
DET. OF ITEM 30, 16 NO'S. REQD.
DET. OF ITEM 31, 20 NO'S. REQD.
PL. 100x10THK. 1085 LG. (WT. 8.26Kg.)



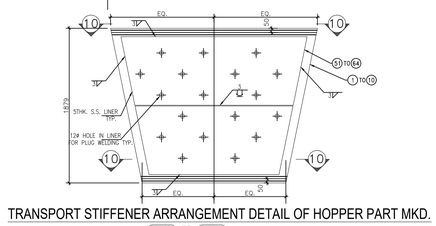
DET. OF ITEM 17, 67 NO'S. REQD.
PL. 100x10THK. 1086 LG. (WT. 8.26Kg.)



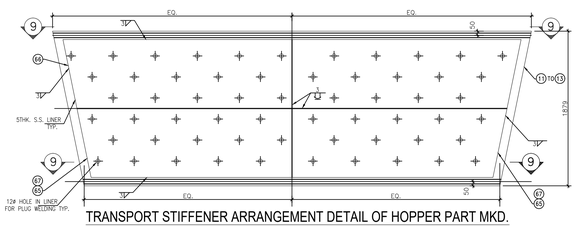
TRANSPORT STIFFENER ARRANGEMENT DETAIL OF HOPPER PART MKD.
(H-101)

GENERAL NOTES:-

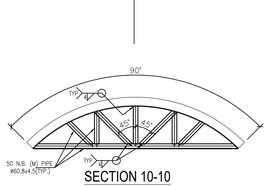
1. ALL DIMENSIONS ARE IN MM & ELEVATIONS IN METERS UNLESS STATED OTHERWISE.
2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH CONTRACT TERMS AND CONDITIONS, TECHNICAL SPECIFICATIONS AND SCHEDULE OF ITEMS.
3. FOR OTHER NOTES AND STD. DETAILS REF. DRG. PE-DG-504-600-C002
4. ALL ELEVATIONS ARE TO THE TOP OF STEEL (U.N.O.)
5. ALL BOLTED FIELD CONNECTIONS ARE TO BE DONE WITH HSFG BOLTS OF PROPERTY CLASS 8.8.(U.N)
6. PROPER CARE SHALL BE TAKEN IN WELDING OF BUNKER PLATES, HORIZONTAL & VERTICAL JOINTS IN BUNKER & HOPPER SHALL BE SUBJECT TO NOT AS PER FQP.
7. VERTICAL JOINTS IN BUNKER PL SHALL BE STAGGERED.
8. PLATE SHALL BE CUT TO MAX WIDTH TO REDUCE NUMBER OF JOINTS.
9. BEFORE COMMENCING REGULAR FABRICATION OF THE BUNKER TRIAL ASSEMBLY AT SHOP OF THE BUNKER INCLUDING HOPPER SHALL BE MADE ATLEAST FOR ONE BUNKER.
10. SIZE OF INCLINED MEMBERS/PLATE TO BE VERIFIED BY FULL SCALE SHOP LAYOUT BEFORE FABRICATION.
11. THIS DRAWING IS NOT BE SCALED, ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
12. STAINLESS STEEL LINER IN THE COAL HOPPER & SILO SHALL BE OF 5.0MM THICKNESS OF GRADE SS 304 AND SHALL BE PROVIDED ON THE INNER FACE OF INCLINED PORTION OF HOPPERS UP TO BOTTOM 300 MM OF VERTICAL PORTION OF SILO, WITHOUT ALLOWING ANY PROJECTIONS IN COAL FLOW PATH.
13. PLUG WELD IN SST LINER PLATE SHALL BE GROUND SMOOTH TO MATCH WITH PLATE PROFILE.
14. 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.
15. SPOT RADIOGRAPHY FOR BUTT WELDS SHALL BE CARRIED OUT IN TENSION ZONE AND IN COMPRESSION ZONE AS PER FQP.
16. ALL SITE FILLET WELDS OF BUNKER AND BUNKER SUPPORTING GIRDERS/BEAMS AS PER FQP.
17. ADEQUATE TEMPORARY STIFFENER TO BE PRORATED TO AVOID BUCKLING DISTORTION OF BUNKER STRUCTURE DURING FABRICATION, HANDLING AND ERECTION STAGE.
18. 100% TESTING OF SITE BUTT WELDS REQUIRED .
19. FOR SINGLE V WELDING REFER RELEVANT QUALITY PROCEDURE FOR BACK GOUGING&FINISH WELDING DETAIL.
20. READ ALONG WITH DRAWING NO.'S 0-66-101-U0040 & 0-66-101-U0041.



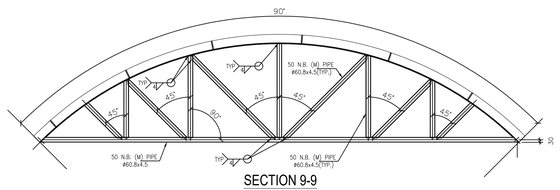
TRANSPORT STIFFENER ARRANGEMENT DETAIL OF HOPPER PART MKD.
(H-102) TO (H-113)



TRANSPORT STIFFENER ARRANGEMENT DETAIL OF HOPPER PART MKD.
(H-114) TO (H-121)



SECTION 10-10



SECTION 9-9

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

CONTRACTOR: Bharat Heavy Electricals Ltd
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT, NEW DELHI

CUSTOMER NO : ADANI POWER LIMITED
PROJECT NAME : 2x800MW ULTRA SCTPP-MAHAN (PH-II)

SUB CONTRACTOR: Bharat Heavy Electricals Ltd
HIGH PRESSURE BOILER PLANT, TRICHY

DETAILER

	NAME	SIGNATURE	DATE
DRN	RPC		07.09.2024
CHD	PP		07.09.2024
APPD	LP		07.09.2024

DEPT ST | CODE 122 | TITLE
ALL DIMENSIONS ARE IN MM | PROJECTION | SCALE NTS | WEIGHT (Kg)
REF TO ASSY / OLD DWG

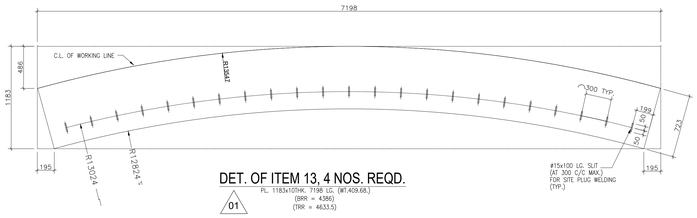
BUNKER HOPPER STIFFENERS DETAILS & GA

PEM DRG NO. 0-66-101-A0001
HPVP DRG NO. 0-66-101-U0039
REV. 0

0-66-101-U0041

ON DWN#00

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299



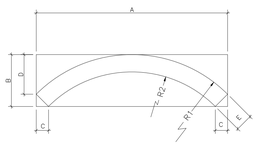
DET. OF ITEM 13, 4 NOS. REQD.

PL. 1183x10THK. 7198 LG. (WT.826.68Kg.)
(BRR = 4386)
(TRR = 4633.5)

01

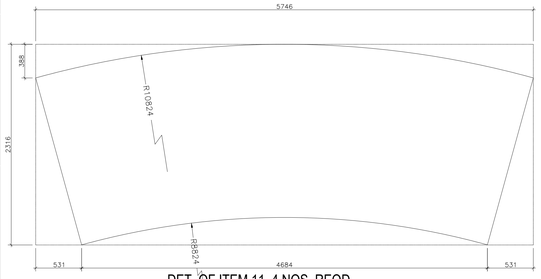
TABLE:1
(RING PLATE DEVELOPMENT DETAIL)

ITEM NO.	A	B	C	D	E	R1	R2	THK.	WT. Kg.	NO'S. REQD.	REMARKS
18	1173	314	71	243	100	830	730	10	9.61	4	CUT TO SHAPE
19	1688	420	71	350	100	1194	1094	10	14.10	4	CUT TO SHAPE
20	2203	527	71	456	100	1558	1458	10	18.59	4	CUT TO SHAPE
21	2718	634	71	563	100	1922	1822	10	23.08	4	CUT TO SHAPE
22	3232	740	71	669	100	2286	2186	10	27.57	4	CUT TO SHAPE
23	3747	847	71	776	100	2650	2550	10	32.06	4	CUT TO SHAPE
24	4262	953	71	883	100	3014	2914	10	36.54	4	CUT TO SHAPE
25	4777	1060	71	989	100	3378	3278	10	41.03	4	CUT TO SHAPE
26	5291	1167	71	1096	100	3742	3642	10	45.52	4	CUT TO SHAPE
27	5703	1252	71	1181	100	4033	3933	10	49.11	4	CUT TO SHAPE



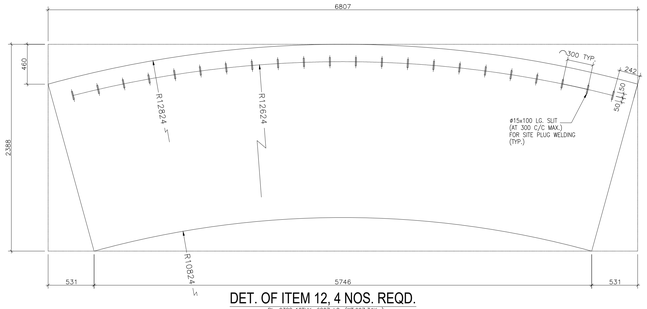
TYPICAL RING PLATE 10mm DEVELOPMENT

DETAIL REF. TABLE-1



DET. OF ITEM 11, 4 NOS. REQD.

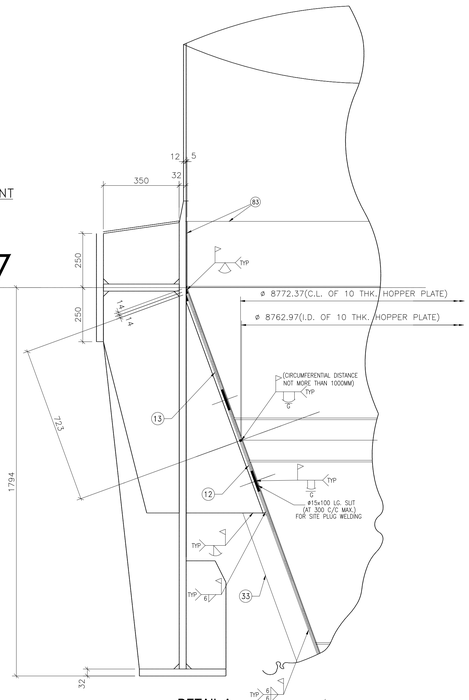
PL. 2316x10THK. 5746 LG. (WT.828.64Kg.)
(BRR = 3018)
(TRR = 3702)



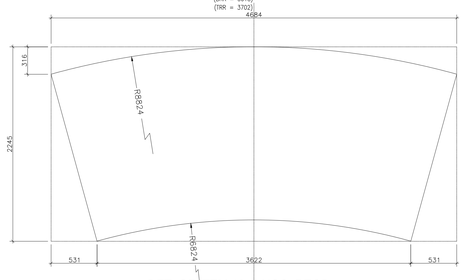
DET. OF ITEM 12, 4 NOS. REQD.

PL. 2386x10THK. 6807 LG. (WT.997.34Kg.)
(BRR = 3702)
(TRR = 4386)

EL(+)40.542M
(C.L. OF RING GRDER)

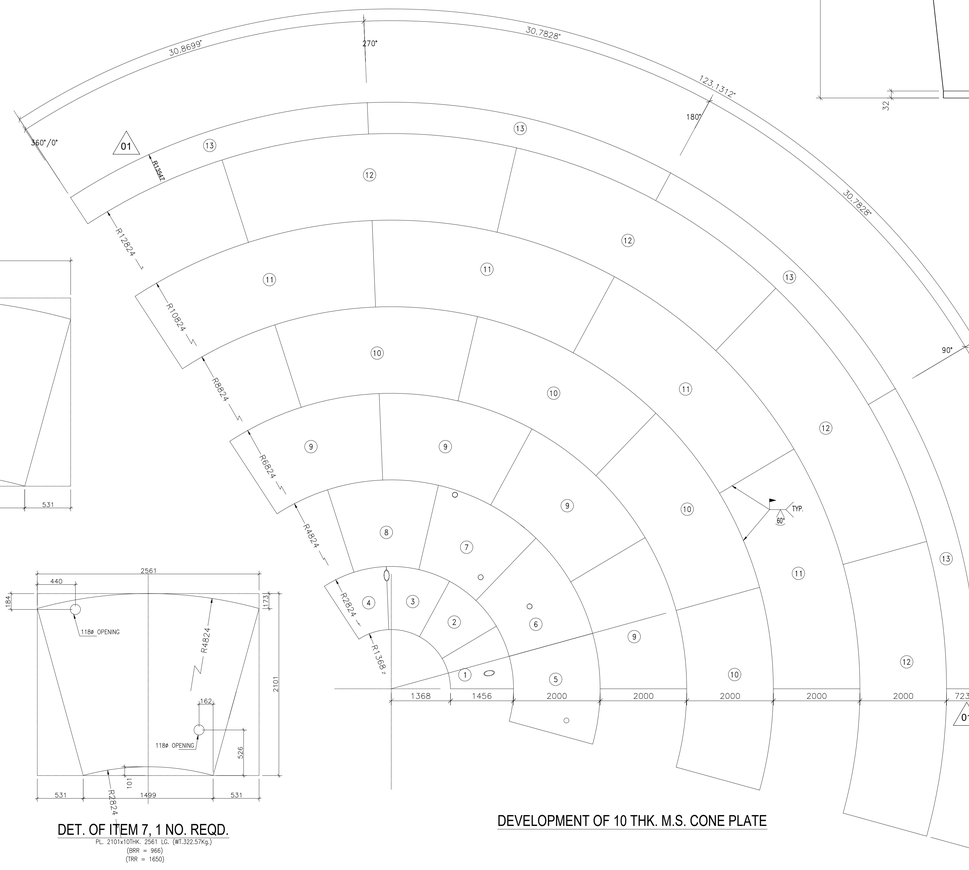


DETAIL A

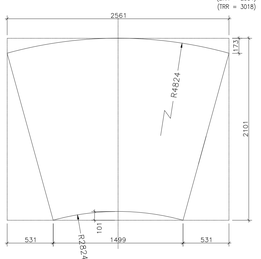


DET. OF ITEM 10, 4 NOS. REQD.

PL. 2245x10THK. 4684 LG. (WT.659.94Kg.)
(BRR = 2334)
(TRR = 3018)

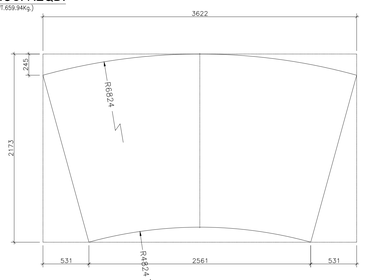


DEVELOPMENT OF 10 THK. M.S. CONE PLATE



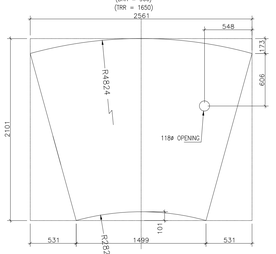
DET. OF ITEM 8, 1 NO. REQD.

PL. 2101x10THK. 2561 LG. (WT.322.57Kg.)
(BRR = 966)
(TRR = 1650)



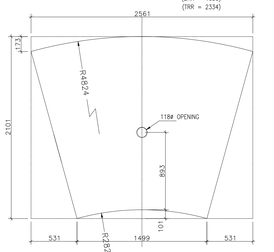
DET. OF ITEM 9, 4 NOS. REQD.

PL. 2173x10THK. 3622 LG. (WT.491.27Kg.)
(BRR = 1650)
(TRR = 3334)



DET. OF ITEM 5, 1 NO. REQD.

PL. 2101x10THK. 2561 LG. (WT.322.57Kg.)
(BRR = 966)
(TRR = 1650)

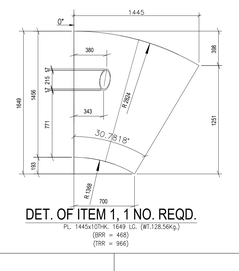


DET. OF ITEM 6, 1 NO. REQD.

PL. 2101x10THK. 2561 LG. (WT.322.57Kg.)
(BRR = 966)
(TRR = 1650)

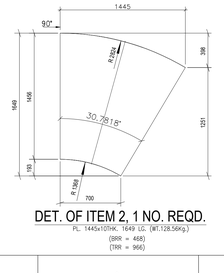
DET. OF ITEM 7, 1 NO. REQD.

PL. 2101x10THK. 2561 LG. (WT.322.57Kg.)
(BRR = 966)
(TRR = 1650)



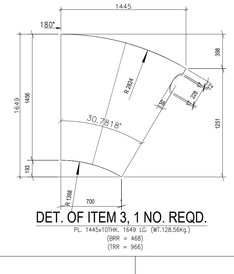
DET. OF ITEM 1, 1 NO. REQD.

PL. 1445x10THK. 1649 LG. (WT.128.56Kg.)
(BRR = 468)
(TRR = 966)



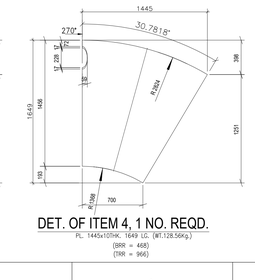
DET. OF ITEM 2, 1 NO. REQD.

PL. 1445x10THK. 1649 LG. (WT.128.56Kg.)
(BRR = 468)
(TRR = 966)



DET. OF ITEM 3, 1 NO. REQD.

PL. 1445x10THK. 1649 LG. (WT.128.56Kg.)
(BRR = 468)
(TRR = 966)



DET. OF ITEM 4, 1 NO. REQD.

PL. 1445x10THK. 1649 LG. (WT.128.56Kg.)
(BRR = 468)
(TRR = 966)

BILL OF MATTERIAL

ERECTION MARKED	ITEM NUMBER	SECTION	WIDTH	LENGTH	NO'S. REQD.	UNIT WT.	ERECTION NUMBER	GROSS WT. KG	TOTAL WT.	MATERIAL CODE	REMARKS
H-101	1	PLATE 10 THK.	1445	1649	1	128.56		128.56		IS:2062, GR Fe250	CUT TO SHAPE
1NO.	2	PLATE 10 THK.	1445	1649	1	128.56		128.56		IS:2062, GR Fe250	CUT TO SHAPE
	3	PLATE 10 THK.	1445	1649	1	128.56		128.56		IS:2062, GR Fe250	CUT TO SHAPE
	4	PLATE 10 THK.	1445	1649	1	128.56		128.56		IS:2062, GR Fe250	CUT TO SHAPE
	14	PLATE 20THK.	1170	1170	1	65.78		65.78		IS:2062, GR Fe350	CUT TO SHAPE
	15	PLATE 10 THK.	107	200	24	1.12		26.88		IS:2062, GR Fe250	CUT TO SHAPE
	16	PLATE 10 THK.	105	771	8	5.95		47.60		IS:2062, GR Fe250	CUT TO SHAPE
	18	PLATE 10 THK.	314	1173	4	9.61		38.44		IS:2062, GR Fe250	CUT TO SHAPE
	51	S.S. PL. 5 THK.	714	1363	5	28.35		141.75		ASTM A240. S304	CUT TO SHAPE
	52	S.S. PL. 5 THK.	714	1363	1	28.35		28.35		ASTM A240. S304	CUT TO SHAPE
	53	S.S. PL. 5 THK.	714	1363	1	28.35		28.35		ASTM A240. S304	CUT TO SHAPE
	54	S.S. PL. 5 THK.	714	1363	1	28.35		28.35		ASTM A240. S304	CUT TO SHAPE
						TOTAL WT.	1	919.74	919.74		
H-102	5	PLATE 10 THK.	2101	2561	1	322.57		322.57		IS:2062, GR Fe250	CUT TO SHAPE
1NO.	17	PLATE 10 THK.	100	1086	2	8.26		16.52		IS:2062, GR Fe250	CUT TO SHAPE
	19	PLATE 10 THK.	420	1688	1	14.1		14.10		IS:2062, GR Fe250	CUT TO SHAPE
	20	PLATE 10 THK.	527	2203	1	18.59		18.59		IS:2062, GR Fe250	CUT TO SHAPE
	55	S.S. PL. 5 THK.	975	1845	1	57.3		57.30		ASTM A240. S304	CUT TO SHAPE
	58	S.S. PL. 5 THK.	1002	2284	1	72.74		72.74		ASTM A240. S304	CUT TO SHAPE
						TOTAL WT.	1	501.82	501.82		
H-103	6	PLATE 10 THK.	2101	2561	1	322.57		322.57		IS:2062, GR Fe250	CUT TO SHAPE
1NO.	17	PLATE 10 THK.	100	1086	3	8.26		24.78		IS:2062, GR Fe250	CUT TO SHAPE
	19	PLATE 10 THK.	420	1688	1	14.1		14.10		IS:2062, GR Fe250	CUT TO SHAPE
	20	PLATE 10 THK.	527	2203	1	18.59		18.59		IS:2062, GR Fe250	CUT TO SHAPE
	56	S.S. PL. 5 THK.	975	1845	1	57.3		57.30		ASTM A240. S304	CUT TO SHAPE
	59	S.S. PL. 5 THK.	1002	2284	1	72.74		72.74		ASTM A240. S304	CUT TO SHAPE
						TOTAL WT.	1	510.08	510.08		
H-104	7	PLATE 10 THK.	2101	2561	1	322.57		322.57		IS:2062, GR Fe250	CUT TO SHAPE
1NO.	17	PLATE 10 THK.	100	1086	2	8.26		16.52		IS:2062, GR Fe250	CUT TO SHAPE
	19	PLATE 10 THK.	420	1688	1	14.1		14.10		IS:2062, GR Fe250	CUT TO SHAPE
	20	PLATE 10 THK.	527	2203	1	18.59		18.59		IS:2062, GR Fe250	CUT TO SHAPE
	57	S.S. PL. 5 THK.	975	1845	1	57.3		57.30		ASTM A240. S304	CUT TO SHAPE
	60	S.S. PL. 5 THK.	1002	2284	1	72.74		72.74		ASTM A240. S304	CUT TO SHAPE
						TOTAL WT.	1	501.82	501.82		
H-105	8	PLATE 10 THK.	2101	2561	1	322.57		322.57		IS:2062, GR Fe250	CUT TO SHAPE
1NO.	17	PLATE 10 THK.	100	1086	3	8.26		24.78		IS:2062, GR Fe250	CUT TO SHAPE
	19	PLATE 10 THK.	420	1688	1	14.1		14.10		IS:2062, GR Fe250	CUT TO SHAPE
	20	PLATE 10 THK.	527	2203	1	18.59		18.59		IS:2062, GR Fe250	CUT TO SHAPE
	55	S.S. PL. 5 THK.	975	1845	1	57.3		57.30		ASTM A240. S304	CUT TO SHAPE
	59	S.S. PL. 5 THK.	1002	2284	1	72.74		72.74		ASTM A240. S304	CUT TO SHAPE
						TOTAL WT.	1	510.08	510.08		
H-106	9	PLATE 10 THK.	2173	3622	1	491.27		491.27		IS:2062, GR Fe250	CUT TO SHAPE
H-108	17	PLATE 10 THK.	100	1086	4	8.26		33.04		IS:2062, GR Fe250	CUT TO SHAPE
H-109	21	PLATE 10 THK.	634	2718	1	23.08		23.08		IS:2062, GR Fe250	CUT TO SHAPE
1NO. EACH	22	PLATE 10 THK.	740	3232	1	27.57		27.57		IS:2062, GR Fe250	CUT TO SHAPE
	61	S.S. PL. 5 THK.	1043	2896	1	94.15		94.15		ASTM A240. S304	CUT TO SHAPE
	62	S.S. PL. 5 THK.	1072	3345	1	110		110.00		ASTM A240. S304	CUT TO SHAPE
						TOTAL WT.	3	779.11	2337.33		
H-107	9	PLATE 10 THK.	2173	3622	1	491.27		491.27		IS:2062, GR Fe250	CUT TO SHAPE
1NO.	17	PLATE 10 THK.	100	1086	3	8.26		24.78		IS:2062, GR Fe250	CUT TO SHAPE
	21	PLATE 10 THK.	634	2718	1	23.08		23.08		IS:2062, GR Fe250	CUT TO SHAPE
	22	PLATE 10 THK.	740	3232	1	27.57		27.57		IS:2062, GR Fe250	CUT TO SHAPE
	61	S.S. PL. 5 THK.	1043	2896	1	94.15		94.15		ASTM A240. S304	CUT TO SHAPE
	62	S.S. PL. 5 THK.	1072	3345	1	110		110.00		ASTM A240. S304	CUT TO SHAPE
						TOTAL WT.	1	770.85	770.85		
H-110	10	PLATE 10 THK.	2245	4684	1	659.94		659.94		IS:2062, GR Fe250	CUT TO SHAPE
H-112	17	PLATE 10 THK.	100	1086	4	8.26		33.04		IS:2062, GR Fe250	CUT TO SHAPE
1NO. EACH	23	PLATE 10 THK.	847	3747	1	32.06		32.06		IS:2062, GR Fe250	CUT TO SHAPE
	24	PLATE 10 THK.	953	4262	1	36.54		36.54		IS:2062, GR Fe250	CUT TO SHAPE
	63	S.S. PL. 5 THK.	1113	3921	1	131.28		131.28		ASTM A240. S304	CUT TO SHAPE
	64	S.S. PL. 5 THK.	1143	4407	1	147.34		147.34		ASTM A240. S304	CUT TO SHAPE
						TOTAL WT.	2	1040.20	2080.40		
H-111	10	PLATE 10 THK.	2245	4684	1	659.94		659.94		IS:2062, GR Fe250	CUT TO SHAPE
H-113	17	PLATE 10 THK.	100	1086	5	8.26		41.30		IS:2062, GR Fe250	CUT TO SHAPE
1NO. EACH	23	PLATE 10 THK.	847	3747	1	32.06		32.06		IS:2062, GR Fe250	CUT TO SHAPE
	24	PLATE 10 THK.	953	4262	1	36.54		36.54		IS:2062, GR Fe250	CUT TO SHAPE
	63	S.S. PL. 5 THK.	1113	3921	1	131.28		131.28		ASTM A240. S304	CUT TO SHAPE
	64	S.S. PL. 5 THK.	1143	4407	1	147.34		147.34		ASTM A240. S304	CUT TO SHAPE
						TOTAL WT.	2	1048.46	2096.92		
H-114	11	PLATE 10 THK.	2316	5746	1	828.64		828.64		IS:2062, GR Fe250	CUT TO SHAPE
H-115	17	PLATE 10 THK.	100	1086	6	8.26		49.56		IS:2062, GR Fe250	CUT TO SHAPE
H-116	25	PLATE 10 THK.	1060	4777	1	41.03		41.03		IS:2062, GR Fe250	CUT TO SHAPE
H-117	26	PLATE 10 THK.	1167	5291	1	45.52		45.52		IS:2062, GR Fe250	CUT TO SHAPE
1NO. EACH	65	S.S. PL. 5 THK.	962	2522	2	84.13		168.26		ASTM A240. S304	CUT TO SHAPE
	66	S.S. PL. 5 THK.	970	2753	2	92.22		184.44		ASTM A240. S304	CUT TO SHAPE
						TOTAL WT.	4	1317.45	5269.80		
H-118	12	PLATE 10 THK.	2388	6807	1	997.34		997.34		IS:2062, GR Fe250	CUT TO SHAPE
H-119	27	PLATE 10 THK.	1252	5703	1	49.11		49.11		IS:2062, GR Fe250	CUT TO SHAPE
H-120	67	S.S. PL. 5 THK.	980	3056	2	110.93		221.86		ASTM A240. S304	CUT TO SHAPE
H-121											
1NO. EACH											
						TOTAL WT.	4	1268.31	5073.24		
01 H-122	13	PLATE 10 THK.	1183	7198	1	409.68		409.68		IS:2062, GR Fe250	CUT TO SHAPE
4 NO'S.											
						TOTAL WT.	4	409.68	1638.72		
28	28	PLATE 10 THK.	100	1085	8	8.26		66.08		IS:2062, GR Fe250	CUT TO SHAPE
29	29	PLATE 10 THK.	100	1085	12	8.26		99.12		IS:2062, GR Fe250	CUT TO SHAPE
30	30	PLATE 10 THK.	100	1085	16	8.26		132.16		IS:2062, GR Fe250	CUT TO SHAPE
31	31	PLATE 10 THK.	100	1085	20	8.26		165.20		IS:2062, GR Fe250	CUT TO SHAPE
32	32	PLATE 10 THK.	100	872	24	6.58		157.92		IS:2062, GR Fe250	CUT TO SHAPE
33	33	PLATE 10 THK.	100	1026	24	7.76		186.24		IS:2062, GR Fe250	CUT TO SHAPE
68	68	S.S. PL. 5 THK.	987	3289	8	110.93		887.44		ASTM A240. S304	CUT TO SHAPE
69	69	S.S. PL. 5 THK.	296	1534	3	11.76		35.28		ASTM A240. S304	CUT TO SHAPE
70	70	S.S. PL. 5 THK.	296	1534	1	11.76		11.76		ASTM A240. S304	CUT TO SHAPE
71	71	S.S. PL. 5 THK.	368	2595	3	20.2		60.60		ASTM A240. S304	CUT TO SHAPE
72	72	S.S. PL. 5 THK.	368	2595	1	20.2		20.20		ASTM A240. S304	CUT TO SHAPE
73	73	S.S. PL. 5 THK.	439	3657	4	28.63		114.52		ASTM A240. S304	CUT TO SHAPE
74	74	S.S. PL. 5 THK.	511	4718	4	37.07		148.28		ASTM A240. S304	CUT TO SHAPE
75	75	S.S. PL. 5 THK.	296	2912	8	22.72		181.76		ASTM A240. S304	CUT TO SHAPE
76	76	S.S. PL. 5 THK.	314	3448	8	26.94		215.52		ASTM A240. S304	CUT TO SHAPE
77	77	S.S. PL. 5 THK.	758	3622	8	89.37		714.96		ASTM A240. S304	CUT TO SHAPE
78	78	S.S. PL. 5 THK.	200	1785	4	11.34		45.36		ASTM A240. S304	CUT TO SHAPE
79	79	S.S. PL. 5 THK.	200	1785	4	12.14		48.56		ASTM A240. S304	CUT TO SHAPE
80	80	S.S. PL. 5 THK.	200	1784	4	12.5		50.00		ASTM A240. S304	CUT TO SHAPE
81	81	S.S. PL. 5 THK.	200	1784	4	12.83		51.32		ASTM A240. S304	CUT TO SHAPE
82	82	S.S. PL. 5 THK.	200	1784	4	13		52.00		ASTM A240. S304	CUT TO SHAPE
83	83	S.S. PL. 5 THK.	300	2424	12	85.65		1027.80		ASTM A240. S304	BEND TO SHAPE
						TOTAL WT.	1	4472.08	4472.08		
						1 HOPPER GROSS WT. KG.			26682.88		

ABSTRACT	
PLATE 10 THK.	17975.46
PLATE 20 THK.	411.16
S.S. PL. 5 THK.	7956.44
G. TOTAL(1 no.)=	26343.06

NOTES:-

1. READ ALONG WITH DRAWING NO.'S 0-66-101-U0039 & 0-66-101-U0040.

LEGEND:-

1. BRR --> BOTTOM MEAN ROLLING RADIUS
2. TRR --> TOP MEAN ROLLING RADIUS

REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD
01	25-10-24	M.CHANDWA	NV REDDY	NV REDDY	02	15-11-2024	K PRAVEEN	NV REDDY	NV REDDY																			
	DETAL OF ITEM NO-13 IS CORRECTED.					ITEM NO: 03 OUTER CUT RADIUS IS CORRECTED.																						

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

CONTRACTOR: Bharat Heavy Electricals Ltd, POWER SECTOR, PROJECT ENGINEERING MANAGEMENT, NEW DELHI

SUB CONTRACTOR / DETAILER: Bharat Heavy Electricals Ltd, HIGH PRESSURE BOILER PLANT, TRICHY

	NAME	SIGNATURE	DATE
DRN.	RPC		07.09.2024
CHD	PP		07.09.2024
APPD	LP		07.09.2024

CUSTOMER NO : ADANI POWER LIMITED
PROJECT NAME : 2x800MW ULTRA SCTPP-MAHAN (PH-II)

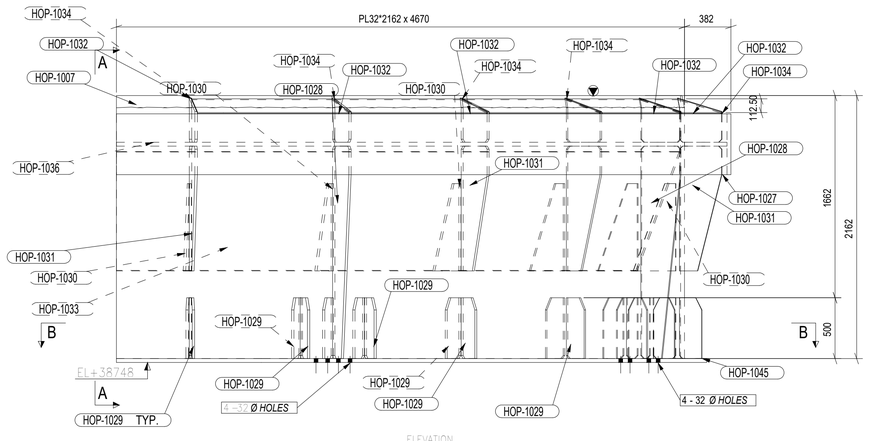
DEPT ST | CODE 122 | TITLE: BUNKER HOPPER CASING DETAILS & BOM

ALL DIMENSIONS ARE IN MM | PROJECTION | SCALE: NTS | WEIGHT (Kg): 26343.06 | REF TO ASSY / OLD DWG

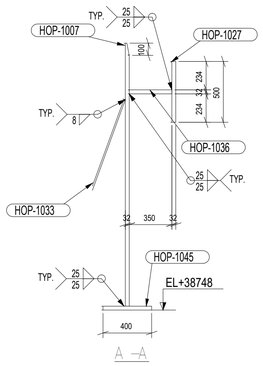
PEM DRG NO: 0-66-101-A0002 | HPVP DRG NO: 0-66-101-U0041 | REV: 02

DRAWING NO: 1-66-101-U0019

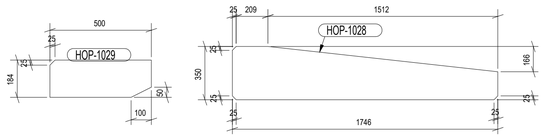
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299

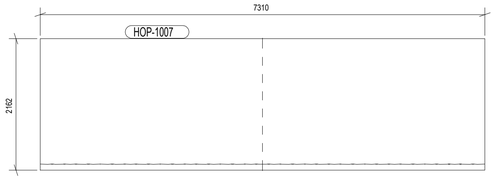


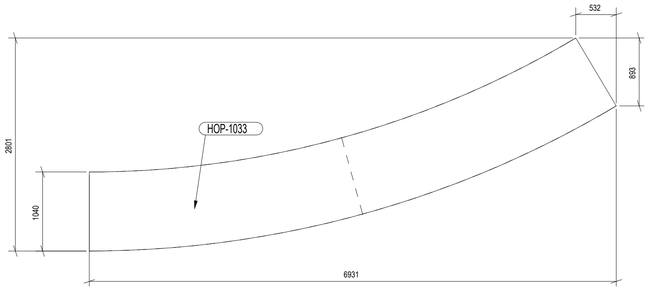
ELEVATION

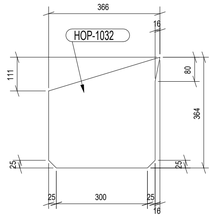


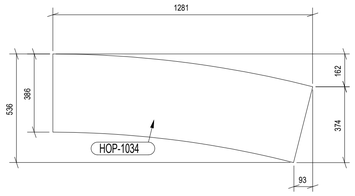
A –A

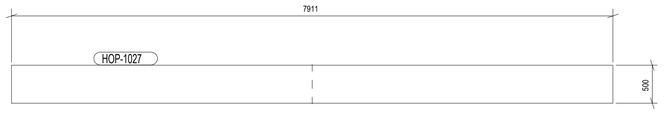


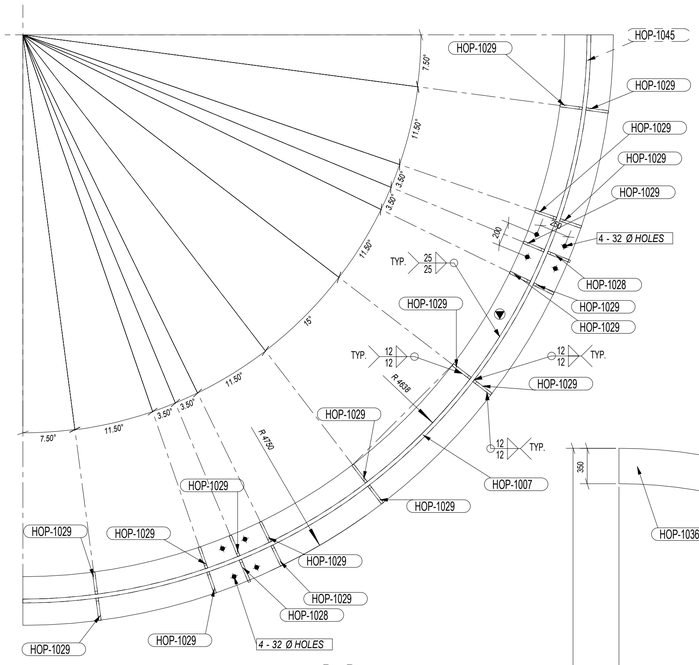




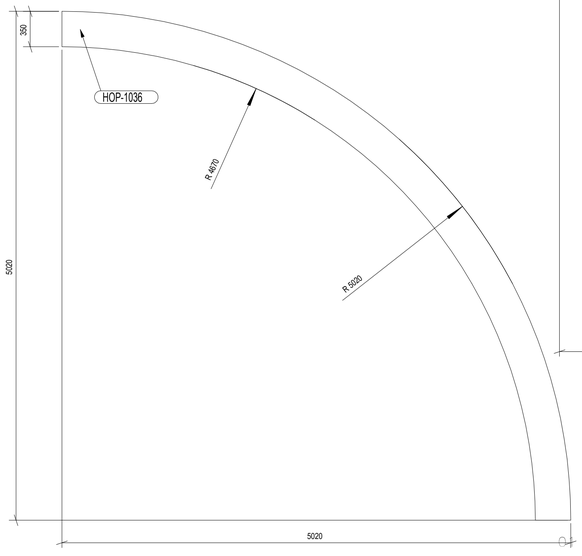


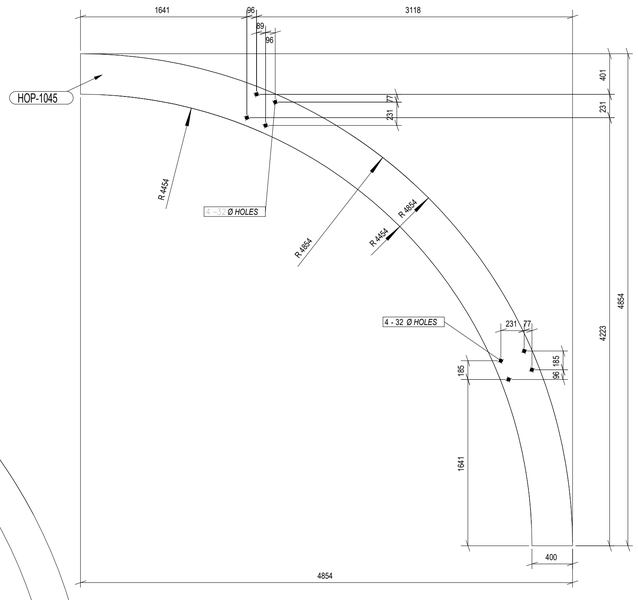


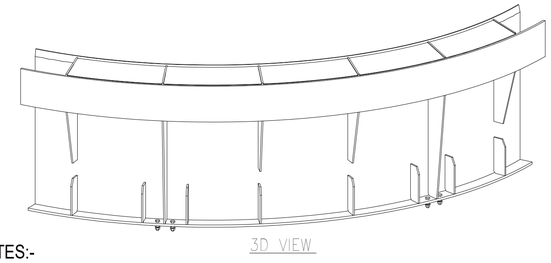




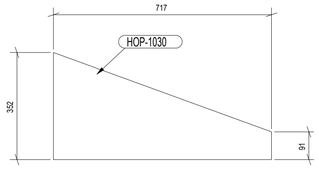
B –B

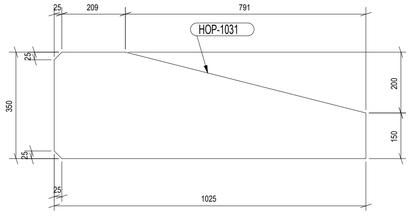






3D VIEW





1 NUMBER REQUIRED AS DRAWN, MARKED A-107

NOTES:-

1. BOLT HOLE LOCATION DIMENSIONS AND BOLT HOLE PITCH DIMENSIONS ARE CRITICAL TO QUALITY.
2. RING GIRDER FUNNEL (ID:HOP-1033),TOP ROLLING MEAN RADIUS =4632MM& BOTTOM ROLLING MEAN RADIUS= 4276MM.
3. REFER 0-66-101-U0042 FOR RING GIRDERS GA

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO / VAR NO	MATERIAL CODE / MATERIAL SPECN	AVCP	UNIT / DI	UNIT WEIGHT / QUANTITY	GS	ZONE
	11	PLATE-32 4854.0x4854.0 HOP-1045				15-011-047 IS2062 E350BR		No	734.349		
									1		
	10	PLATE-32 5020.0x5020.0 HOP-1036				15-011-047 IS2062 E350BR		No	668.935		
									1		
	9	PLATE-8 536.0x1282.0 HOP-1034				15-011-027 IS2062 E250A		No	30.211		
									5		
	8	PLATE-12 2801.0x6931.0 HOP-1033				15-011-132 IS2062 E250A		No	685.006		
									1		
	7	PLATE-20 364.0x366.0 HOP-1032				15-011-043 IS2062 E350BR		No	16.816		
									8		
	6	PLATE-20 350.0x1025.0 HOP-1031				15-011-043 IS2062 E350BR		No	43.807		
									4		
	5	PLATE-20 352.0x717.0 HOP-1030				15-011-043 IS2062 E350BR		No	24.934		
									6		
	4	PLATE-20 184.0x500.0 HOP-1029				15-011-043 IS2062 E350BR		No	14.002		
									18		
	3	PLATE-20 350.0x1746.0 HOP-1028				15-011-043 IS2062 E350BR		No	76.093		
									2		
	2	PLATE-32 500.0x7911.0 HOP-1027				15-011-047 IS2062 E350BR		No	993.294		
									1		
	1	PLATE-32 2162.0x7310.0 HOP-1007				15-011-047 IS2062 E350BR		No	3914.005		
									1		

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

CUSTOMER: CUSTOMER NO: ADANI POWER LIMITED
PROJECT: 2x800MW ULTRA SCTPP-MAHAN (PH-II)

Bharat Heavy Electricals Ltd
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA (U.P.)
355-052

	NAME	SIGNATURE	DATE
DRN	RPC		12.08.2024
CHD	PP		12.08.2024
APPD	LP		12.08.2024

DEPT: CIVIL | PRJ. CODE: 497 | ALL DIMENSIONS ARE IN MM | PROJECTION | SCALE: NTS | WEIGHT (Kg): 7976.600 | REF TO ASSY / OLD DWG

TITLE: RING GIRDER AS MARKED A-107

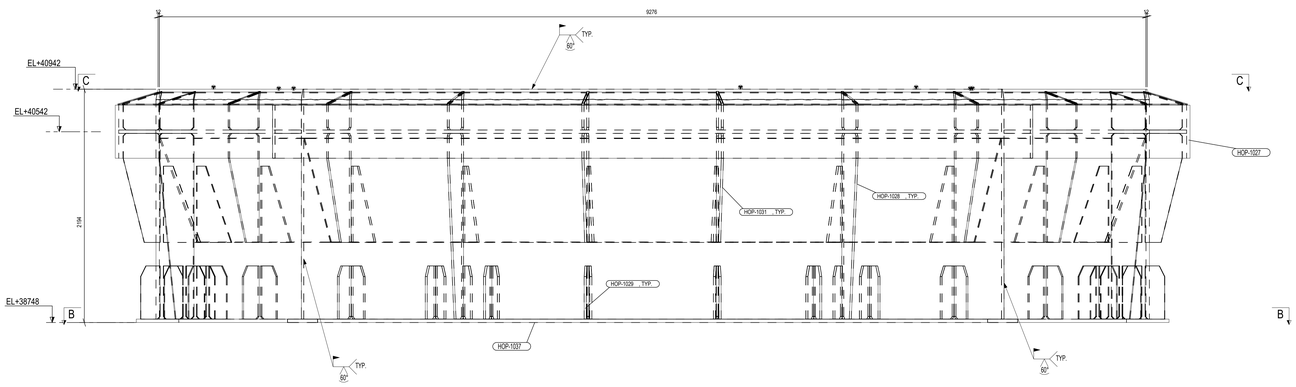
PEM DRG NO: 1-66-101-A0001 REV 01
HPVP DRG NO: 1-66-101-U0019

REV NO.	DATE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.
01	24-10-24	NOTE NO: 02,03 ARE ADDED	M.CHAITANYA	NVREDDY	NVREDDY

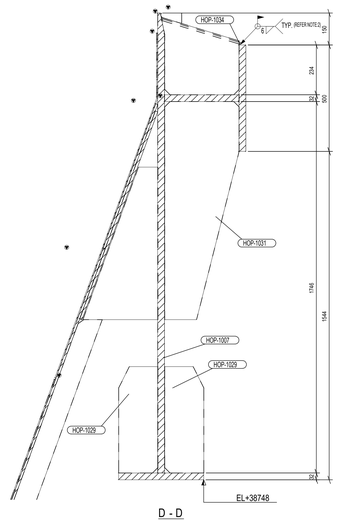
DRAWING NO: 0-66-101-U0042

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299

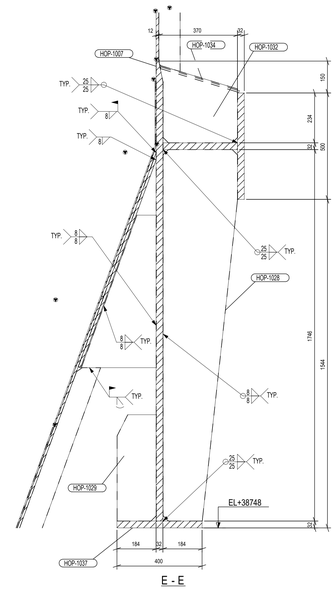
NORTH



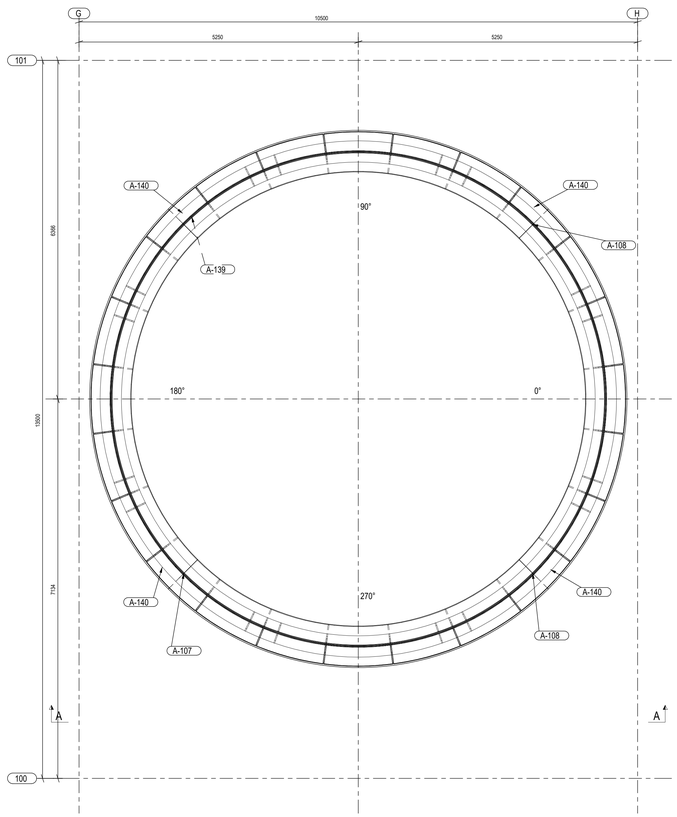
A - A



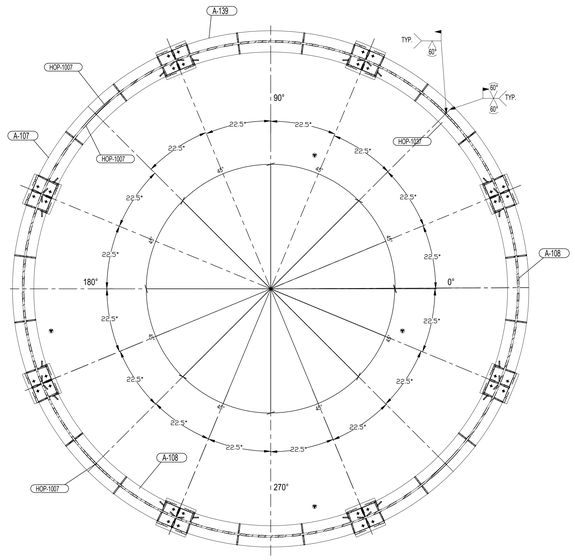
D - D



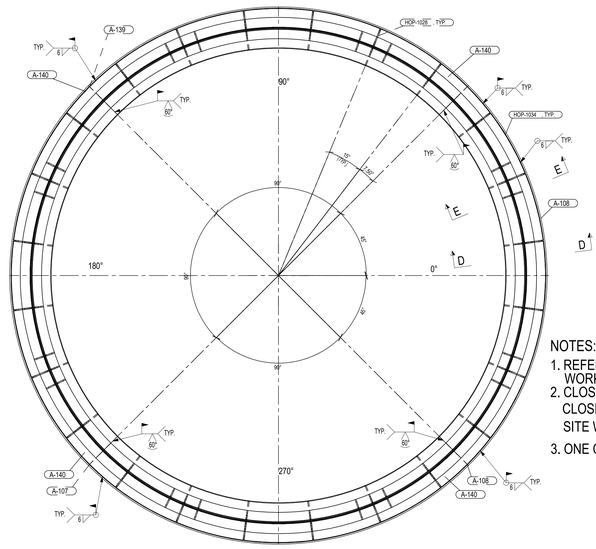
E - E



TOP PLAN



B - B



C - C

01 LOCATION OF RING FUNNEL FROM RING GIRDER WEB TOP

NOTES:-

1. REFER DRAWING NO:- PE-DG-504-600-C002 FOR GENERAL NOTES FOR STRUCTURAL STEEL WORKS
2. CLOSING PLATES TO BE WELDED IN SHOP AS SHOWN IN INDIVIDUAL DETAIL DRAWING. CLOSING PLATES BETWEEN ONE RING GIRDER TO ANOTHER ONLY TO BE SENT LOOSE FOR SITE WELDING.
3. ONE COAT OF RED OXIDE CAN BE APPLIED BEFORE WELDING CLOSING PLATE @ SHOP.

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STS	(PEM DRG NO. / HPVP DRG NO.) DRAWING NUMBER	NTEM NO	MATERIAL CODE	KKEP	UNIT	UNIT WEIGHT	GS	ZONE
	4	A-140 PL#38_ GIRDER COVER PLATE LOOSE		2-66-101-A0001 / 2-66-101-U0049				No	30.211		
	3	A-139 PL32*2162		1-66-101-A0003 / 1-66-101-U0020				No	7976.600		
	2	A-108 PL32*2162		1-66-101-A0004 / 1-66-101-U0021				No	7976.600		
	1	A-107 PL32*2162		1-66-101-A0001 / 1-66-101-U0019				No	7976.600		
					VAR NO	MATERIAL SPECN		DI	QUANTITY		

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CONTRACTOR: **Bharat Heavy Electricals Ltd** POWER SECTOR PROJECT ENGINEERING MANAGEMENT, NEW DELHI

CUSTOMER NO. : ADANI POWER LIMITED
PROJECT NAME : 2x800MW ULTRA SCTPP-MAHAN (PH-II)

SUB CONTRACTOR: **Bharat Heavy Electricals Ltd** HIGH PRESSURE BOILER PLANT, TRICHY

DETAILER

	NAME	SIGNATURE	DATE
DRN	RPC		29.08.2024
CHD	PP		29.08.2024
APPD	LP		29.08.2024

DEPT: ST | CODE: 122 | ALL DIMENSIONS ARE IN MM | PROJECTION | SCALE: NTS | WEIGHT (Kg): 32027.244 | REF TO ASSY / OLD DWG

TITLE: GA OF RING GIRDER

PEM DRG NO: 0-66-101-A0001
HPVP DRG NO: 0-66-101-U0042
REV: 01

REV NO.	DATE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.
01	29-10-24	NOTE NO: 02 & 03 ARE ADDED	M.CHAITANYA	NVREDDY	NVREDDY