

01	10.12.2025	Revised based on customer comment	RK	RK	TV
00	01.12.2025	First release	RK	RK	TV
REV	DATE	DESCRIPTION / NOTE	PRD	CHD	APD

## REVISIONS

CLIENT:



**ADITYA ALUMINUM**  
(A UNIT OF HINDALCO INDUSTRIES LIMITED)

CONSULTANT:



**TATA CONSULTING ENGINEERS LIMITED**  
MUMBAI

CONTRACTOR / SUPPLIER:



**BHARAT HEAVY ELECTRICALS LTD.**  
BOILER AUXILIARIES PLANT, RANIPET- 632406

PROJECT:

**1X150 MW CAPTIVE POWER PLANT, UNIT #7,  
LAPANGA, ODISHA**

TITLE:

**PAINTING SCHEME FOR APH, FANS, G&D  
AND ESP**

Prepared by	Renjith. K	STATUS: FOR APPROVAL
Checked by	Renjith. K	BHEL CUST NO: R1/1593
Approved by	T. Venugopal	REV NO: 01

**BHEL DRG / DOC NO.: RPT-QM-1593-PS-001; REV:01**



**Bharat Heavy Electricals Limited**  
**Boiler Auxiliaries Plant**  
**Ranipet – 632 406**



BHEL DOC NO.	PS: HIND: BTG: R1/1593
REVISION NO.	01
DATE	10-12-2025

**HINDALCO ADITYA LAPANGA (1 X 150 MW) - BTG PACKAGE**

**PAINTING SCHEDULE FOR FANS, APH, ESP AND G&D**

**DRAWING / DOCUMENT NO: RPT-QM-1593-PS-001; REV:01**

**BHEL RANIPET Customer No(s): R1/1593**

Prepared & Reviewed by	Approved by
	
Renjith K / Sr. Manager (QA)	T. Venugopal / AGM (Quality)

**T. VENUGOPAL**  
**AGM / QUALITY**  
**BHEL RANIPET - 632 406.**

SI No	SURFACE LOCATION	PGMA	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	01-12-2025	Original issue – first submission
01	10-12-2025	<p><b>Customer comment:</b> BHEL to confirm that painting total DFT &amp; specification is not less than the existing 6 X 150 MW units since BHEL has agreed the same in the contract.</p> <p><b>BHEL Reply:</b> BHEL confirms that the painting total DFT and specification provided are equal to or better than those of the existing 6 × 150 MW units.</p>

### 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 incorporation 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: \_\_\_\_\_

BP/GA(HIL)

11-12-2025

Date: \_\_\_\_\_

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

## 1. AIR PRE-HEATER (APH)

01	Rotor Assembly – Temp > 95°C		52010	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
02	Cold basket and element, Hot basket and element		52024 52025	Power Tool cleaning to St3 (SSPC-SP3)	Temporary Rust Preventive Oil application (Wet) as per PRQA 522 <b>Note:</b> Heating elements are assembled in module assy after dipping in the rust preventive fluid				
03	Radial Seals –Temp > 95°C	T Bars	52013	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
		Seals			Temp rust preventive as per PRQA 523	20	--	--	20
04	Rotor Housing Assembly – Temp > 95°C	Insulated Side	52030	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
		Flue gas Swept Surface			Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
05	Hot and Cold End Connecting Plate Assembly – Temp > 95°C	Insulated Side	52041 52042	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
		Flue gas Swept Surface			Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
06	Axial seals		52054	Power Tool cleaning to St3 (SSPC-SP3)	Temp rust preventive as per PRQA 523	20	--	--	20
07	Bypass seals		52055	Power Tool cleaning to St3 (SSPC-SP3)	Temp rust preventive as per PRQA 523	20	--	--	20
08	Rotor Drive assembly With bracket, Air Motor, Gear Box– Temp <95°C		52100	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100
09	Air seal piping Temp< 95° C		52211	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100

SI No	SURFACE LOCATION	PGMA	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
				PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	
10	Access door – Temp. > 95 °C	52220	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
11	Observation port with light	52220	No painting, as the same is made of Glass					
	Other than glass part– Temp > 95°C	52220	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100
12	Rotor Stoppage alarm	52220	Made of Aluminium (No painting is required)					
	Other than aluminum --- Temp > 95°C		Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100
13	Air receiver – Temp < 95°C	52101	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100
14	Lifting beams, special Tools & tackles – Temp < 95°C	52220 52000	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100
15	T C pipe Assy. (Stainless Steel part)	52220	No Painting					
	T C pipe Assy – other than SS parts – Temp < 95°C	52220	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100
16	Guide Bearing Assembly– Temp < 95°C	52261	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100
17	Supporting Bearing Assembly – Temp < 95°C	52262	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100

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				PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	
18	Oil piping Hot end– Temp < 95°C	52271	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100
19	Oil piping cold end– Temp < 95°C	52272	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100
20	Oil circulating units – Temp < 95°C	52274	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100
21	Washing manifold & deluge assy items– Temp < 95°C	52301 52302	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100
22	Cleaning Device assemblies Tube with Nozzle – Temp < 95°C	52325 52326 52329	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100
23	Commissioning spares and Mandatory spares	52988	As per respective items as above					

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

## 2. FANS

01	Foundation Material of FD, ID & PA Fans	55011 56021 55031	Power Tool cleaning to St3 (SSPC-SP3)	Temp. Rust Preventive Fluid as per PRQA 523	20	--	--	20
02	Foundation Material of FD, ID & PA Fans – Packer Plates	55011 56021 55031	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100
03	<b>FD FAN &lt;95° C Surface Temperature</b> <b>Static Parts</b> - Insulated Surface (Outside) & Ambient Air swept surface (Inside) setting & indication shaft assembly, expansion joint parts	55514 55714 55814 55410 55510	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
	<b>Rotating Parts</b> (Inside the Insulated static parts – protection up to erection)	55214	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	--	--	60
04	<b>ID FAN &gt;95° C Surface Temperature</b> <b>Static Parts</b> - Insulated Surface (Outside)	56526	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
	<b>Static Parts</b> – Flue gas swept surface (Inside)		Power tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
	<b>Rotating Parts</b> - (Inside the insulated Static Parts – protection up to erection)	56226	Power tool cleaning to St3(SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60

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

05	<b>PA FAN &lt;95° C surface Temperature Static parts</b> – Insulated Surface (Outside) & Ambient Air swept surface (Inside) setting & indication shaft assembly, expansion joint parts	55634 55734 55834 55430 55530	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
	<b>Rotating Parts</b> (Inside the insulated static parts-protection up to erection)	55334	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	--	--	60
06	<b>Coupling and coupling Guard</b> – for FD, ID & PA FAN & Seal Air FAN, SA Fan motor canopy, FD, ID, PA Fan motor canopy, FD, ID, PA Fan LOS canopy, Fan Tools and fixture – temp < 95°C	55000 55015 56025 55035 56075 56079 55810 56820 55830 56870 55019 56029 55039 55210 56220 55230	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100
07	<b>Lub oil System</b> – For FD, ID & PA FAN	55910 56920 55930	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100
08	<b>Silencer for FD &amp; PA FAN</b> <95 °C Surface Temperature Insulated Surface	55911 55931	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100



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				PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	
09	Radial pent house ventilation fan / Radial seal fan bearing housing, ID Fan bearing housing / Radial Seal Air Fan, Radial seal air fan stator <95° C Surface Temperature	56161 56172 56173 56320 56370 56472 56473	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100
10	FD, ID, PA & SA Fan Stair & Handrail - Galvanizing items (as per BHEL Engineering document)	55012 56022 55032 56072	Gratings- Blast cleaning to Sa 2½  Other Items- Power tool cleaning to St3 (SSPC-SP3) and acid cleaning	Hot Dip Galvanizing to 610 gm sq. Meter (minimum) and to a coating thickness of 85 µm (minimum)				
	FD, ID, PA & SA Fan Stair & Handrail – Other than galvanized structural items		Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100

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

### 3. GATES & DAMPER

01	Gates & Dampers > 95°C up to 400 °C	57203, 57223, 57270, 57273, 57363, 57413, 57433, 57460, 57470, 57483, 57493, 57613, 57623	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
02	Gates & Dampers, Seal Air piping < 95 °C	57013, 57020, 57023, 57073, 57113, 57141, 57S41, 57143, 57160, 57173, 57603	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100
03	Ladder, Cage for Ladder, Toe Guard Plate Floor Grill, Hand Rails, Hand Rail Post,	57466 57666	Gratings- Blast cleaning to Sa 2½ Other Items- Power tool cleaning to St3 (SSPC-SP3) & Acid cleaning	Hot Dip Galvanizing to 610 gm per Sq. Meter (minimum) and to a coating thickness of 85 µm (minimum)				
04	Other Structural Items – other than sl.no. 3 of above. Blower with motor, valves, Mounting bracket	57466, 57666, 57209, 57491, 57S91, 57497, 57S97, 57S09	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100
05	Ducts Commissioning Spares	57988	As per respective items mentioned in this Painting Scheme					

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

#### 4. ELECTROSTATIC PRECIPITATOR (ESP OR EP)

01	Insulator Housing Assembly – Temp > 95°C	79906	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
02	Gas Distribution Assembly – Temp > 95°C	79908	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
03	GD Rapping Mechanism – Temp > 95°C	79909	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
04	GD Drive Arrangements – Temp < 95°C	79910	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100
05	Gas Screening – Temp > 95°C	79911	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
06	Emitting System suspension – Temp > 95°C	79913	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
07	Emitting Electrode – Hook Part	79915	Rust preventive application on Hook part only (Electrode Wire is Stainless Steel)					
08	Emitting Electrode Rapping Mechanism – Temp > 95°C	79916	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
09	Drive Arrangement for Emitting System – Temp < 95°C	79917	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100
10	Suspension Arrangement for Collecting Electrode – Temp > 95°C	79919	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
11	Collecting Electrode	79920	Rust Preventive Fluid as per TEP AQCS RP					
12	Lifting Beam for Collecting Electrode	79920	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats of 30 µm)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100

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13	Frame of Emitting System-Top – Temp > 95°C	79921	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
14	Frame Of Emitting System - Bottom– Temp > 95°C	79922	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
15	Inspection /Access Door	79923	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100
16	Shock Bars - - Temp > 95°C	79924	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
17	Collecting Electrode (CE) Rapping Mechanism – Temp > 95°C	79925	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
18	Drive Arrangements for CE Rapping – Temp < 95°C	79926	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100
19	ESP Roof Beams – Temp > 95°C	79928	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
20	Frame of Emitting System – Middle– Temp > 95°C	79932	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
21	Outer Roof –EP - – Temp < 95°C	79942	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100
22	Hopper Ridges – Temp > 95°C	79943	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
23	Hopper Upper part – Temp> 95°C	79944	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
24	Hopper Middle & Lower part – Temp > 95°C	79945	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60

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25	Insulator Support Panel – Temp > 95°C	79946	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
26	Roof Panel Assy – Temp > 95°C	79947	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
27	Casing Structure – Temp > 95°C	79948	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
28	Casing (Shell, Side Panels, Gables & GD Housing)– Temp > 95°C	79949	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
29	ESP Funnel Assembly – Temp > 95°C	79950	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
30	Rectifier handling system – Temp <95°C (Other than columns) <b>Columns- Refer to SI no: 38</b>	79956	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100
31	Splitters & Guide Vanes, Fixing comp. for ESP insulation – Temp > 95°C	79957 79968 79989	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	--	--	60
32	ESP Performance Test Equipment, – Temp < 95°C	79961	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100
33	Water Washing System – Temp < 95°C	79966	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats of 20 µm)	40	100
34	Hand Rail Post, Bend, ERW Tubes, Floor Grill and Step Tread	79965 89610 89611 89612 89613	Gratings- Blast cleaning to Sa 2½ Other Items- Power tool cleaning to St3(SSPC-SP3) and acid cleaning	Hot Dip Galvanizing to 610 gm sq. Meter (minimum) and to a coating thickness of 85 µm (minimum)				
35	Commissioning Spares	79988	As per respective item, as listed in the painting schedule					

SI No	SURFACE LOCATION	PGMA	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
				PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	
36	Tools & Tackles– Temp < 95°C	79996	Power Tool cleaning to St3 (SSPC-SP3)	Two Coat of Red Oxide Zinc phosphate primer to IS:12744 (30 µm per Coat)	60	Synthetic Enamel to IS2932 Shade: Light Grey Shade 631 of IS 5 (Two coats)	50	110
37	Other than galvanized items for Approach Platform for Hopper	79965	Blast Cleaning to Sa 2.5 Near White metal finish of ISO 8501-1 with surface roughness profile to 40-60 µm	<b>Primer Coat:</b> One coat of two component moisture curing Inorganic Ethyl Zinc Silicate Primer to IS 14946, Metallic Zinc content- 75% (min) in dry film, <b>DFT = 75µm per coat (min)</b>  <b>Intermediate Coat:</b> One coat of two component Polyamide cured Epoxy based MIO pigmented coat <b>DFT = 100µm per coat (min)</b>  <b>Finish Coat:</b> One coat of Aliphatic Acrylic Polyurethane to IS 13213, <b>DFT = 50 µm per coat (min)</b> Shade <b>Dark Admiralty Grey to Shade No. 632 of IS 5</b>  <b>Note:</b> <b>1.</b> The total paint thickness Primer (75 µm) + Intermediate (100 µm) + Finish coat (50 µm) shall be minimum <b>225 µm</b> .  <b>2.</b> DFT of individual paint coat shall be ensured separately and the same shall meet the specified minimum DFT of each coat as given above.  <b>3.</b> Bottom of base plate including below zero level portion marked in EP Supporting Columns which will be embedded in concrete, those surfaces shall be prepared by manual cleaning to ST3 and provided with primer coat of chlorinated rubber-based zinc phosphate primer of min. 50 µm DFT.				
38	Supporting Structure for ESP, Penthouse columns (Refer note 5 for surface embedded in concrete)	79956 79981						
39	Other than galvanized items vide sl. No. 34, like Stair stringer Channels, Bracket, Support Bracket, Frames Loose Channels, Toe Plates, Stiffener Plates and Angles for EP Galleries, Stair and Walk Way	89610 89611						

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

## 5. 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:

SL NO	SURFACE LOCATION	SURFACE PREPARATION	PRIMER, INTERMEDIATE & FINISH
1	Paint damaged Components falling under sl.no. 37, 38, 39 of ESP	Surface preparation by manual cleaning. Minimum 6" of surrounding areas with existing coat to be roughened by wire brush & emery paper for best adhesion by patch primer	<ol style="list-style-type: none"> <li>1. Primer: One coat of Self priming Epoxy Zinc rich primer to IS:14589 Gr. II to DFT of 80 µm (minimum)</li> <li>2. Intermediate and Finish: As given in respective scheme as above</li> <li>3. If primer is intact, intermediate and finish to be done as per the respective scheme.</li> </ol>
2	Paint damaged components falling under other Sl. Nos. of APH, FAN, GATE & DAMPER and ESP		Primer and Finish : As given in respective scheme

## 6. GENERAL NOTES

1. No painting is required for Galvanized, non-ferrous & stainless-steel items, except as indicated above.
2. Machined items are to be applied with coat of temporary rust preventive oil
3. PGMA's covered in sub-supplier (i.e., Purchased) items viz., support bearing / slide bearing and other sub-delivery components of ESP etc., are not indicated in the above list. However, the Painting Schedule for all items supplied by all sub-suppliers and BOI under the scope of BHEL shall be same as for main equipment covered in this document. For all site erection shop materials Red Oxide Zinc Phosphate Primer shall be applied to meet the temporary protection.
4. In sub-assembly, wherever plates / sheets of thickness less than or equal to 5mm and rods are used, very minor items like clamps, small items etc. tiny items of weight less than 25 Kg - Power Tool or Hand Tool Cleaning to SSPC - SP 3 / SP 2 and painting as per FAN, sl. No. 6 shall be followed.
5. DFT shall meet the specified value. In case of non-meeting of DFT in number of coats specified, subsequent coats shall be applied to meet specified DFT.
6. 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.
7. All threaded and other surfaces of foundation bolts and its materials, insulation pins, Anchor channels, Sleeves, HSFG bolts 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.
8. Weld edges made for site welding shall be manual cleaned by wire brush and shall be applied with weldable primer.
9. All steel structures shall be provided with painting as given in the specification. Further, painting system shall also meet the requirements of corrosivity category C3 (durability high) as per ISO 12944.
10. The primer coat shall be applied in shop immediately after blast cleaning by airless spray technique. Intermediate coat shall be applied in shop after an interval of minimum 24 hours (from the application of primer coat) by airless spray technique.

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

## 7. 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 (IN HOURS)	SHADE
01	Epoxy Zinc phosphate primer	IS 13238	2	40	Spray	24	Grey
02	Zinc Ethyl silicate primer (% Zn on dry film= 80 (min))	IS 14946	2	60	Airless Spray only	24	Grey
03	Epoxy High solid- Polyamide cured Epoxy based MIO pigmented intermediate coat	--	2	80	Airless Spray	16	Brown
04	Aliphatic acrylic polyurethane paint	IS 13213	2	55	Airless Spray	16	Shade as per respective painting scheme
05	Heat resistant aluminum paint	IS 13183	1	--	Brush/ Spray	24	--
06	Chlorinated rubber based zinc phosphate primer	--	1	40	Brush/ Spray	12	Grey
07	Long oil alkyd Synthetic enamel finish paint	IS 2932	1	35	Brush/ Spray	12	Corresponding shade no
08	Red oxide Zinc phosphate primer	IS 12744	1	--	Brush/ spray	12	--

**Note: Application of paint as per paint/ primer manufacturer's instruction**