

CUSTOMER: 	TAMILNADU GENERATION & DISTRIBUTION CORPORATION LIMITED																
CONSULTANT: 	DESEIN PRIVATE LTD.																
PROJECT: 	2X660 MW UDANGUDI STPP- STAGE I (UNIT#1&2) IN UDANGUDI, TUTICORIN DISTRICT, TAMILNADU																
BHARAT HEAVY ELECTRICAL LTD BOILER AUXILIARIES PLANT, RANIPET																	
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PRPD	Rajamanickam.M		12.11.2018														
CHD APPD	K.C Gandhi Parimalam		12.11.2018														
<u>2X660MW UDANGUDI STPP STAGE I (UNIT# 1&2)</u>																	
<u>TITLE:</u>				<u>PAINTING SCHEDULE FOR APH, FANS, ESP, Gates & Dampers, Aux. boiler chimney</u>													
DOCUMENT NO: RPT-PS:UDAN:EPC:R678-R679& R4S9				REV: 02	Date: 12.11.2018												
<u>RECORD OF REVISION</u>																	
REV No	Effective date	Remarks															
00	16/03/2018	Original Issue															
01	24/08/2018	Revised Issue- Changes made as per Lr. No. CE/PROJ/SE/C/UP/EE/M/Engineering/D.342/2018, dt.23.08.2018															
02	12/11/2018	Revised Issue- Changes made as per customer comments dtd 09.11.2018															

	Bharat Heavy Electricals Limited Boiler Auxiliaries Plant Ranipet – 632 406 <i>Vellore Dist. Tamil Nadu</i>	BHEL DOC NO.	RPT-PS:UDAN:EPC:R678-R679&R4S9
		REVISION NO.	02
		DATE	12-11-2018

UDANGUDI TPP (2X660MW)
PAINTING SCHEDULE FOR APH, FAN, ESP, GATE&DAMPER, &CHIMNEY (AUX.BLR)
BHEL RANIPET Customer No(s).: R678 – R679 & R4S9

Prepared By	Reviewed & Approved By
	
(Rajamanickam. M)	(K. Gandhi Parimalam)

SI No	SURFACE LOCATION	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
			PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	

RECORD OF REVISION

REV NO	EFFECTIVE DATE	DETAILS OF REVISION MADE
00	16.03.2018	Original issue – First submission
01	24.08.2018	Customer/ Consultant comments: Air- Preheater- Item 1 to 11- Please clarify why only primer is indicated for these items BHEL Reply: Item no: 01 of APH, Item will be subjected to temperature up to 350°C, that's why primer is only envisaged as per Annex 25.1.2 of painting systems. (Page 24 of 31), SI no: 02 to 11 are coming in gas path, that's why red oxide primer is only envisaged as per Annex 25.1.2 of painting systems. (Page 24 of 31) Customer/ Consultant comments: Chimney for outer shell – Please indicate painting for Chimney outer shell BHEL Reply: Chimney outer shell painting is indicated in SI no: 02 under Chimney in painting scheme. Painting scheme is as per Annex. 25.1.2 of painting systems (Page 24 of 31). Customer/ Consultant comments: ESP Item- 1,2,3,5,6,8,10,13,14,16,17,19,20, 22, 23 to 29, 32- Please clarify why only primer is indicated for these items BHEL Reply: The items referred in the SI nos are coming in gas path, therefore red oxide primer is only indicated for these items as per Annex 25.1.2 of painting systems (Page 24 of 31) Customer/ Consultant comments: All insulated surfaces shall be coated with heat resistant aluminium paint. BHEL Reply: We wish to bring to your kind notice that as per Annex 25.1.2 of painting systems, Page 24 of 31, Carbon steel surfaces upto 400°C and under thermal insulation shall be given primer of Red oxide Zinc phosphate primer to IS 12744. Customer/ Consultant comments: Fans- stairs shall be painted in line with SI no: 02 of Fans. BHEL Reply: In Stairs and handrails PGMA, Stair stringer channels, Floor grills and toe guard plates are galvanized. Other structural items of stair case shall be painted as per SI no: 02 of Fans which is indicated vide SI no: 04 of Fans in the painting scheme. Customer/ Consultant comments: Painting materials and DFT microns shall be as per Annexure 25.1.2 of painting system/ Sec.2.25/ vol. II of Tender specification. BHEL Reply: We wish to confirm that all painting materials and DFT microns are ensured as per Annexure 25.1.2 of painting system/ Sec.2.25/ vol. II of Tender specification.
02	12.11.2018	Total DFT was indicated in all the places and Notes as given by customer incorporated under Note 12.

SI No	SURFACE LOCATION	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
			PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	

1-AIR PRE HEATER (APH)

01	Steam Coiled APH (SCAPH) Temp<400°C	Power Tool Cleaning to St3 (SSPC-SP3)	Red-oxide Zinc phosphate primer to IS 12744 (Two coats)	60	NIL	--	60
02	Rotor Post assembly (Flue gas swept surface)	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
03	Pin rack assembly (Machined areas of pin & holes)	Power Tool Cleaning to St3 (SSPC-SP3)	Temp rust preventive to PRQA 523	20	NIL	--	20
04	Seals		Temporary rust preventive oil to PRQA 523	20	NIL	--	20
05	Rotor Housing assembly (Flue gas swept surface)	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
06	Hot and Cold End Connecting Plate assembly (Flue gas swept surface); Guide brg Assy, Support brg Assy	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
07	Axial seals (Flue gas swept surface)	Power Tool Cleaning to St3 (SSPC-SP3)	Temp. Rust Preventive Oil to PRQA 523	20	NIL	--	20
08	Bypass seals (Flue gas swept surface)	Power Tool Cleaning to St3 (SSPC-SP3)	Temp. Rust Preventive Oil to PRQA 523	20	NIL	--	20
09	Washing manifold & deluge assy items (Flue gas swept surface)	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
10	Cleaning Device Assy (Tube with Nozzle – Long Retractable Non Rotating type) (Flue gas swept surface)	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
11	Other items of General Details except Access Door Assy (Flue gas swept surface)	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
12	Access Door Assy (> 95°C - exposed to atmosphere)	Blast Cleaning to SA 2 ½ (Near white metal) with surface profile 35 – 50 µm SIS 05 5900 *	Primer: 1 coat of Inorganic ethyl zinc silicate - DFT 75µ. Intermediate coat: Two coats of Polyamide cured Epoxy MIO pigmented Intermediate coat DFT 100 µ per coat	75 200	Two pack aliphatic acrylic polyurethane paint to IS 13213 Shade: Dark Admiralty grey (Shade no: 632 of IS 5)	75	350

SI No	SURFACE LOCATION	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
			PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	
13	Air seal piping (<95°C- exposed to atmosphere)	Blast Cleaning to SA 2 ½ (Near white metal) with surface profile 35 – 50 µm SIS 05 5900 *	Primer: 1 coat of Inorganic ethyl zinc silicate to IS 14946 - DFT 75µ. Intermediate coat: Two coats of Polyamide cured Epoxy MIO pigmented Intermediate coat DFT 100 µ per coat- DFT- 200µ Finish: Two pack aliphatic acrylic polyurethane paint to IS 13213, DFT- 75µ Total- 350 µ Shade: Sky blue (Shade no: 101 of IS 5)				

SI No	SURFACE LOCATION	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
			PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	

2. FANS

01	Foundation Matl of FD, ID & PA Fans Bolt & Stud Assy & FD Fan (Aux.blr)	Power tool cleaning to St3 (SSPC-SP3)	Temp. Rust Preventive Fluid as per PR QA 523	20	NIL	--	20
02	Foundation Matl of FD, ID & PA Fans – Packer Plates Base Frame for Actuators of FD, ID & PA Fans Seal Air Fan Motor Base Frame / Plate	Blast Cleaning to SA 2 ½ (Near white metal) with surface profile 35 – 50 µm SIS 05 5900*	Primer: 1 coat of Inorganic ethyl zinc silicate to IS 14946 - DFT 75µ. Intermediate coat: Two coats of Polyamide cured Epoxy MIO pigmented Intermediate coat DFT 100 µ per coat- DFT- 200µ Finish: Two pack aliphatic acrylic polyurethane paint to IS 13213, DFT- 75µ Total- 350 µ Shade: Dark Admiralty grey (Shade no: 632 of IS 5)				
03	Stairs and Hand Rails-FD/ID/PA FAN – Floor grills only	Refer SI No 3 under GATES & DAMPERS					
04	Other structural items (Stringer channels, Toe guard plates etc) other than SI no: 03 of above	Blast Cleaning to SA 2 ½ (Near white metal) with surface profile 35 – 50 µm SIS 05 5900*	Primer: 1 coat of Inorganic ethyl zinc silicate to IS 14946 - DFT 75µ. Intermediate coat: Two coats of Polyamide cured Epoxy MIO pigmented Intermediate coat DFT 100 µ per coat- DFT- 200µ Finish: Two pack aliphatic acrylic polyurethane paint to IS 13213, DFT- 75µ Total- 350 µ Shade: Dark Admiralty grey (Shade no: 632 of IS 5)				
04	FD FAN <95° C Surface Temperature Static Parts - Insulated Surface (Outside) & Ambient Air swept surface (Inside)	Power tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
	Rotating Parts (Inside the Insulated static parts – protection up to erection)	Power tool cleaning to St3 (SSPC-SP3)	Epoxy based Zinc Phosphate Primer (Two Pack system) as per IS:13238 (Two coats) per coat= 30µm &Total DFT = 60 µm min.	60	NIL	--	60
05	ID FAN >95° C Surface Temperature Static Parts - Insulated Surface (Outside)	Power tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
	Static Parts – Flue gas swept surface (Inside)						

SI No	SURFACE LOCATION	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
			PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	
	Rotating Parts - (Inside the insulated Static Parts – protection up to erection)	Power tool cleaning to St3 (SSPC-SP3)	Epoxy based Zinc Phosphate Primer (Two Pack system) as per IS:13238 (Two coats) per coat= 30µm & Total DFT = 60 µm min.	60	NIL	--	60
06	PA FAN < 95° C Surface Temperature Static parts – Insulated Surface (outside) & ambient Air swept surface (Inside)	Power tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
	Rotating Parts - (Inside the insulated Static Parts – protection up to erection)	Power tool cleaning to St3 (SSPC-SP3)	Epoxy based Zinc Phosphate Primer (Two Pack system) as per IS:13238 (Two coats) per coat= 30µm & Total DFT = 60 µm min.	60	NIL	--	60
07	Coupling and Coupling Guard – For FD, ID & PA FAN, Seal Air FAN & FD FAN (aux. blr)	Blast Cleaning to SA 2 ½ (Near white metal) with surface profile 35 – 50 µm SIS 05 5900 *	Primer: 1 coat of Inorganic ethyl zinc silicate to IS 14946 - DFT 75µ. Intermediate coat: Two coats of Polyamide cured Epoxy MIO pigmented Intermediate coat DFT 100 µ per coat- DFT- 200µ Finish: Two pack aliphatic acrylic polyurethane paint to IS 13213, DFT- 75µ Total- 350 µ Shade: Dark Admiralty grey (Shade no: 632 of IS 5)				
08	Lub Oil System – For FD , ID & PA Fan	Blast Cleaning to SA 2 ½ (Near white metal) with surface profile 35 – 50 µm SIS 05 5900 *	Primer: 1 coat of Inorganic ethyl zinc silicate - DFT 75µ. Intermediate coat: Two coats of Polyamide cured Epoxy MIO pigmented Intermediate coat DFT 100 µ per coat	75 200	Two pack aliphatic acrylic polyurethane paint to IS 13213 Shade: Dark Admiralty grey (Shade no: 632 of IS 5)	75	350
09	Silencer for FD & PA FAN & FD FAN (aux. blr.) < 95° C Surface Temperature Insulated Surface	Power tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
10	Seal Air FAN and FD FAN (Aux. blr.) < 95° C Surface Temperature Insulated Surface	Power tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60

SI No	SURFACE LOCATION	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (μm min.)
			PAINT	DFT (μm min.)	PAINT	DFT (μm min.)	
11	Commissioning and mandatory spares Tools for FD fan for aux. blr	Power tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60

SI No	SURFACE LOCATION	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
			PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	

3. GATES & DAMPERS

01	Gates & Dampers > 95° C Insulated Surfaces	Power tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
02	Gates & Dampers < 95 ° C Insulated Surfaces	Power tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two Coats)	60	NIL	--	60
03	Platform & Ladder – Items of Cage for Ladder, Toe Guard Plate Floor Grill, Hand Rails, Hand Rail Post,	Hot Dip Galvanizing to 610 gm per Sq. Meter (minimum) and to a coating thickness of 87 µm (minimum)					
04	Platform & Ladder - Other Structural Items – other than sl.no. 3 of above.	Refer SI No 40 under ESP					
05	Ducts Commissioning Spares	As per respective items mentioned in this Painting Scheme					

SI No	SURFACE LOCATION	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
			PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	

4. CHIMNEY FOR AUX. BOILER

01	Chimney Foundation Materials		Power Tool Cleaning to st3 (SSPC-SP3	Temp. Rust Preventive Fluid as per PR QA 523	20	NIL	--	20
02	Chimney shell	Insulated Side	Power Tool Cleaning to st3 (SSPC-SP3	Two coats of Red Oxide Zinc Phosphate Prime to IS: 12744 (Two coats)	60	NIL	--	60
		Flue Gas Swept Surface						
03	Chimney Duct	Insulated Side	Power Tool Cleaning to st3 (SSPC-SP3	Two coats of Red Oxide Zinc Phosphate Prime to IS: 12744 (Two coats)	60	NIL	--	60
		Flue Gas Swept Surface						
04	Chimney Base, Painters Trolley (other than SS) and Chimney Strakes		Surface preparation: Blast Cleaning to SA 2 ½ (Near white metal) with surface profile 35 – 50 µm Primer: 1 coat of Inorganic ethyl zinc silicate to IS 14946 - DFT 75µ. Intermediate coat: Two coats of Polyamide cured Epoxy MIO pigmented Intermediate coat DFT 100 µ per coat- DFT- 200µ Finish: Two pack aliphatic acrylic polyurethane paint to IS 13213, DFT- 75µ Total- 350 µ Shade: Dark Admiralty grey (Shade no: 632 of IS 5)					
05	Platform Ladder and hand rails post, hand rails and floor grills & step treads		Hot Dip Galvanizing to 610 gm per Sq. Meter (minimum) and to a coating thickness of 87 µm (minimum)					
06	Other than sl.no.05 of platform structural items		Blast Cleaning to SA 2 ½ (Near white metal) with surface profile 35 – 50 µm	Primer: 1 coat of Inorganic ethyl zinc silicate - DFT 75µ. Intermediate coat: Two coats of Polyamide cured Epoxy MIO pigmented Intermediate coat DFT 100 µ per coat	75 200	Two pack aliphatic acrylic polyurethane paint to IS 13213 Shade: Dark Admiralty grey (Shade no: 632 of IS 5)	75	350

SI No	SURFACE LOCATION	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
			PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	

5. ELECTROSTATIC PRECIPITATOR (ESP OR EP)

1	Insulator Housing Assy 7X - X06; Temp>95°C (Flue gas swept surface)	Power Tool Cleaning to st3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
2	Gas Distribution Assy 7X - X08; Temp>95°C (Flue gas swept surface)	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
3	GD Rapping Mechanism 7X - X09; Temp>95°C (Flue gas swept surface)	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
4	GD Drive Arrangements (7X - X10) outdoor equipment/external surfaces	Blast Cleaning to SA 2 ½ (Near white metal) with surface profile 35 – 50 µm, SIS 05 5900 *	Primer: 1 coat of Inorganic ethyl zinc silicate to IS 14946- DFT 75µ. Intermediate coat: Two coats of Polyamide cured Epoxy MIO pigmented Intermediate coat DFT 100 µ per coat- DFT- 200µ Finish: Two pack aliphatic acrylic polyurethane paint to IS 13213, DFT- 75µ Total- 350 µ Shade: Dark Admiralty grey (Shade no: 632 of IS 5)				
5	Gas Screening 7X - X11; Temp>95°C (Flue gas swept surface)	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
6	Emitting System suspension 7X - X13; Temp>95°C (Flue gas swept surface)	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
7	Emitting Electrode –Hook Part 7X - X15	Rust preventive application on Hook part Only (Electrode Wire is Stainless Steel)					
8	Emitting Electrode Rapping Mechanism 7X - X16 ; Temp>95°C (Flue gas swept surface)	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
9	Drive Arrangement For Emitting System (7X - X17) outdoor equipment/external surfaces	Blast Cleaning to SA 2 ½ (Near white metal) with surface profile 35 – 50 µm, SIS 05 5900 *	Primer: 1 coat of Inorganic ethyl zinc silicate to IS 14946 - DFT 75µ. Intermediate coat: Two coats of Polyamide cured Epoxy MIO pigmented Intermediate coat DFT 100 µ per coat- DFT- 200µ Finish: Two pack aliphatic acrylic polyurethane paint to IS 13213, DFT- 75µ Total- 350 µ Shade: Dark Admiralty grey (Shade no: 632 of IS 5)				

SI No	SURFACE LOCATION	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
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10	Suspension Arrangement for Collecting Electrode 7X - X19; Temp>95°C (Flue gas swept surface)	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
11	Collecting Electrode, 7X - X20	Rust Preventive Fluid Application					
12	Lifting Beam for Collecting Electrode 7X - X20	Blast Cleaning to SA 2 ½ (Near white metal) with surface profile 35 – 50 µm, SIS 05 5900 *	Primer: 1 coat of Inorganic ethyl zinc silicate - DFT 75µ. Intermediate coat: Two coats of Polyamide cured Epoxy MIO pigmented Intermediate coat DFT 100 µ per coat	75 200	Two pack aliphatic acrylic polyurethane paint to IS 13213 Shade: Dark Admiralty grey (Shade no: 632 of IS 5)	75	350
13	Frame of Emitting System-Top 7X - X21; Temp>95°C (Flue gas swept surface)	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
14	Frame of Emitting System Bottom 7X - X22; Temp>95°C (Flue gas swept surface)	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Prime to IS: 12744 (Two coats)	60	NIL	--	60
15	Inspection /Access Door 7X - X23 outdoor equipment/external surfaces	Blast Cleaning to SA 2 ½ (Near white metal) with surface profile 35 – 50 µm, SIS 05 5900 *	Primer: 1 coat of Inorganic ethyl zinc silicate to IS 14946 - DFT 75µ. Intermediate coat: Two coats of Polyamide cured Epoxy MIO pigmented Intermediate coat DFT 100 µ per coat- DFT- 200µ Finish: Two pack aliphatic acrylic polyurethane paint to IS 13213, DFT- 75µ Total- 350 µ Shade: Dark Admiralty grey (Shade no: 632 of IS 5)				
16	Shock Bars 7X - X24; Temp>95°C (Flue gas swept surface)	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
17	Collecting Electrode (CE) Rapping Mechanism 7X - X25; Temp>95°C (Flue gas swept surface)	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60

SI No	SURFACE LOCATION	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
			PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	
18	Drive Arrangements for CE Raping 7X - X26 outdoor equipment/external surfaces	Blast Cleaning to SA 2 ½ (Near white metal) with surface profile 35 – 50 µm, SIS 05 5900 *	Primer: 1 coat of Inorganic ethyl zinc silicate to IS 14946 - DFT 75µ. Intermediate coat: Two coats of Polyamide cured Epoxy MIO pigmented Intermediate coat DFT 100 µ per coat- DFT- 200µ Finish: Two pack aliphatic acrylic polyurethane paint to IS 13213, DFT- 75µ Total- 350 µ Shade: Dark Admiralty grey (Shade no: 632 of IS 5)				
19	ESP Roof Beams 7X - X28; Temp>95°C (Flue gas swept surface)	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
20	Frame of Emitting System – Middle 7X - X32; Temp>95°C (Flue gas swept surface)	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
21	Outer Roof –EP 7X - X42 outdoor equipment/external surfaces	Blast Cleaning to SA 2 ½ (Near white metal) with surface profile 35 – 50 µm, SIS 05 5900 *	Primer: 1 coat of Inorganic ethyl zinc silicate to IS 14946- DFT 75µ. Intermediate coat: Two coats of Polyamide cured Epoxy MIO pigmented Intermediate coat DFT 100 µ per coat- DFT- 200µ Finish: Two pack aliphatic acrylic polyurethane paint to IS 13213, DFT- 75µ Total- 350 µ Shade: Dark Admiralty grey (Shade no: 632 of IS 5)				
22	Hopper Ridges 7X - X43; Temp>95°C (Flue gas swept surface)	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60

SI No	SURFACE LOCATION	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)	
			PAINT	DFT (µm min.)	PAINT	DFT (µm min.)		
23	Hopper Upper part (7X - X44) Temp>95°C	Insulated side	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
		Flue Gas Swept Surface		Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
24	Hopper Middle & Lower part (7X - X45) Temp>95°C	Insulated side	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
		Flue Gas Swept Surface		Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
25	Insulator Support Panel (7X - X46) Temp>95°C	Insulated Side	Power Tool Cleaning to st3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
		Flue Gas Swept Surface		Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
26	Roof Panel Assy (7X - X47) Temp>95°C	Insulated Side	Power Tool Cleaning to st3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
		Flue Gas Swept Surface		Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
27	Casing Structure 7X - X48 (Flue gas swept surface) Temp>95°C		Power Tool Cleaning to st3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
28	Casing (Shell, Side Panels, Gables & GD Housing) (7X - X49) Temp>95°C	Insulated Side	Power Tool Cleaning to st3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
		Flue Gas Swept Surface		Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60

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			PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	

29	ESP Funnel Assy 7X - X50 Temp>95°C	Insulated Side	Power Tool Cleaning to st3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
		Flue Gas Swept Surface		Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
30	ESP Pent House – Columns and trusses only (7X - X55)	Painting Scheme shall be in line with PGMA 7X – X81 (ESP Supporting Structure) – Refer Sl.no. 40.						
31	ESP Pent House – Other items other than sl.no. 30. (7X - X55)	Blast Cleaning to SA 2 ½ (Near white metal) with surface profile 35 – 50 µm, SIS 05 5900 *	Primer: 1 coat of Inorganic ethyl zinc silicate - DFT 75µ. Intermediate coat: Two coats of Polyamide cured Epoxy MIO pigmented Intermediate coat DFT 100 µ per coat	75 200	Two pack aliphatic acrylic polyurethane paint to IS 13213 Shade: Dark Admiralty grey (Shade no: 632 of IS 5)	75	350	
32	Splitters & Guide Vanes (7X - X57); Temp>95°C (Flue gas swept surface)	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60	
33	ESP Performance Test Equipment (7X - X61)-outdoor equipment/external surfaces	Blast Cleaning to SA 2 ½ (Near white metal) with surface profile 35 – 50 µm, SIS 05 5900 *	Primer: 1 coat of Inorganic ethyl zinc silicate to IS 14946 - DFT 75µ. Intermediate coat: Two coats of Polyamide cured Epoxy MIO pigmented Intermediate coat DFT 100 µ per coat- DFT- 200µ Finish: Two pack aliphatic acrylic polyurethane paint to IS 13213, DFT- 75µ Total- 350 µ Shade: Dark Admiralty grey (Shade no: 632 of IS 5)					
34	Water Washing System (7X - X66)	Power Tool Cleaning to St3 (SSPC-SP3)	Primer: 1 coat of Inorganic ethyl zinc silicate to IS 14946 - DFT 75µ. Intermediate coat: Two coats of Polyamide cured Epoxy MIO pigmented Intermediate coat DFT 100 µ per coat	75 200	Two pack aliphatic acrylic polyurethane paint to IS 13213 Shade: Dark Admiralty grey (Shade no: 632 of IS 5)	75	350	
35	Foundation Materials for ESP (7X - X80)	Surface preparation will be power tool cleaning. All Threaded and other surfaces of foundation bolt and its materials shall be coated with temporary rust preventive fluid. During execution of civil works the dried film of coating will be removed using Organic Solvents.						

SI No	SURFACE LOCATION	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
			PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	
36	Hand Rail Post, Bend ,ERW Tubes, Floor Grill and Step Tread(7X - X65,89 – 611,89 – 612,89 – 613)	Hot Dip Galvanizing to 610 gm sq. Meter (minimum) and to a coating thickness of 87 µm (minimum)					
37	Commissioning Spares(79 – 988)	As per respective item , as listed in the painting schedule					
38	Tools & Tackles 79 - 996	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60

SI No	SURFACE LOCATION	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
			PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	
39	Approach Platform For Hopper (7X - X65)	Blast Cleaning to Sa 2.5 Near White metal with surface roughness profile to 35-50 µm, SIS 05 5900 *	Primer: 1 coat of Inorganic ethyl zinc silicate to IS 14946 - DFT 75µ. Intermediate coat: Two coats of Polyamide cured Epoxy MIO pigmented Intermediate coat DFT 100 µ per coat- DFT- 200µ Finish: Two pack aliphatic acrylic polyurethane paint to IS 13213, DFT- 75µ Total- 350 µ Shade: Dark Admiralty grey (Shade no: 632 of IS 5) Note: Out of two coats of finish paint of Two pack aliphatic acrylic polyurethane paint to IS 13213, one coat to DFT- 40 µ will be done at shop or subcontracting works. Second coat of finish paint of Two pack aliphatic acrylic polyurethane paint to IS 13213 will be done at site to DFT- 35µ; Dark Admiralty grey (Shade no: 632 of IS 5) Total DFT- Primer- 75 µ + Intermediate 200 µ+ Finish 75 µ, Total- 350 µ Columns below '0' level, one coat of Rust preventive oil to PRQA 523 to DFT- 40µ shall be applied since this item will be embedded inside the concrete pedestal.				
40	Supporting Structure for ESP (Refer note for surface embedded in concrete) (7X - X81)						
41	Stair stringer Channels, Bracket, Supp Bracket, Frames Loose Channels, Toe Plates, Stiffener Plates and Angles for EP Galleries, Stair and Walk Way (7X - X65 89 – 610)						

SI No	SURFACE LOCATION	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
			PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	

6. PAINTING OF DAMAGED AREAS

Areas where paint has deteriorated badly by erosion and areas where the paint film has lost its adhesion property and where the steel has got rusted appreciably - these areas are to be repainted as per the following procedure:

SURFACE LOCATION	SURFACE PREPARATION	PRIMER, INTERMEDIATE & FINISH
APH: SI nos. 12,13 Fans: SI nos. 02,07 ESP: SI nos: 04,09,15, 18,21,31,33,39,40,41 Chimney: SI no:04& 06	Hand/ Power tool cleaning to remove the paint and Minimum 6" of surrounding areas with existing coat to be roughened by wire brush & emery paper for best adhesion by patch primer	1. Primer: One coat of Self priming Epoxy Zinc rich primer to IS:14589 Gr.II to DFT of 70 µm (min.) 2. Intermediate and Finish: As given in respective scheme as above If primer is intact, intermediate and finish to be done as per the respective scheme.
Any other areas other than above sl nos, where paint got damaged	As given in respective scheme (Derusting of all mechanical damages)	Primer and Finish : As given in respective scheme

SI No	SURFACE LOCATION	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (μ m min.)
			PAINT	DFT (μ m min.)	PAINT	DFT (μ m min.)	

GENERAL NOTES

1. Blast cleaning shall not be performed where dust can contaminate surfaces undergoing such cleaning or during humid weather conditions having humidity exceed 85%.
2. Irrespective of surface preparation, the first coat of primer must be applied immediately within 4 hours of cleaning of surface.
3. No painting is required for Galvanized, non-ferrous & stainless steel items, except as indicated above.
4. Surfaces not easily accessible after shop assembly shall be treated before- hand and protected for life of the equipment as per this painting scheme as applicable for the respective PGMA/Surface location painting scheme.
5. Machined items are to be applied with coat of temporary rust preventive oil
6. PGMA's and its items coming under BOI are not indicated in this painting schedule. However, respective Engg document for all BOIs shall be referred. Wherever it is not specified; it shall be as per painting schedule of applicable PGMA description.
7. In sub-assy, wherever plates / sheets of thickness less than or equal to 5mm and rods are used - Power Tool or Hand Tool Cleaning to SSPC - SP 3 / SP 2 shall be followed.
8. 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.
9. Surfaces inaccessible after assembly shall receive two coats of primer prior to assembly. Surfaces inaccessible after erection shall receive one additional coat of finish paint over the above number of coats specified before erection. Portion of steel member embedded / to be encased in concrete shall not be painted, but may be applied with temporary rust preventive fluid, which may be removed while erection.
10. 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.
11. Surface preparation, post treatment and touch up for mechanical damages shall be as per (6) PAINTING OF DAMAGED AREAS.
12. Final finish coat apart from this painting schedule of items exposed to atmosphere shall be carried out at site during commissioning stage before handing over.

SI No	SURFACE LOCATION	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
			PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	

Painting scheme- Details of procurement & application processes

SL NO	TYPE OF PAINT	SPECIFICATION OF PAINT	NO OF PACK	VOLUME OF SOLIDS (% Min)	MODE OF APPLICATION	OVER COATING INTERVAL	SHADE
01	Inorganic Zinc Ethyl silicate primer (% Zn on dry film= 80 (min))	IS 14946	2	60	Spray only	24	Grey
02	Epoxy High solid- Polyamide cured Epoxy based MIO pigmented intermediate coat	--	2	80	Spray	12	Brown
03	Aliphatic acrylic polyurethane paint	IS 13213	2	55	Spray	16	Corresponding shade no
04	Red oxide Zinc phosphate primer	IS 12744	1	--	Brush/ spray	12	--
05	Temporary rust preventive fluid to PRQA 523	--	1	--	Brush	12	--

SI No	SURFACE LOCATION	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (μ m min.)
			PAINT	DFT (μ m min.)	PAINT	DFT (μ m min.)	

PAINTING REQUIREMENTS AS STIPULATED IN TENDER DOCUMENT

SL NO	AREAS	TENDER DOCUMENT REFERENCE
01	All areas of ESP, Fans, Gates and Damper, APH & chimney	Volume II, Sub section 2.25, Cleaning, Protective coating & Painting
02	Galvanizing of gratings, hand railings and ladders	Volume II, Sub section 2.25, Cleaning, Protective coating & Painting