Rev 04	28-01-2026	K. Srinivasan	K. Rajmohan	A. Santhakumari	Modified as per customer comments of CAT-II approval.
Rev 03	15-12-2025	K. Srinivasan	K. Rajmohan	A. Santhakumari	Modified as per customer comments of CAT-III approval.
Rev 02	15-11-2025	K. Srinivasan	K. Rajmohan	A. Santhakumari	Modified as per customer comments of CAT-III approval.
Rev 01	07-11-2025	K. Srinivasan	K. Rajmohan	A. Santhakumari	Modified as per customer comments of CAT-III approval.
Rev 00	15-07-2025	K. Srinivasan	K. Rajmohan	A. Santhakumari	Prepared in line with EPC Bidding Document. No. GSECL/P&P/EPC/ 800MW, Vol.V, Annexure.8- Painting requirements & Pre-bid resolutions to Bidding Documents issued by GSECL.
Revision	**Rev date**	**Created by**	**Reviewed by**	**Approved by**	**Description**
Revision history					
Customer No:		**U8/1862**			
Customer Doc No:		**PL: C3-PS/1862**			
PROJECT	UKAI 1x800 MW Super Critical TPP Unit-7				
Owner GSECL	**GUJARAT STATE ELECTRICITY CORPORATION LIMITED.**				
OWNER'S CONSULTANT steag energy services	STEAG ENERGY SERVICES (INDIA) PVT. LTD.				
EPC Contractor (BTG PACKAGE) BHEL	BHARAT HEAVY ELECTRICALS LIMITED HIGH PRESSURE BOILER PLANT, TIRUCHIRAPALLI – 620014 & Their Approved Subcontractors				
	Name	**Date**	**Title**		
Prepared by	K. Srinivasan	28-01-2026	**PAINTING SCHEDULE FOR SG COMPONENTS**		
Reviewed by	K. Rajmohan				
Approved by	A. Santhakumari				

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 PS10	**Collector & Separator Vessels (Except Internals), Supports** 04 –321,323;	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
2 PS5	**Collector & Separator Vessels internals and** Dd items (threaded and machined surfaces only) 04-347;07-331,360,361,362,393; 08-911,912,913;09-303,304; 12-306,314,317,324,327,328,344,348,354,393; 17-304,306,319;19-306,307; 21-602,605,700; 24-352,700,803,813,818,827,842,968; 28-700;32-700; 35-010,190,701,721 to 727; 35-728,730;36-700,701,721,722,723; 39-012,700;41-710;42-700,710;43-710;45-710; 47-710;48-019,700;65-710;67-710; **Foundation materials**: 35-010; 39-012;	SSPC – SP3 Power Tool Cleaning	Rust Preventive Fluid to PR: CHEM: 09 – 04 DFT=25µm per coat	1	--	--	--	--	--	25
3 PS19B2	**Buck stays** 08-001,003,006,007,111,380; 08-501,503,901,910; **Boiler supporting structures, Columns, Girders, Bracings** 35-131 to 138, 141 to 148, 151 to 158; 35-181 to 188, 211to214; 35-221,222,231,232,311,312,321; 35-322,331,332,341,342,351,352,361,362; 35-371,372, 374,375,381 to 388, 390; 35-441 to 448, 451 to 458, 511 to 518; 35-521 to 528; 35-531 to 538, 993;	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=80µm per coat (refer sheet 12 Sl.no.11 for details)	1	High Build Epoxy MIO coating cured with polyamide hardnener coat DFT = 120µm per coat (refer sheet 12 Sl.no.10 for details)	1	Aliphatic acrylic Polyurethane paint DFT = 30µm per coat. (refer sheet 12 Sl.no.2 for details)	2	Dark admiralty grey to Shade No. 632 of IS 5.	260

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 PS19B2 (Contd.)	Galleries, Stair-ways & inter connecting Walkways 36-111 to113,151to153; 36-311to316; 36-321to326,331to338,341to346; 36-351to356,361to366,371 to 377,381 to 383; 36-391 to 395;36-610,613,620,740,993; 38-210,299,310, 410,510,610, 710,993; ID system structures. 39-101,102,141,142,150,299,300; 39-304,305,306,993; Duct supports 48-015,115,145,205,225, 265; 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=80µm per coat (refer sheet 12 Sl.no.11 for details)	1	High Build Epoxy MIO coating cured with polyamide hardnener coat DFT = 120µm per coat (refer sheet 12 Sl.no.10 for details)	1	Aliphatic acrylic Polyurethane paint DFT = 30µm per coat. (refer sheet 12 Sl.no.2 for details)	2	Dark admiralty grey to Shade No. 632 of IS 5.	260
4 PS1Z3	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; 07-102,110,125,217,223,231,232; 12-178, 850,852, 900; 17-407,476,807; 18-001,002,010,701; 19-701,702,903;21-600;24-811,824,828; 24-836,837;	Blast cleaning to SA2 ½ (Near white metal) with surface profile 35-50 µm	Inorganic Ethyl Zinc Silicate Primer DFT=60µm per coat	1	--	--	--	--	Grey	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 PS1Z3 (Contd.)	**Hot Air:** 48-018, 022,116,202,204,207,208; 48-212,214,222,224, 262,264,267,662,664,667; **Flue Gas:** 48-372,382,384,386, 432,434,462,464,482,484,491; 48-492,494,496,498;	Blast cleaning to SA2 ½ (Near white metal) with surface profile 35-50 µm	Inorganic Ethyl Zinc Silicate Primer DFT=60µm per coat	1	--	--	--	--	Grey	60
5 PS 9A1	**Components >95° C uninsulated other than components coming in gas path.** **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 20 µm per coat	1	--	--	Heat Resistant Aluminium Paint to IS 13183 Gr. II DFT 20µm per coat	2	Aluminum	60
6 PS 10C3	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	2	Aluminum	60
7 PS2	**Loose tubes, SH, RH & Eco. coils** 11-074,078,374,378,406,467,469,487,491,494,606; 11-608,684,694,716,717,718,767,768,769,787,791; 11-916,917,918,967,968,969,987,991; 12-179,181,184,187,368,405,514,524,544,554,600; 12-800,803,805,862,903,914,917,924,927,928,944; 12-948,954,968;16-201,202,203,270,278,379; 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** 04-147, 547; 07-409,431,460,461,462,502,503,509,531,560; 12-506,906,907; 17-919; 21-601,604,606; 24-350,351,354, 800,801,804,805,806,808,809; 24-810,814,815,817,825,826,835,840,841,855; 24-950,955,960;30-219,233,234; 36-396,398; Fuel firing: 41-350,390,500; Steam blowing piping 42-001,002,005,010,046,065,070,120,152,154,157; 43-004,104, 200; 45-200,801,802, 804,805,806,858; 47- 261,263,281,283,858; Duct plates, expansion joints 48-911,912; Coal Feeding: 65-736; 67-204,272,276, 283,801,802,803; 95-088,089,091,485;97-585,591,592; $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;** **Impulse line: 97-590** **(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.
# - Final Shade is Grey white (RAL 9002).

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; 06-447,451,453,455,500,501,515,731,732; 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; 11-474; 12-993,994; 17-174,504,506,900,903; 19-704,753,763,783; 19-793,802,850,851,852; 20-988,998;21-987,988; 24-822,823, 987,988, 989, 993; 30-103,105,211,212,215,223,224,235; 31-010,104; 32-010,210,810; 35-995; 37-010; 41-997; 42-858,997; 43-997;45-997; 47-997;48-993; 65-200,997; 67-200,997; 96-193; 97-282; 99-501,514; 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 PS 1AE	Hand rails and posts: # 35-851; 36-851,852,853; # 38-850; 39-850;	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	# - Golden Yellow to Shade No. 356 of IS5	70
11 PS6	**ladders / rungs** 35-821,822,823; 36-820,821,822,823; 38-820; 39-820; **Floor Grills, Step treads** 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 **: The Guard plates, Stringer channels shall be painted as per painting scheme prescribed in Sl. No.10. Hood ladders, angles and plates shall be painted as per 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.	--	--	--	--	--	--	--
1AS6	**Soot Blower components** **20-051,054,201,204,511,794,962;** **(Refer note 19 for valve head assembly)**	Blast cleaning to SA2 ½ (Near white metal) with surface profile 15-30 µm	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	3	Verdigris Green Shade No. 280 of IS5	120
	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 PS15D	**For CLH & VLH*** PGs 07,08,12,17,19,21,24,47,48 &80 07-402,403,405;12-517,528; 17-904,906; 19-506,507,904,905, 906,907; 24-353; 48-206,395;	Blast cleaning to SA2 ½ (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= 40.0 microns per coat	1	Phirozi Blue Shade No. 176 of IS5	80
14 PS10B4	**Components > 95ºC & <200^{0}C, un-insulated Fuel pipes** 47-200,269,289;	Blast cleaning to SA2 ½ (Near white metal) with surface profile 35-40 µm	Inorganic Ethyl Zinc Silicate Primer DFT=40µm per coat	1	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	80
15 PS 1BE	All Columns below '0' level (embedded in concrete) PGs 34,35,36,38, 39	SSPC-SP3/ Power Tool Cleaning	HB Chlorinated Rubber Based Zinc Phosphate primer %VS=40, (min) DFT=50 microns per coat	1	--	--	No paint	No paint	Grey	50

*- 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. If required, one coat of Rust preventive shall be applied after tightening of the same.**

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 GSECL UKAI 1X800MW EPC document Vol-V/ Annex-8/ Cl-6.0.

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: U8/1862, GSECL UKAI SCTPP - 1X800 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 Vol-V/ Annex-8/ Painting requirements.

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 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 & 10 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 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 having thickness <5mm, surface preparation can be power tool cleaning to St3 and painting shall be in line with PS1A.

23. Handrails, step treads of PGMA under Sl. No. 3 need to be galvanized as applicable in line with scheme of Sl.No. 10.

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 C3 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. Five spots shall be taken for every $10m^2$ of painted areas. Each spot (3.8cm) covers three gauge readings.

b. if the structure is less than $30m^2$, each $10m^2$ should be measured.

c) if the structure is between 30 and $100m^2$, select 3 random $10m^2$ test areas and measure.

d) For structure exceeding 100m^2, select 3 random 10m^2 testing areas for the first 100m^2 and select 1 random 10m^2 testing area for each additional 100m^2.

e) Coating thickness tolerance: Individual reading taken to get a representative measurement for the spot are unrestricted (usually low or high readings are discarded). Spot measurements (the average of 3 gauge readings) must be in the range of ±20% of minimum total DFT.

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

Following parameters to be inspected for surface preparation and painting of components.

Components	Surface preparation	Painting
Structures, CLH/VLH, etc (Sl. No. 3,4,5,11(1AS2),12,13)	**a) Surface finish - Visual comparator for blast cleaning to Sa2.5 level. b) Surface profile check – by comparator or any suitable method. c) Salt contamination 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. 1,2,6,7,8,9,11,14)	**Cleanliness of power tool cleaned surfaces.**	**Visual examination & dry film thickness of each coat.**

29. **Paint application requirements:**

a. Two pack coatings shall be mixed in the ratio recommended by manufacturer to ensure proper and complete curing of the coatings. The base and hardener are to be separately mixed first to obtain a homogenous mixture. The hardener is to be added to the base slowly, with continuous mixing / agitation and not the reverse.

b. Any addition of thinner to achieve the application viscosity should be made only after the components are thoroughly mixed. Excess thinner is not recommended, as increase in volume, leads to lower DFT, sagging, longer curing time, etc.

c. Paints containing Zinc, MIO pigments shall be continuously stirred with use of a mechanical agitator whilst being applied, to ensure uniformity over the surface area.

d. Conventional air spray: the correct combination of air volume, air pressure and fluid flow to give good atomisation to be ensured to get a defect free painted surface.

e. Air spray (pressure pot) is recommended in cases where large quantities of paint are to be applied as paint in the tank can be prevented from settling, reduces application time and also enables the gun to be turned to any angle to coat objects effectively without spilling paint.

f. Transport and erection of painted structures shall be carried out only after the drying time specified by the paint manufacturer has elapsed. Handling & packing of painted material shall be appropriate to avoid damage to painting, such as the use of non-metallic slings, etc for handling and by minimizing handling after painting.

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	Aliphatic acrylic Polyurethane paint as per IS13213	13	2	40	30	DA Grey/ Phirozi blue	632/ 176 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.	5	2	60	120 (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.	7	2	60	80 (min)	Grey	--	Airless Spray	24
12	HB Chlorinated Rubber Based Zinc Phosphate Primer-Colour Grey	8	1	40	50	Grey	--	Brush / Spray	12

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 zinc rich primer to IS 14589 Grade II	2 T.DFT 80µ (min)	As given in scheme	1	As given in scheme	2	As given in scheme	As given in scheme
2	Paint damaged components fall under Sl.no: 1,2,4,5,6,7,8,9,11,12,13.	Power tool cleaning to bare metal	As given in scheme							

02	17.02.2026	Revised Based on Customer comments	RK	RK	TV
01	04.02.2026	Revised Based on Customer comments	RK	RK	TV
00	15.11.2025	First release	RK	RK	TV
REV	DATE	DESCRIPTION / NOTE	PRD	CHD	APD

REVISIONS

TITLE:

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

OWNER:

GUJARAT STATE ELECTRICITY CORPORATION LIMITED

OWNER'S CONSULTANT:

STEAG ENERGY SERVICES (INDIA) PVT. LTD

PROJECT:

1 X 800 MW ULTRA SUPERCRITICAL UNIT NO.#7 ON ASH DYKE AREA AT UKAI TPS

EPC CONTRACTOR:

BHARAT HEAVY ELECTRICALS LTD.

BOILER AUXILIARIES PLANT, RANIPET- 632406

Prepared by	Renjith. K	STATUS: FOR APPROVAL
Checked by	Renjith. K	BHEL CUST NO: R8/1588
Approved by	T. Venugopal	REV NO: 02

BHEL DRG / DOC NO.: RPT-QM-1588-PS-001: REV.02

RANIPET	**Bharat Heavy Electricals Limited** **Boiler Auxiliaries Plant** **Ranipet – 632 406**	BHEL DOC NO.	PS: UKAI: R8/1588
		REVISION NO.	02
		DATE	17-02-2026

1 X 800 MW ULTRA SUPERCRITICAL UNIT NO. #7 ON ASH DYKE AREA AT UKAI TPS

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

CONTRACT NO: LOA REF: GSECL/P&P/SE(ENGG)/UKAI-7/226 DATED 27.03.2025

DRAWING / DOCUMENT NO: RPT-QM-1588-PS-001; REV.02

BHEL RANIPET Customer No(s).: R8/1588

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

Sl 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	15-11-2025	Original issue – first submission
01	04-02-2026	Revised based on customer comments (refer CRS sheet for details)
02	17-02-2026	Revised based on customer comments (refer CRS sheet for details)

Sl 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	Steam coil APH, - Temp > 95°C		50510	Power Tool cleaning to St3 (SSPC-SP3)	One coat of Heat Resistant Aluminum Paint Gr II to IS 13183	20	One coat of Heat Resistant Aluminum Paint Gr II to IS 13183	20	40
02	Module assembly, Tubular Air heater (Insulated) - Temp > 95°C		52010 50121	Power Tool cleaning to St3 (SSPC-SP3)	Two Coats Red Oxide Zinc phosphate prime to IS:12744	60	--	--	60
03	Heating Element with Baskets		52010	Power Tool cleaning to St3 (SSPC-SP3)	Temporary Rust Preventive Oil application (Wet) as per PRQA 522 **Note**: Heating elements are assembled in module assy after dipping in the rust preventive fluid				
04	Rotor post assembly – Temp > 95°C		52011	Power Tool cleaning to St3 (SSPC-SP3)	Two Coats Red Oxide Zinc phosphate prime to IS:12744	60	--	--	60
05	Pin rack assembly		52012	---	Temp rust preventive as per PRQA 523	20	--	--	20
06	Radial Seals –Temp > 95°C	T Bars	52013	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60
		Seals			Temporary rust preventive Oil as per PRQA 523	20	--	--	20
07	Rotor Housing Assembly – Temp > 95°C	Insulated Side	52030	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60
		Flue gas Swept Surface			Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60
08	Hot and Cold End Connecting Plate Assembly – Temp > 95°C	Insulated Side	52041 52042	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60
		Flue gas Swept Surface			Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60
09	Axial seals		52054	Power Tool cleaning to St3 (SSPC-SP3)	Temp. Rust Preventive Oil as per PRQA 523	20	--	--	20
10	Bypass seals		52055	Power Tool cleaning to St3 (SSPC-SP3)	Temp. Rust Preventive Oil as per PRQA 523	20	--	--	20

Sl No	SURFACE LOCATION	PGMA	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
				PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	
11	Rotor Drive assembly With bracket, Air Motor, Gear Box– Temp <95°C	52100	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
12	Air seal piping Temp< 95° C	52211	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
13	Access door – Temp. > 95 ° C	52220	Power Tool cleaning to St3 (SSPC-SP3)	One coat of Heat Resistant Aluminum Paint Gr II to IS 13183	20	One coat of Heat Resistant Aluminum Paint Gr II to IS 13183	20	40
14	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)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
15	Rotor Stoppage alarm	52220	Made of Aluminium (No painting is required)					
	Other than aluminum –– Temp > 95°C		Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
16	Air receiver– Temp < 95°C	52101	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
17	Lifting beams, special Tools & tackles – Temp < 95°C	52220 52000	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
18	T C pipe Assy. (Stainless Steel part)	52220	No Painting					
	T C pipe Assy. (Non Stainless Steel part)– Temp < 95°C	52220	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
19	Guide Bearing Assembly– Temp < 95°C	52261	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100

Sl No	SURFACE LOCATION	PGMA	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
				PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	
20	Supporting Bearing Assembly– Temp < 95°C	52262	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
21	Oil piping Hot end– Temp < 95°C	52271	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
22	Oil piping cold end– Temp < 95°C	52272	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
23	Oil circulating units – Temp < 95°C	52274	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
24	Washing manifold & deluge assy items– Temp < 95°C	52301 52302	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
25	Cleaning Device assemblies Tube with Nozzle, HP Pump – Temp < 95°C	52338 52339 52341	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
26	Cleaning device drive– Temp < 95°C	52339	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
27	Commissioning spares and Mandatory spares	52988	As per respective items as above					

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

2. FANS

01	Foundation Material of FD, ID & PA Fans, Aux. FD Fan	55011 55021 55031 56001	Temp. Rust Preventive Fluid as per PRQA 523		20	--	--	20
02	Foundation Material of FD, ID & PA Fans – Packer Plates Seal Air Fan Motor Base Frame / Plate Base Frame for Actuators of FD, ID & PA Fans	55011 55021 55031 56370 55516 55628 55635	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
03	**FD FAN <95° C Surface Temperature** **Static Parts** - Insulated Surface (Outside) & Ambient Air swept surface (Inside) setting & indication shaft assembly, expansion joint parts	55516 55716 55816 55410 55510	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
	Rotating Parts (Inside the Insulated static parts – protection up to erection)	55216	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	**ID FAN >95° C Surface Temperature** **Static Parts** - Insulated Surface (Outside), expansion joint parts	55628 55728 55828 55420 55520	Power Tool cleaning to St3 (SSPC-SP3)	One coat of Heat Resistant Aluminum Paint Gr II to IS 13183	20	One coat of Heat Resistant Aluminum Paint Gr II to IS 13183	20	40
	Static Parts – Flue gas swept surface (Inside), setting & indication shaft assembly		Power tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60
	Rotating Parts - (Inside the insulated Static Parts – protection up to erection)	55328	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

Sl No	SURFACE LOCATION	PGMA	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
				PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	
05	**PA FAN <95º C surface Temperature** **Static parts –** Insulated Surface (Outside) & Ambient Air swept surface (Inside) setting & indication shaft assembly, expansion joint parts	55635 55735 55835 55430 55530	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
	Rotating Parts (Inside the insulated static parts-protection up to erection)	55335	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	**Coupling and coupling Guard** – for FD, ID & PA FAN, Seal Air FAN & Aux. FD Fan, SA Fan & Aux. FD Fan motor canopy, FD, ID, PA Fan motor canopy, FD, ID, PA Fan LOS canopy, Fan Tools and fixture – temp < 95°C	55000 56000 55015 55025 55035 56075 56079 55810 55820 55830 56870 55019 55029 55039 55210 55220 55230 56005 56009 56800	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
07	**Lub oil System –** For FD, ID & PA FAN	55910 55920 55930	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
08	**Silencer for FD & PA FAN** <95º C Surface Temperature Insulated Surface	55911 55931	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100

Sl No	SURFACE LOCATION	PGMA	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
				PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	
09	Radial pent house ventilation fan /ID sealing /cooling fans / Radial seal fan bearing housing / Radial Seal Air Fan, Radial seal air fan stator / Aux. FD Fan rotor / Aux. FD Fan bearing housing / Aux. FD Fan stator <95º C Surface Temperature	55024 56161 56173 56370 56473 56104 56300 56404	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
10	FD, ID, PA, SA Fan, Aux. FD Fan Stair & Handrail - Galvanizing items (as per BHEL Engineering document)	55012 55022 55032 56072 56002	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, Aux. FD Fan Stair & Handrail – Other than galvanized structural items		Blast Cleaning to Sa 2.5 Near White metal finish of ISO 8501-1 with surface roughness profile to 40-60 µm	**Primer Coat:** One coat of Inorganic Ethyl Zinc Silicate Primer to IS 14946, (Metallic zinc content 80% (min)), DFT = 80 µm per coat **Intermediate Coat:** One coat of polyamide cured Epoxy based MIO pigmented Intermediate coat (solid by volume- 80% (min) DFT = 120 µm per coat	80 120	Two coats of two pack Aliphatic Isocyanate cured Acrylic finish Paint to IS 13213 (solid by volume- 55% (min) DFT = 60 µm per coat, Shade: Dark admiralty grey to shade no. 632 of IS 5	60	260

Sl 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, 57430, 57460, 57470, 57480, 57490, 57623	Power Tool cleaning to St3 (SSPC-SP3)	One coat of Heat Resistant Aluminum Paint Gr II to IS 13183	20	One coat of Heat Resistant Aluminum Paint Gr II to IS 13183	20	40
02	Gates & Dampers, Seal Air piping < 95 ° C	57010, 57020, 57023, 57033, 57063, 57073, 57083, 57110, 57141, 57S41, 57143, 57160, 57173, 57A13	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	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	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
05	Ducts Commissioning Spares	57988	As per respective items mentioned in this Painting Scheme					

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

4. ELECTROSTATIC PRECIPITATOR (ESP OR EP)

1	Insulator Housing Assembly– Temp > 95°C	79906	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60
2	Gas Distribution Assembly– Temp > 95°C	79908	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60
3	GD Rapping Mechanism– Temp > 95°C	79909	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60
4	GD Drive Arrangements– Temp< 95°C	79910	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
5	Gas Screening– Temp > 95°C	79911	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60
6	Emitting System suspension– Temp > 95°C	79913	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60
7	Emitting Electrode –Hook Part	79915	Rust preventive application on Hook part only (Electrode Wire is Stainless Steel)					
8	Emitting Electrode Rapping Mechanism– Temp > 95°C	79916	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60
9	Drive Arrangement for Emitting System– Temp < 95°C	79917	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
10	Suspension Arrangement for Collecting Electrode– Temp > 95°C	79919	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	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)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
13	Frame Of Emitting System-Top– Temp > 95°C	79921	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60
14	Frame Of Emitting System - Bottom– Temp > 95°C	79922	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60
15	Inspection /Access Door	79923	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
16	Shock Bars - – Temp > 95°C	79924	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60

Sl No	SURFACE LOCATION		PGMA	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
					PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	
17	Collecting Electrode (CE) Rapping Mechanism – Temp > 95°C		79925	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60
18	Drive Arrangements for CE Rapping – Temp < 95°C		79926	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
19	ESP Roof Beams – Temp > 95°C		79928	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60
20	Frame of Emitting System – Middle– Temp > 95°C		79932	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60
21	Outer Roof –EP - – Temp < 95°C		79942	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
22	Hopper Ridges – Temp > 95°C		79943	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60
23	Hopper Upper part – Temp > 95°C	Insulated side	79944	Power Tool Cleaning to st3 (SSPC-SP3)	One coat of Heat Resistant Aluminum Paint Gr II to IS 13183	20	One coat of Heat Resistant Aluminum Paint Gr II to IS 13183	20	40
		Flue Gas Swept Surface			Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60
24	Hopper Middle & Lower part– Temp > 95°C	Insulated side	79945	Power Tool Cleaning to st3 (SSPC-SP3)	One coat of Heat Resistant Aluminum Paint Gr II to IS 13183	20	One coat of Heat Resistant Aluminum Paint Gr II to IS 13183	20	40
		Flue Gas Swept Surface			Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60
25	Insulator Support Panel – Temp > 95°C	Insulated Side	79946	Power Tool Cleaning to st3 (SSPC-SP3)	One coat of Heat Resistant Aluminum Paint Gr II to IS 13183	20	One coat of Heat Resistant Aluminum Paint Gr II to IS 13183	20	40
		Flue Gas Swept Surface			Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60
26	Roof Panel Assy – Temp > 95°C	Insulated Side	79947	Power Tool Cleaning to st3 (SSPC-SP3)	One coat of Heat Resistant Aluminum Paint Gr II to IS 13183	20	One coat of Heat Resistant Aluminum Paint Gr II to IS 13183	20	40
		Flue Gas Swept Surface			Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60
27	Casing Structure – Temp > 95°C		79948	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60
28	Casing (Shell, Side Panels,	Insulated Side	79949	Power Tool Cleaning to st3 (SSPC-SP3	One coat of Heat Resistant Aluminum Paint Gr II to IS 13183	20	One coat of Heat Resistant Aluminum Paint Gr II to IS 13183	20	40

Sl No	SURFACE LOCATION	PGMA	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
				PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	
	Gables & GD Housing) – Temp > 95°C	Flue Gas Swept Surface			Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60
29	ESP Funnel Assembly – Temp > 95°C	Insulated Side	79950	Power Tool Cleaning to st3 (SSPC-SP3	One coat of Heat Resistant Aluminum Paint Gr II to IS 13183	20	One coat of Heat Resistant Aluminum Paint Gr II to IS 13183	20	40
		Flue Gas Swept Surface			Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60
30	ESP Pent House – Temp <95°C (Other than columns) **Columns - Refer to Sl. No: 38**		79955	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
31	Splitters & Guide Vanes, Fixing component of ESP insulation – Temp > 95°C		79957 79989 79968	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	--	--	60
32	ESP Performance Test Equipment – Temp < 95°C		79961	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100
33	Water Washing System – Temp < 95°C		79966	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	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					
36	Tools & Tackles– Temp < 95°C		79996	Power Tool cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS2932 Shade: Smoke Grey Shade 692 of IS 5 (Two coats)	40	100

Sl No	SURFACE LOCATION	PGMA	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
				PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	
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	**Primer Coat:** One coat of two component moisture curing Inorganic Ethyl Zinc Silicate Primer to IS 14946, Metallic Zinc content- 75% (min) in dry film, **DFT = 80µm per coat (min)** **Intermediate Coat:** One coat of two component Polyamide cured Epoxy based MIO pigmented coat **DFT = 120µm per coat (min)** **Finish Coat:** Two coats of Aliphatic Acrylic Polyurethane to IS 13213, **DFT = 30 µm per coat (min) Total - 60 µm (min)** Shade **Dark Admiralty Grey to Shade No. 632 of IS 5** **Note:** **1.** The total paint thickness Primer (80 µm) + Intermediate (120 µm) + Finish coat (60 µm) shall be minimum **260 µm**. **2.** DFT of individual paint coat shall be ensured separately and the same shall meet the specified minimum DFT of each coat as given above. **3.** 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)	79955 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						

Sl 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. 10 of FANS and 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	1. Primer: One coat of Self priming Epoxy Zinc rich primer to IS:14589 Gr. II to DFT of 70 µm (minimum) 2. Intermediate and Finish: As given in respective scheme as above 3. If primer is intact, intermediate and finish to be done as per the respective scheme.
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. PGMAs 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 PGMAs are to painted. In case any component is left out, the same shall 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. Heat resistant aluminum paint – the usage of Gr – I or Gr – II in place of Gr – III or Gr – I in place of Gr-II is technically acceptable.
11. 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.

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

12. Painting Color Scheme for C&I Impulse Piping shall be as per the Vol-III, PART-C, CL NO. 8.07.08. & system as per clause no 17.05.00 i.e Surface Preparation and Painting.
13. Electrical equipment's /panels / MOV Actuators etc. Tender Clause No. 1.41.00 COLOR CODING OF EQUIPMENTS (Vol. III Part-B Electrical Specs, Page No. 46) shall be applicable
14. All electrical equipment mounted outdoor shall have RAL 7032 paint shade. All electrical equipment mounted indoor (non-air-conditioned areas) shall have RAL 7032 paint shade while those located in air-conditioned areas shall have RAL 7035 paint shade. Panel interior shall be RAL 9010 (Glossy white). For all electrical MV/LV/Control panels, Local control panels and Junction boxes, Transformers, etc shall be painted with RAL 7032.

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	Dark Admiralty Grey to Shade No. 632 of IS 5
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