BHEL	BHEL, Ranipet - 632 406, India. Quality Assurance Department. Painting Scheme	BHEL DOC No: PS:KORB:FGD:G205 Rev: 03 Dt: 15/09/2020 NTPC Contract No: CS-2100-109(3)-9-FC-NOA-6843 Dt: 22/08/2019 NTPC Doc No: 2100-109-PVM-H-001 Rev: 03 Dt: 15/09/2020
Project	FGD Package of Korba STPS Stage-I, II & III - BHEL Cust Nos: G205-G207 (3x200 MW) & G505-G508 (4x500 MW).	

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	

FGD Package of KORBA STPS Stage – I, II & III (3x200 MW + 3x500 MW + 4x500 MW)

Painting Scheme for FGD System, Booster Fans, Gates & Dampers

Prepared By	Reviewed By	Approved By
15/9/2020	17/9/2020	17/9/2020
Abdul Ghani, Senior Engineer / QA	Renjith K Manager/QA	Arunachalam R, DGM / QA

Signature Not Verified

Digitally signed by PK ROY
Date: 2020.09.24 05:05:35 IST
Reason: CAT I
Location: NTPCEOC

BHEL	**BHEL, Ranipet - 632 406, India.** **Quality Assurance Department.** **Painting Scheme**	BHEL DOC No: **PS:KORB:FGD:G205** Rev: **03** Dt: 15**/09/2020** **NTPC Contract No: CS-2100-109(3)-9-FC-NOA-6843 Dt: 22/08/2019** **NTPC Doc No: 2100-109-PVM-H-001 Rev: 03 Dt: 15/09/2020**
Project	**FGD Package of Korba STPS Stage-I, II & III - BHEL Cust Nos: G205-G207 (3x200 MW) & G505-G508 (4x500 MW)**	

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	

Record of Revisions

Rev No	Date	Details of Revision	
00	21/05 /2020	First Submission	
01	01/07 /2020	**NTPC Comments:**	**BHEL Replies:**
		kindly revise the painting schedule in line with clause no. 1.01.01 part-A, subsection III, where specific requirement has not been specified.	Clause 1.01.01 part A subsection-III does not exist. However, we have taken painting requirements as per 1.04.01 for parts where specific requirements have not been specified.
		Sl No 1 of Fans: Axial Fan Tools & Fixtures: no specific stipulation mentioned in this clause, either clause 31.03.00 of part B, sub sec IV-D to be followed or generic clause 1.01.01 part A subsection-III to be applied	Cl 31.03.00 is applicable to structural steel. Clause 1.01.01 part A subsection-III does not exist. However, axial fan tools & fixtures are very small items and surfaces are exposed to temperature around 80 – 95^{0}C. Hence, this painting (Clause 20.03.00 of Part- C Section VI) is appropriate and would suffice for the application.
		Sl No 7 of Fans: Axial booster fan rotor: Is this for the flue gas swept part?, Is primer to be applied on blades??	It is flue gas swept part only. It is used for protection till erection only including blades.
		Sl No 8 of Fans: Axial booster fan stator: insulated and non-insulated to be put separately??? what temperature is the paint suitable for?	Stator will be fully insulated at site after erection. Hence, the provided painting would suffice and is meant for protection till erection only.
		Sl Nos: 1 of FGD: For Slurry recirculation pump System: The referred clause pertains to ECW system and not for the slurry recirculation pump...Kindly follow generic clause included in part A in case specific clause in not indicated	Since these products are coming inside building and able to withstand the designed environment with the paint applicable for ECWS i.e., paint specified under Cl 7.05.00 of Sub-Section: I- M5 Section-VI, Part-B has been used.
		Sl No 2 of FGD: Absorber System Internals – Structural items: Kindly clarify what are the internal structural items mentioned here.	Items include baffle plate arrangement, supporting beams at the top level are the internals.
		Sl No 3 of FGD: Mist eliminator and accessories, Absorber baffle grating support: why civil clause for steel surfaces not being applied here.	These are not civil structures and are part of absorber system. Hence, we have not considered civil painting. The provided painting would suffice.

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Project	**FGD Package of Korba STPS Stage-I, II & III - BHEL Cust Nos: G205-G207 (3x200 MW) & G505-G508 (4x500 MW)**	

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	

Rev No	Date	NTPC Comments:	BHEL Replies:
01	01/07/2020	Sl No 8 of FGD: Absorber system accessories: no specific stipulation mentioned in this clause, generic clause 1.01.01 part A subsection-III to be applied.	These products are very small items like nozzles, flanges & inspection doors, viewing ports, etc., and surfaces are exposed to temperature around 80 – 95^0 Celsius. Hence, this painting (Clause 20.03.00 of Part- C Section VI) is meant for protection until erection.
		Sl No: 11, 12 of FGD: Emergency quench system, Handling Equipment, RC pump: no specific stipulation mentioned in this clause, generic clause 1.01.01 part A subsection-III to be applied.	These surfaces are exposed to temperature around 80 – 95^0 Celsius. Hence, this painting (Clause 20.03.00 of Part- C Section VI) would suffice for the intended application.
		Sl No 16 of FGD: Ducts between bypass duct inlet & booster fan: painting for no insulated components?	This is already covered on flue gas swept surface.
		Sl No 24 of FGD: Elevator and accessories: no specific stipulation mentioned in this clause, generic clause 1.01.01 part A subsection-III to be applied	Since it is an equipment which involves thin items like body, doors and electric items, shot blasting cannot be done. Hence, the already provided paint would suffice.
		Sl No 28, 45 of FGD: Slurry pumps & accessories, Water pumps The referred clause pertains to ECW system and not for the slurry recirculation pump...Kindly follow generic clause included in part A in case specific clause in not indicated.	Since these products are coming inside building and able to withstand the designed environment with the paint applicable for ECWS, paint specified under Cl 7.05.00 of Sub-Section: I- M5 Section-VI, Part-B has been used.
		Sl No 30 of FGD: Handling Equipment- Hoists & Man hole door. Same as sl .no. 29	These products consist of many small items and electrical items. Hence, this painting (Clause 20.03.00 of Part- C Section VI) would suffice for the intended application.
		Sl No 36 of FGD: Air cannon silo, Bag filter & Fan assy, Nozzles& Flanges: no specific stipulation mentioned in this clause, generic clause 1.01.01 part A subsection-III to be applied	These are special equipment and shot blasting would affect the performance. Hence, the already provided paint would suffice.
		Sl No 48 of FGD: All valves (Temp <95 deg C) : no specific stipulation mentioned in this clause, generic clause 1.01.01 part A subsection-III to be applied	These surfaces are exposed to temperature around 70 – 95^0 Celsius. Hence, this painting (Clause 20.03.00 of Part- C Section VI) would suffice for the intended application.

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Project	**FGD Package of Korba STPS Stage-I, II & III - BHEL Cust Nos: G205-G207 (3x200 MW) & G505-G508 (4x500 MW)**	

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	

Rev No	Date	NTPC Comments:	BHEL Replies:
01	01/07/2020	Sl No 50 of FGD: Supports for cable trays, Air receivers, commissioning& Mandatory spares, Tools & tackles no specific stipulation mentioned in this clause, generic clause 1.01.01 part A subsection-III to be applied.	These are flimsy/thin structures and shot blasting would affect the performance. Hence, the already provided paint would suffice.
		1. Painting of Electrical Control Panels not mentioned. 2. Painting of Diesel control panel shall be included as per Specifications. 3. Painting of radiators of transformers and external surface of Transformers and Marshalling box shall be included. 4. Painting of Rigid steel conduits shall be included. 5. Painting of Battery rack systems and battery chargers shall be included. 6. Painting of Electrical equipment shall be mentioned. 7. Instrument transformers terminal box painting shall be included. 8.Painting of Earthing joints and welded joints shall be included. 9. Painting shade of Distribution boards, switchboxes, emergency ac lighting fixtures shall be included. 10.Paiinting of Lighting panels to be included. 11.Painting of motors shall be mentioned. 12.Painting of Switchgear bus ducts shall be included. 13. Connection between earthleads and equipment. 14. Painting of switchgears shall be included.	Since these are Electrical bought out items (BOI), painting requirements will be included in Engineering drawings (which will be submitted to NTPC/Engg for approval).
		Sl No 2 & 3 of Gates & Dampers: Seal air piping, knife gate valve, mounting bracket and mandatory spares; Blower with Motor, Knife Gate valve, Mounting bracket, Mandatory spares Generic clause 1.01.01 part A subsection-III to be applied	These are flimsy/thin structures and shot blasting would affect the performance. Hence, the already provided paint would suffice.
		Include painting scheme of FDPS and Ventilation.	FDPS and Ventilation are not in BHEL-Ranipet scope of supply. Painting requirements for these will be submitted by concerned BHEL Units during detailed engineering.

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Project	**FGD Package of Korba STPS Stage-I, II & III - BHEL Cust Nos: G205-G207 (3x200 MW) & G505-G508 (4x500 MW)**	

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	

Rev No	Date	NTPC Comments:	BHEL Replies:
02	24/08 /2020	Sl No 1 of Fans: Axial Fan Tools & Fixtures: as per specification and as recognized in reply above, cl. 1.04.01 to be used	Axial fan tools & fixtures are very small items and surfaces are exposed to temperature around 80 – 95^{0}C. Hence, provided painting is appropriate and would suffice for the application Also, plz refer Nabinagar painting scheme.
		Sl No 8 of Fans: Axial booster fan stator: for insulated surface high temperature paint shall be applicable considering temperature is greater than 95°C	Included.
		Sl No 1, 28 of FGD: For Slurry recirculation pump System, Slurry pumps & accessories, Water pumps: kindly comply with specification requirement.	Incorporated requirements of Cl 1.04.00 Part-A Section VI.
		Sl No 8 of FGD: Absorber system accessories: kindly follow specification requirement as per applicable clause in Part-A.	These products are very small items like nozzles, flanges & inspection doors, viewing ports, etc., and surfaces are exposed to temperature around 80 – 95^0 Celsius. Hence, provided painting which is meant for protection until erection, would suffice. Also, plz refer Nabinagar painting scheme.
		Sl No: 11, 12 of FGD: Emergency quench system, Handling Equipment, RC pump: kindly follow specification requirement as per applicable clause in Part-A.	Incorporated for major items. For minor items like nozzle, flanges, etc., existing painting retained.
		Sl No 24 & 30 of FGD: Elevator and accessories & Handling Equipment- Hoists & Man hole door: kindly follow specification requirement as per applicable clause in Part-A.	These products consist of many small items and electrical items. Hence, provided painting would suffice for the intended application. Also, plz refer Nabinagar painting scheme.
		Sl No 36 of FGD: Air cannon silo, Bag filter & Fan assy, Nozzles& Flanges: kindly follow specification requirement as per applicable clause in Part-A.	These are special equipment and shot blasting would affect the performance. Hence, the already provided paint would suffice. Also, plz refer Nabinagar painting scheme.
		Sl No 45 of FGD: Slurry pipe accessories: kindly follow specification requirement as per applicable clause in Part-A.	These products consist of many small items. Hence, provided painting would suffice for the intended application. Also, plz refer Nabinagar painting scheme.
		Sl No 48 of FGD: All valves (Temp <95 deg C) : kindly follow specification requirement as per applicable clause in Part-A.	These surfaces are exposed to temperature around 70 – 95^0 Celsius. Hence, this painting would suffice. Also, plz refer Nabinagar painting scheme.
		Sl No 50 of FGD: Supports for cable trays, Air receivers, commissioning & Mandatory spares, Tools & tackles: kindly follow specification requirement as per applicable clause in Part-A.	These are flimsy/thin structures and shot blasting would affect the performance. Hence, the already provided paint would suffice. Also, plz refer Nabinagar painting scheme.

BHEL	**BHEL, Ranipet - 632 406, India.** **Quality Assurance Department.** **Painting Scheme**	BHEL DOC No: **PS:KORB:FGD:G205** Rev: **03** Dt: 15**/09/2020** **NTPC Contract No: CS-2100-109(3)-9-FC-NOA-6843 Dt: 22/08/2019** **NTPC Doc No: 2100-109-PVM-H-001 Rev: 03 Dt: 15/09/2020**
Project	**FGD Package of Korba STPS Stage-I, II & III - BHEL Cust Nos: G205-G207 (3x200 MW) & G505-G508 (4x500 MW)**	

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	

Rev No	Date	NTPC Comments:	BHEL Replies:
03	14/09 /2020	sl no 1 of fans, As discussed kindly provide a brief of the equipment falling under axial fan and tools	Axial Fan tool & fixtures includes Mounting and dismounting devices like hydraulic transmission elements for dismounting impeller,sickle spanners for bolt and nuts, torque wrench
		sl no 8 of fans, What are the uninsulated areas in the stator	Uninsulated areas in stator are flue gas swept areas.
		sl no 1 of FGD, C&I related LIE,LIR , panels and JBs to be included here as well.	we have made this painting scheme for Ranipet scope of supply for which PGMAs are released by Ranipet Engg. Paint thickness and paint color for items like C&I related LIE,LIR , panels and JBs will be ensured in respective Drawing / Data sheet released by BHEL Ranipet.Therefore, the painting of electrical items is not covered under this painting scheme. This is the practice which is being followed for Auxiliaries as well.
		sl no:8 of FGD, Kindly clarify what is meant by absorber system accessories.	Nozzles and flanges, Suction strainers- FRP
		sl no 24 of FGD; Elevator doors are heavy wear area. Kindly provide higher thickness	Incorporated as earlier reply not accepted by NTPC.
		sl no 30 of FGD, Man hole door should have the painting scheme equal to the absorber.	Manhole painting will be as per absorber painting scheme and incorpoarated in Sl no:5(FW209).Sl no 30 meant for handling equipments for manhole door. Hence no change required.
		Sl no 48 of FGD, Valves should have painting scheme equivalent to the pipes	Incorporated.
		Sl no 3 of Gate&Dampers, DFT to be 200 as per valves	Incorporated.

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Project	**FGD Package of Korba STPS Stage-I, II & III - BHEL Cust Nos: G205-G207 (3x200 MW) & G505-G508 (4x500 MW)**	

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	

1. Fans

1	Axial Fan tool & fixtures **(Clause 20.03.00 of Part- C Section VI)**	55 000	Power Tool Cleaning to st3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS 2932 Shade: Grey white RAL 9002 (Two coats)	40	100
2	Booster Fan foundation material **(Clause 20.04.00 of Part- C Section VI)**	55 081	Temporary rust preventive fluid application as per PRQA 523 DFT- 20µ; 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.					
3	Booster Fan Handrails & Insert **(Clause 31.06.00 of Sec.VI, Part-B, Subsection- IV-D)**	55 082	Blast cleaning to Sa 2½/ Acid pickling	Hand rails, Gratings- Hot dip galvanizing to 610gms/sq.m (minimum) as per IS: 4736 and to a coating thickness of 87µm (min).				
4	Booster Fan Handrails & Insert- Structural items other than the above **(Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)**	55 082	Blast cleaning to Sa 2½ (Near white metal) with surface profile 40-60µm conforming to ISO 8501-1	**Primer:** One coat of Two component moisture curing zinc (ethyl) silicate primer coat (Min 80% metallic zinc content in dry film, solid by volume minimum 60% ±2). Zinc dust composition and properties shall be as per Type II as per ASTM D520-00 DFT- 70µ **Intermediate:** One coat of Two component polyamide cured epoxy with MIO content (containing lamellar MIO Min 30% on pigment, solid by volume min. 80%±2) DFT- 100µ	70 100	**Finish:** Two coats of two pack aliphatic isocyanate cured acrylic polyurethane paint to IS 13213 solid by volume min.55%±2) DFT- 35µ/ coat **Shade:** Grey white, RAL 9002 With gloss retention (SSPC paint spec no.36, ASTM D4587, D2244, D523 of level 2 after min. 1000 hrs exposure, gloss less than 30 and colour change less than 2.0Δ E)	70	240

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Project	**FGD Package of Korba STPS Stage-I, II & III - BHEL Cust Nos: G205-G207 (3x200 MW) & G505-G508 (4x500 MW)**	

Sl No	Surface Location		PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
					Paint	DFT (µm min)	Paint	DFT(µm min)	
5	Axial booster cooling/ seal fan **(Clause 1.04.00 of Part- A Section VI)**		55 084	Blast cleaning to Sa 2½	**Primer:** Two coats of Epoxy resin based Epoxy Zinc phosphate primer to IS 13238 DFT- 50µ/coat **Intermediate:** One coat of Two component epoxy based intermediate paint pigmented with Tio2 DFT- 100µ	100 100	**Finish:** One coat of Epoxy based finish paint with glossy finish to IS 14209; DFT- 75µ **Finish:** One coat of acrylic aliphatic polyurethane paint to IS 13213 DFT-25µ Shade: Grey White, RAL9002	75 25	300
6	Booster fan canopy for motor **(Clause 1.04.00 of Part- A Section VI)**		55 089	Blast cleaning to Sa 2½	**Primer:** Two coats of Epoxy resin based Epoxy Zinc phosphate primer to IS 13238 DFT- 50µ/coat **Intermediate:** One coat of Two component epoxy based intermediate paint pigmented with Tio2; DFT- 100µ	100 100	**Finish:** One coat of Epoxy based finish paint with glossy finish to IS 14209; DFT- 75µ **Finish:** One coat of acrylic aliphatic polyurethane paint to IS 13213 DFT-25µ Shade: Grey White, RAL9002	75 25	300
7	Axial booster fan rotor **(Clause 20.03.00 of Part- C Section VI)**		55 287 55 288	Power Tool Cleaning to St3 (SSPC-SP3)	Two coats of Epoxy based Zinc phosphate primer (Two pack system) to IS 13238; DFT- 30µ/coat	60	NIL	--	60
8	Axial booster fan stator **(Clause 20.03.00 of Part- C Section VI)**	Uninsulated side	55 587 55588 55788	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	---	--	60
		Insulated side Temp>95^0 C	55888 55787 55887	Power Tool Cleaning to St3 (SSPC-SP3)	HR Aluminium paint to IS 13183 Gr.II (upto 400 deg C); Two coats; 20 µ min / coat.	40	--	--	40

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Project	**FGD Package of Korba STPS Stage-I, II & III - BHEL Cust Nos: G205-G207 (3x200 MW) & G505-G508 (4x500 MW)**	

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	
9	Axial booster fan coupling **(Clause 1.04.00 of Part- A Section VI)**	55 880	Blast cleaning to Sa 2½	**Primer:** Two coats of Epoxy resin based Epoxy Zinc phosphate primer to IS 13238 DFT- 50µ/coat **Intermediate:** One coat of Two component epoxy based intermediate paint pigmented with Tio2 DFT- 100µ	100 100	**Finish:** One coat of Epoxy based finish paint with glossy finish to IS 14209; DFT- 75µ **Finish:** One coat of acrylic aliphatic polyurethane paint to IS 13213 DFT-25µ **Shade:** Grey White, RAL9002	75 25	300
10	Booster fan LOS with lubricant **(Clause 1.04.00 of Part- A Section VI)**	55 980	Blast cleaning to Sa 2½	**Primer:** Two coats of Epoxy resin based Epoxy Zinc phosphate primer to IS 13238 DFT- 50µ/coat **Intermediate:** One coat of Two component epoxy based intermediate paint pigmented with Tio2 DFT- 100µ	100 100	**Finish:** One coat of Epoxy based finish paint with glossy finish to IS 14209; DFT- 75µ **Finish:** One coat of acrylic aliphatic polyurethane paint to IS 13213 DFT-25µ **Shade:** Grey White, RAL9002	75 25	300
11	Booster fan actuator **(Clause 1.04.00 of Part- A Section VI)**	55 983	Blast cleaning to Sa 2½	**Primer:** Two coats of Epoxy resin based Epoxy Zinc phosphate primer to IS 13238 DFT- 50µ/coat **Intermediate:** One coat of Two component epoxy based intermediate paint pigmented with Tio2 DFT- 100µ	100 100	**Finish:** One coat of Epoxy based finish paint with glossy finish to IS 14209; DFT- 75µ **Finish:** One coat of acrylic aliphatic polyurethane paint to IS 13213 DFT-25µ **Shade:** Grey White, RAL9002	75 25	300

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	

2. FGD System

1	Slurry recirculation pump System **(Clause 1.04.00 of Part- A Section VI)**	FW 212	Power Tool Cleaning to st3 (SSPC-SP3)	**Primer:** Two coats of Epoxy resin based Epoxy Zinc phosphate primer to IS 13238 DFT- 50µ/coat **Intermediate:** One coat of Two component epoxy based intermediate paint pigmented with Tio2, DFT- 100µ	100 100	**Finish:** One coat of Epoxy based finish paint with glossy finish to IS 14209; DFT- 75µ **Finish:** One coat of acrylic aliphatic polyurethane paint to IS 13213, DFT-25µ **Shade:** Grey White, RAL9002	75 25	300
2	Absorber System Internals – Structural items **(Clause 1.04.00 of Part- A Section VI)**	FW 213	Blast cleaning to Sa 2½	**Primer:** Two coats of Epoxy resin based Epoxy Zinc phosphate primer to IS 13238 DFT- 50µ/coat **Intermediate:** One coat of Two component epoxy based intermediate paint pigmented with Tio2, DFT- 100µ	100 100	**Finish:** One coat of Epoxy based finish paint with glossy finish to IS 14209; DFT- 75µ **Finish:** One coat of acrylic aliphatic polyurethane paint to IS 13213, DFT-25µ **Shade:** Grey White, RAL9002	75 25	300
3	Mist eliminator and accessories, Absorber baffle grating support, Mist eliminator support& Absorber Spray pipe support - Structural items	FW 214 FW 215 FW 216 FW 217 FW 218	Blast cleaning to Sa 2½	**Primer:** Two coats of Epoxy resin based Epoxy Zinc phosphate primer to IS 13238 DFT- 50µ/coat **Intermediate:** One coat of Two component epoxy based	100	**Finish:** One coat of Epoxy based finish paint with glossy finish to IS 14209; DFT- 75µ **Finish:** One coat of acrylic aliphatic	75 25	300

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	
	(Clause 1.04.00 of Part- A Section VI)			intermediate paint pigmented with Tio2 DFT- 100µ	100	polyurethane paint to IS 13213, DFT-25µ Shade: Grey White, RAL9002		
4	Absorber System- Base **(Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)**	FW 219	Blast cleaning to Sa 2½ (Near white metal) with surface profile 40-60µm conforming to ISO 8501-1	**Primer:** One coat of Two component moisture curing zinc (ethyl) silicate primer coat (Min 80% metallic zinc content in dry film, solid by volume minimum 60% ±2). Zinc dust composition and properties shall be as per Type II as per ASTM D520-00 DFT- 70µ **Intermediate:** One coat of Two component polyamide cured epoxy with MIO content (containing lamellar MIO Min 30% on pigment, solid by volume min. 80%±2) DFT- 100µ	70 100	**Finish:** Two coats of two pack aliphatic isocyanate cured acrylic polyurethane paint to IS 13213 solid by volume min.55%±2) DFT- 35µ/ coat Shade: Grey white, RAL 9002 With gloss retention (SSPC paint spec no.36, ASTM D4587, D2244, D523 of level 2 after min. 1000 hrs exposure, gloss less than 30 and colour change less than 2.0Δ E)	70	240
5	Absorber system columns, Absorber shear plate, Duct supports, Structures for RC pump house& Hook up duct structure	FW220; FW300; FW 231 FW 232 FW 233 FW 234 FW 236 FW 238 FW 209	Blast cleaning to Sa 2½ (Near white metal) with surface profile 40-60µm conforming to ISO 8501-1	**Primer:** One coat of Two component moisture curing zinc (ethyl) silicate primer coat (Min 80% metallic zinc content in dry film, solid by volume minimum 60% ±2). Zinc dust composition and properties shall be as per Type II as per ASTM D520-00 DFT- 70µ; **Intermediate:** One coat of Two component polyamide cured epoxy with MIO content (containing	70 100	**Finish:** Two coats of two pack aliphatic isocyanate cured acrylic polyurethane paint to IS 13213 solid by volume min.55%±2) DFT- 35µ/ coat **Shade:** Grey white, RAL 9002 With gloss retention (SSPC paint spec no.36, ASTM D4587, D2244,	70	240

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	
	(Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)			lamellar MIO Min 30% on pigment, solid by volume min. 80%±2) DFT- 100µ		D523 of level 2 after min. 1000 hrs exposure, gloss less than 30 and colour change less than 2.0Δ E)		
6	Absorber system casing bottom- Outside surfaces **(Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)** Inside surfaces are of C276 cladded sheets. Hence, no paint is envisaged.	FW 221	Blast cleaning to Sa 2½ (Near white metal) with surface profile 40-60µm conforming to ISO 8501-1	**Primer:** One coat of Two component moisture curing zinc (ethyl) silicate primer coat (Min 80% metallic zinc content in dry film, solid by volume minimum 60% ±2). Zinc dust composition and properties shall be as per Type II as per ASTM D520-00 DFT- 70µ **Intermediate:** One coat of Two component polyamide cured epoxy with MIO content (containing lamellar MIO Min 30% on pigment, solid by volume min. 80%±2) DFT- 100µ	70 100	**Finish:** Two coats of two pack aliphatic isocyanate cured acrylic polyurethane paint to IS 13213 solid by volume min.55%±2) DFT- 35µ/ coat **Shade:** Grey white, RAL 9002 With gloss retention (SSPC paint spec no.36, ASTM D4587, D2244, D523 of level 2 after min. 1000 hrs exposure, gloss less than 30 and colour change less than 2.0Δ E)	70	240
7	Absorber system casing top- Outside surfaces; Absorber system casing intermediate – Outside surfaces **(Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)**	FW 222; FW 322	Blast cleaning to Sa 2½ (Near white metal) with surface profile 40-60µm conforming to ISO 8501-1	**Primer:** One coat of Two component moisture curing zinc (ethyl) silicate primer coat (Min 80% metallic zinc content in dry film, solid by volume minimum 60% ±2). Zinc dust composition and properties shall be as per Type II as per ASTM D520-00	70	**Finish:** Two coats of two pack aliphatic isocyanate cured acrylic polyurethane paint to IS 13213 solid by volume min.55%±2) DFT- 35µ/ coat **Shade:** Grey white,	70	240

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	
	Inside surfaces are of C276 cladded sheets. Hence, no paint is envisaged.			DFT- 70µ **Intermediate:** One coat of Two component polyamide cured epoxy with MIO content (containing lamellar MIO Min 30% on pigment, solid by volume min. 80%±2) DFT- 100µ	100	RAL 9002 With gloss retention (SSPC paint spec no.36, ASTM D4587, D2244, D523 of level 2 after min. 1000 hrs exposure, gloss less than 30 and colour change less than 2.0Δ E)		
8	Absorber system accessories; ABSORB. RC PUMP NOZZLE; ABS NOZL NB 300 & ABOVE;NOZZLE NB25 TO NB250 **(Clause 20.03.00 of Part- C Section VI)**	FW 223; FW201; FW202 FW203	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS 2932 Shade: Grey white RAL 9002 (Two coats)	40	100
9	Emergency Quench water tank-Outside surfaces **(Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)**	FW 226	Blast cleaning to Sa 2½ (Near white metal) with surface profile 40-60µm conforming to ISO 8501-1	**Primer:** One coat of Two component moisture curing zinc (ethyl) silicate primer coat (Min 80% metallic zinc content in dry film, solid by volume minimum 60% ±2). Zinc dust composition and properties shall be as per Type II as per ASTM D520-00 DFT- 70µ **Intermediate:** One coat of Two component polyamide cured epoxy with MIO content (containing lamellar MIO Min 30% on pigment, solid by volume min. 80%±2) DFT- 100µ	70 100	**Finish:** Two coats of two pack aliphatic isocyanate cured acrylic polyurethane paint to IS 13213 solid by volume min.55%±2) DFT- 35µ/ coat **Shade:** Grey white, RAL 9002 With gloss retention (SSPC paint spec no.36, ASTM D4587, D2244, D523 of level 2 after min. 1000 hrs exposure, gloss less than 30 and colour change less than 2.0Δ E)	70	240

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	
10	Emergency Quench water tank- Inside surfaces (For temporary protection, until erection only)	FW 226	Blast cleaning to Sa 2½	**Primer:** Two coats of Red Oxide Zinc phosphate primer, DFT-30µ/coat; Total-60µ (Primer is only envisaged as lining is given in inside surfaces of the tank)				
11	Emergency quench system, Handling Equipment RC pump **(Clause 1.04.00 of Part- A Section VI)**	FW 227 FW 249	Blast cleaning to Sa 2½	**Primer:** Two coats of Epoxy resin based Epoxy Zinc phosphate primer to IS 13238 DFT- 50µ/coat **Intermediate:** One coat of Two component epoxy based intermediate paint pigmented with Tio2; DFT- 100µ	100 100	**Finish:** One coat of Epoxy based finish paint with glossy finish to IS 14209; DFT- 75µ **Finish:** One coat of acrylic aliphatic polyurethane paint to IS 13213 DFT-25µ Shade: Grey White, RAL9002	75 25	300
	Minor items**(Clause 20.03.00 of Part- C Section VI)**	FW 227 FW 249	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS 2932 Shade: Grey white RAL 9002 (Two coats)	40	100
12	Air oxidation system, Viewing ports (Without glass) – Major items **(Clause 1.04.00 of Part- A Section VI)**	FW 230 FW 239	Blast cleaning to Sa 2½	**Primer:** Two coats of Epoxy resin based Epoxy Zinc phosphate primer to IS 13238 DFT- 50µ/coat **Intermediate:** One coat of Two component epoxy based intermediate paint pigmented with Tio2 DFT- 100µ	100 100	**Finish:** One coat of Epoxy based finish paint with glossy finish to IS 14209; DFT- 75µ **Finish:** One coat of acrylic aliphatic polyurethane paint to IS 13213 DFT-25µ Shade: Grey White, RAL9002	75 25	300

BHEL	**BHEL, Ranipet - 632 406, India.** **Quality Assurance Department.** **Painting Scheme**	BHEL DOC No: **PS:KORB:FGD:G205** Rev: **03** Dt: 15**/09/2020** **NTPC Contract No: CS-2100-109(3)-9-FC-NOA-6843 Dt: 22/08/2019** **NTPC Doc No: 2100-109-PVM-H-001 Rev: 03 Dt: 15/09/2020**
Project	**FGD Package of Korba STPS Stage-I, II & III - BHEL Cust Nos: G205-G207 (3x200 MW) & G505-G508 (4x500 MW)**	

Sl No	Surface Location		PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
					Paint	DFT (µm min)	Paint	DFT(µm min)	
	Minor items**(Clause 20.03.00 of Part- C Section VI)**			Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS 2932 Shade: Grey white RAL 9002 (Two coats)	40	100
13	Absorber W/D interface, W/D wash system, Slurry distribution system, Oxidation Air distribution system **(Clause 1.04.00 of Part- A Section VI)**		FW 228 FW 229 FW 243 FW 244	Blast cleaning to Sa 2½	**Primer:** Two coats of Epoxy resin based Epoxy Zinc phosphate primer to IS 13238 DFT- 50µ/coat **Intermediate:** One coat of Two component epoxy based intermediate paint pigmented with Tio2 DFT- 100µ	100 100	**Finish:** One coat of Epoxy based finish paint with glossy finish to IS 14209; DFT- 75µ **Finish:** One coat of acrylic aliphatic polyurethane paint to IS 13213, DFT-25µ Shade: Grey White, RAL9002	75 25	300
14	Expansion joint between bypass **(Clause 20.03.00 of Part- C Section VI)**	Flue gas swept surface	FW 251	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (two coats)	60	--	--	60
		Insulated surfaces		Power Tool Cleaning to St3 (SSPC-SP3)	HR Aluminum paint to IS 13183 Gr.II (upto 400 deg C)	40	NIL	--	40
15	Expansion joint **(Clause 20.03.00 of Part- C Section VI)**		FW 252	NON METALLIC EXPANSION JOINT					
16	Hook-up Ducts, Ducts between bypass duct inlet & booster fan	Flue gas swept surface	FW 238 FW 255 FW 207 FW 355	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
		Insulated surfaces		Power Tool Cleaning to St3 (SSPC-SP3)	HR Aluminum paint to IS 13183 Gr.II (upto 400 deg C)	40	NIL	--	40

Sl No	Surface Location		PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
					Paint	DFT (µm min)	Paint	DFT(µm min)	
	(Clause 20.03.00 of Part- C Section VI)								
17	Ducts between Booster fan & Absorber **(Clause 20.03.00 of Part- C Section VI)**	Flue gas swept surface	FW 256 FW207	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
		Insulated surfaces		Power Tool Cleaning to St3 (SSPC-SP3)	HR Aluminum paint to IS 13183 Gr.II (upto 400 deg C)	40	NIL	--	40
18	Ducts between Absorber& Stack **(Clause 20.03.00 of Part- C Section VI)**	Flue gas swept surface	FW 257 FW207	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL	--	60
		Insulated surfaces		Power Tool Cleaning to St3 (SSPC-SP3)	HR Aluminium paint to IS 13183 Gr.II (upto 400 deg C)	40	NIL	--	40
19	Duct structure between bypass duct& Booster fan **(Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)**		FW 260	Blast cleaning to Sa 2½ (Near white metal) with surface profile 40-60µm conforming to ISO 8501-1	**Primer:** One coat of Two component moisture curing zinc (ethyl) silicate primer coat (Min 80% metallic zinc content in dry film, solid by volume minimum 60% ±2). Zinc dust composition and properties shall be as per Type II as per ASTM D520-00 DFT- 70µ **Intermediate:** One coat of Two component polyamide cured epoxy with MIO content (containing lamellar MIO Min 30% on pigment, solid by volume min. 80%±2) DFT- 100µ	70 100	**Finish:** Two coats of two pack aliphatic isocyanate cured acrylic polyurethane paint to IS 13213 solid by volume min.55%±2) DFT- 35µ/ coat **Shade:** Grey white, RAL 9002 With gloss retention (SSPC paint spec no.36, ASTM D4587, D2244, D523 of level 2 after min. 1000 hrs exposure, gloss less than 30 and colour change less than 2.0Δ E)	70	240

	BHEL, Ranipet - 632 406, India. Quality Assurance Department. Painting Scheme	BHEL DOC No: **PS:KORB:FGD:G205** Rev: **03** Dt: 15**/09/2020** **NTPC Contract No: CS-2100-109(3)-9-FC-NOA-6843 Dt: 22/08/2019** **NTPC Doc No: 2100-109-PVM-H-001 Rev: 03 Dt: 15/09/2020**
Project	**FGD Package of Korba STPS Stage-I, II & III - BHEL Cust Nos: G205-G207 (3x200 MW) & G505-G508 (4x500 MW)**	

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	
20	Duct structure between Booster fan & Absorber **(Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)**	FW 261	Blast cleaning to Sa 2½ (Near white metal) with surface profile 40-60µm conforming to ISO 8501-1	**Primer:** One coat of Two component moisture curing zinc (ethyl) silicate primer coat (Min 80% metallic zinc content in dry film, solid by volume minimum 60% ±2). Zinc dust composition and properties shall be as per Type II as per ASTM D520-00 DFT- 70µ; **Intermediate:** One coat of Two component polyamide cured epoxy with MIO content (containing lamellar MIO Min 30% on pigment, solid by volume min. 80%±2) DFT- 100µ	70 100	**Finish:** Two coats of two pack aliphatic isocyanate cured acrylic polyurethane paint to IS 13213 solid by volume min.55%±2) DFT- 35µ/ coat **Shade:** Grey white, RAL 9002 With gloss retention (SSPC paint spec no.36, ASTM D4587, D2244, D523 of level 2 after min. 1000 hrs exposure, gloss less than 30 and colour change less than 2.0Δ E)	70	240
21	Duct structure between Absorber & Stack **(Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)**	FW 262	Blast cleaning to Sa 2½ (Near white metal) with surface profile 40-60µm conforming to ISO 8501-1	**Primer:** One coat of Two component moisture curing zinc (ethyl) silicate primer coat (Min 80% metallic zinc content in dry film, solid by volume minimum 60% ±2). Zinc dust composition and properties shall be as per Type II as per ASTM D520-00 DFT- 70µ **Intermediate:** One coat of Two component polyamide cured epoxy with MIO content (containing lamellar MIO Min 30% on pigment, solid by volume min. 80%±2) DFT- 100µ	70 100	**Finish:** Two coats of two pack aliphatic isocyanate cured acrylic polyurethane paint to IS 13213 solid by volume min.55%±2) DFT- 35µ/ coat **Shade:** Grey white, RAL 9002 With gloss retention (SSPC paint spec no.36, ASTM D4587, D2244, D523 of level 2 after min. 1000 hrs exposure, gloss less than 30 and colour change less than 2.0Δ E)	70	240

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	
22	Foundation material for duct structures, Absorber, Elevator, RC pump shed, tanks, Silo Structure, pipe racks **(Clause 20.04.00 of Part-C Section VI)**	FW 280 FW 281 FW 282 FW 283 FW 740 FW 760 FW 762 FW 763	Temporary rust preventive fluid application as per PRQA 523 DFT- 20µ 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.					
23	Structures for Emergency Quench water tank Structures for Elevator **(Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)**	FW 285 FW 292	Blast cleaning to Sa 2½ (Near white metal) with surface profile 40-60µm conforming to ISO 8501-1	**Primer:** One coat of Two component moisture curing zinc (ethyl) silicate primer coat (Min 80% metallic zinc content in dry film, solid by volume minimum 60% ±2). Zinc dust composition and properties shall be as per Type II as per ASTM D520-00 DFT- 70µ; **Intermediate:** One coat of Two component polyamide cured epoxy with MIO content (containing lamellar MIO Min 30% on pigment, solid by volume min. 80%±2); DFT- 100µ	70 100	**Finish:** Two coats of two pack aliphatic isocyanate cured acrylic polyurethane paint to IS 13213 solid by volume min.55%±2) DFT- 35µ/ coat **Shade:** Grey white, RAL 9002 With gloss retention (SSPC paint spec no.36, ASTM D4587, D2244, D523 of level 2 after min. 1000 hrs exposure, gloss less than 30 and colour change less than 2.0Δ E)	70	240
24	Elevator and accessories **(Clause 20.03.00 of Part- C Section VI)**	FW 293 FW 716	Power Tool Cleaning to st3 (SSPC-SP3	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS 2932 **Shade:** Grey white RAL 9002 (Two coats)	60	120
	Elevator and accessories -ELEVATOR DOOR	FW 293	Power Tool Cleaning to st3 (SSPC-SP3	**Primer:** Red Oxide Zinc hosphate to IS: 12744 (2coats),DFT- 25µ/ Coat;**Intermediate:** One coat of Synthetic Enamel intermediate coat to IS 2932; DFT- 50µ	50 50	**Finish:** Two coats of Synthetic Enamel to IS 2932, DFT- 50µ/ coat; **Shade:** Grey white RAL 9002	100	200

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	
25	Structures for booster fan handling; Absorber Beams & Bracings; Absorber Lower Floors; Absorber Upper Floors; Elevaior Column; Elevator Beam And Bracing Elevator Floors; Elevator M/C Room & Guide; Inter-Connecting Platform to Absorber **(Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)**	FW 310; FW 301; FW 302; FW 303; FW 380; FW 381; FW 382; FW 385; FW 386	Blast cleaning to Sa 2½ (Near white metal) with surface profile 40-60µm conforming to ISO 8501-1	**Primer:** One coat of Two component moisture curing zinc (ethyl) silicate primer coat (Min 80% metallic zinc content in dry film, solid by volume minimum 60% ±2). Zinc dust composition and properties shall be as per Type II as per ASTM D520-00 DFT- 70µ **Intermediate:** One coat of Two component polyamide cured epoxy with MIO content (containing lamellar MIO Min 30% on pigment, solid by volume min. 80%±2) DFT- 100µ	70 100	**Finish:** Two coats of two pack aliphatic isocyanate cured acrylic polyurethane paint to IS 13213 solid by volume min.55%±2) DFT- 35µ/ coat **Shade:** Grey white, RAL 9002 With gloss retention (SSPC paint spec no.36, ASTM D4587, D2244, D523 of level 2 after min. 1000 hrs exposure, gloss less than 30 and colour change less than 2.0Δ E)	70	240
26	Galleries and railings for Stairs, Absorber, Dampers, Ducts, Tanks; Absorber Floor Grills; Absorber Stairs & Handrails; Elevator Stair and Hand Rail; Elevator Floor Grill **(Clause 31.06.00 of Sec.VI, Part-B, Subsection- IV-D)**	FW 214 FW 237 FW 250 FW 610 FW 612 FW 613 FW 712 FW 722; FW 304; FW 305; FW 383; FW 384	Blast cleaning to Sa 2½/ Acid pickling	Hand rails, Gratings- Hot dip galvanizing to 610gms/sq.m (minimum) as per IS: 4736 and to a coating thickness of 87µm (min).				

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	
27	Galleries and railings for Stairs, Absorber, Dampers, Ducts, Tanks – Structures other than the above **(Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)**	FW 237 FW 610 FW 612 FW 613 FW 722	Blast cleaning to Sa 2½ (Near white metal) with surface profile 40-60µm conforming to ISO 8501-1	**Primer:** One coat of Two component moisture curing zinc (ethyl) silicate primer coat (Min 80% metallic zinc content in dry film, solid by volume minimum 60% ±2). Zinc dust composition and properties shall be as per Type II as per ASTM D520-00 DFT- 70µ **Intermediate:** One coat of Two component polyamide cured epoxy with MIO content (containing lamellar MIO Min 30% on pigment, solid by volume min. 80%±2) DFT- 100µ	70 100	**Finish:** Two coats of two pack aliphatic isocyanate cured acrylic polyurethane paint to IS 13213 solid by volume min.55%±2) DFT- 35µ/ coat **Shade:** Grey white, RAL 9002 With gloss retention (SSPC paint spec no.36, ASTM D4587, D2244, D523 of level 2 after min. 1000 hrs exposure, gloss less than 30 and colour change less than 2.0Δ E)	70	240
28	Slurry pumps & accessories, Water pumps **(Clause 1.04.00 of Part- A Section VI)**	FW 701 FW 702	Power Tool Cleaning to st3 (SSPC-SP3)	**Primer:** Two coats of Epoxy resin based Epoxy Zinc phosphate primer to IS 13238 DFT- 50µ/coat **Intermediate:** One coat of Two component epoxy based intermediate paint pigmented with Tio2, DFT- 100µ	100 100	**Finish:** One coat of Epoxy based finish paint with glossy finish to IS 14209; DFT- 75µ **Finish:** One coat of acrylic aliphatic polyurethane paint to IS 13213, DFT-25µ **Shade:** Grey White, RAL9002	75 25	300
29	Monorail for hoist & cranes; TRENCH COVER PLATE; MAN HOLE DOOR	FW 709 FW 710 FW 717	Blast cleaning to Sa 2½ (Near white metal) with surface profile 40-	**Primer:** One coat of Two component moisture curing zinc (ethyl) silicate primer coat (Min 80% metallic zinc content in dry film, solid by volume minimum	70	**Finish:** Two coats of two pack aliphatic isocyanate cured acrylic polyurethane paint to IS 13213 solid by volume min.55%±2)	70	240

	BHEL, Ranipet - 632 406, India. Quality Assurance Department. Painting Scheme	BHEL DOC No: **PS:KORB:FGD:G205** Rev: **03** Dt: 15/09/2020 **NTPC Contract No: CS-2100-109(3)-9-FC-NOA-6843 Dt: 22/08/2019** **NTPC Doc No: 2100-109-PVM-H-001 Rev: 03 Dt: 15/09/2020**
Project	**FGD Package of Korba STPS Stage-I, II & III - BHEL Cust Nos: G205-G207 (3x200 MW) & G505-G508 (4x500 MW)**	

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	
	ROOF SHEETING **(Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)**		60µm conforming to ISO 8501-1	60% ±2). Zinc dust composition and properties shall be as per Type II as per ASTM D520-00 DFT- 70µ **Intermediate:** One coat of Two component polyamide cured epoxy with MIO content (containing lamellar MIO Min 30% on pigment, solid by volume min. 80%±2) DFT- 100µ	100	DFT- 35µ/ coat **Shade:** Grey white, RAL 9002 With gloss retention (SSPC paint spec no.36, ASTM D4587, D2244, D523 of level 2 after min. 1000 hrs exposure, gloss less than 30 and colour change less than 2.0Δ E)		
30	Handling Equipment- Hoists; AIR RECEIVERS; CHAIN PULLEYS **(Clause 20.03.00 of Part- C Section VI)**	FW 713 FW 714 FW 717 FW798	Power Tool Cleaning to st3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats) Idler roller shall be applied with two coats of 70 microns at shop	70	Synthetic Enamel to IS 2932 Shade: Grey white RAL 9002 (Two coats)	60	130
31	Agitator support; ABSORBER AGITATOR **Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)**	FW 721 FW 241	Blast cleaning to Sa 2½ (Near white metal) with surface profile 40-60µm conforming to ISO 8501-1	**Primer:** One coat of Two component moisture curing zinc (ethyl) silicate primer coat (Min 80% metallic zinc content in dry film, solid by volume minimum 60% ±2). Zinc dust composition and properties shall be as per Type II as per ASTM D520-00 DFT- 70µ **Intermediate:** One coat of Two component polyamide cured epoxy with MIO content (containing lamellar MIO Min 30% on pigment, solid by volume min. 80%±2) DFT- 100µ	70 100	**Finish:** Two coats of two pack aliphatic isocyanate cured acrylic polyurethane paint to IS 13213 solid by volume min.55%±2) DFT- 35µ/ coat **Shade:** Grey white, RAL 9002 With gloss retention (SSPC paint spec no.36, ASTM D4587, D2244, D523 of level 2 after min. 1000 hrs exposure, gloss less than 30 and colour change less than 2.0Δ E)	70	240

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	
32	Limestone silo structures **Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)**	FW 730	Blast cleaning to Sa 2½ (Near white metal) with surface profile 40-60µm conforming to ISO 8501-1	**Primer:** One coat of Two component moisture curing zinc (ethyl) silicate primer coat (Min 80% metallic zinc content in dry film, solid by volume minimum 60% ±2). Zinc dust composition and properties shall be as per Type II as per ASTM D520-00 DFT- 70µ **Intermediate:** One coat of Two component polyamide cured epoxy with MIO content (containing lamellar MIO Min 30% on pigment, solid by volume min. 80%±2) DFT- 100µ	70 100	**Finish:** Two coats of two pack aliphatic isocyanate cured acrylic polyurethane paint to IS 13213 solid by volume min.55%±2) DFT- 35µ/ coat **Shade:** Grey white, RAL 9002 With gloss retention (SSPC paint spec no.36, ASTM D4587, D2244, D523 of level 2 after min. 1000 hrs exposure, gloss less than 30 and colour change less than 2.0Δ E)	70	240
33	Limestone Silo- Outside surfaces **Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)**	FW 731	Blast cleaning to Sa 2½ (Near white metal) with surface profile 40-60µm conforming to ISO 8501-1	**Primer:** One coat of Two component moisture curing zinc (ethyl) silicate primer coat (Min 80% metallic zinc content in dry film, solid by volume minimum 60% ±2). Zinc dust composition and properties shall be as per Type II as per ASTM D520-00 DFT- 70µ **Intermediate:** One coat of Two component polyamide cured epoxy with MIO content (containing lamellar MIO Min 30% on pigment, solid by volume min. 80%±2) DFT- 100µ	70 100	**Finish:** Two coats of two pack aliphatic isocyanate cured acrylic polyurethane paint to IS 13213 solid by volume min.55%±2) DFT- 35µ/ coat **Shade:** Grey white, RAL 9002 With gloss retention (SSPC paint spec no.36, ASTM D4587, D2244, D523 of level 2 after min. 1000 hrs exposure, gloss less than 30 and colour change less than 2.0Δ E)	70	240

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	
34	Limestone Silo- Inside surfaces (Conical portion) (For temporary protection, until erection only)	FW 731	Blast cleaning to Sa 2½ (Near white metal) with surface profile 35-50µm conforming to ISO 8501-1	**Primer:** Two coats of Red Oxide Zinc phosphate primer to IS: 12744 (SS lining is inside the Limestone silo conical portion, hence primer is only envisaged; SS lining will be done at shops itself)	60	NIL	--	60
35	Limestone Silo- Inside surfaces (Cylindrical portion) (For temporary protection, until erection only)	FW 731	Blast cleaning to Sa 2½ (Near white metal) with surface profile 40-60µm conforming to ISO 8501-1	**Primer Coat:** One coat of two component moisture curing Inorganic Ethyl Zinc Silicate Primer to IS 14946, (Solid by volume- 60% (min)), (Metallic zinc content 80% (min)) DFT = 70 µm per coat (min.) Zinc dust composition shall be Type-II as per ASTM D520-00	70	--	--	70
36	Air cannon silo, Bag filter & Fan assy, Nozzles& Flanges; FIXING COMP FOR DUCT; TEMPLATE-MISC; SHIM PLATE FOR PIPE RACK **(Clause 20.03.00 of Part- C Section VI)**	FW 723 FW 724 FW 725 FW 268 FW789 FW711	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS 2932 Shade: Grey white RAL 9002 (Two coats)	40	100
37	Limestone silo approach platform, Platform for Pipe racks & Sub pipe racks **(Clause 31.06.00 of Sec.VI, Part-B, Subsection- IV-D)**	FW 733 FW 766 FW 767 FW297 FW298	Blast cleaning to Sa 2½/ Acid pickling	Hand rails, Gratings- Hot dip galvanizing to 610gms/sq.m (minimum) as per IS: 4736 and to a coating thickness of 87µm (min).				

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	
38	Limestone silo approach platform, Pipe racks, Sub pipe racks platform- Structures other than the above **(Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)**	FW 733 FW 766 FW 767 FW297 FW298	Blast cleaning to Sa 2½ (Near white metal) with surface profile 40-60µm conforming to ISO 8501-1	**Primer:** One coat of Two component moisture curing zinc (ethyl) silicate primer coat (Min 80% metallic zinc content in dry film, solid by volume minimum 60% ±2). Zinc dust composition and properties shall be as per Type II as per ASTM D520-00 DFT- 70µ **Intermediate:** One coat of Two component polyamide cured epoxy with MIO content (containing lamellar MIO Min 30% on pigment, solid by volume min. 80%±2) DFT- 100µ	70 100	**Finish:** Two coats of two pack aliphatic isocyanate cured acrylic polyurethane paint to IS 13213 solid by volume min.55%±2) DFT- 35µ/ coat **Shade:** Grey white, RAL 9002 With gloss retention (SSPC paint spec no.36, ASTM D4587, D2244, D523 of level 2 after min. 1000 hrs exposure, gloss less than 30 and colour change less than 2.0Δ E)	70	240
39	Limestone Mill – Outside surfaces **(Clause 1.04.00 of Part- A Section VI)**	FW 735	Blast cleaning to Sa 2½	**Primer:** Two coats of Epoxy resin based Epoxy Zinc phosphate primer to IS 13238 DFT- 50µ/coat **Intermediate:** One coat of Two component epoxy based intermediate paint pigmented with Tio2 DFT- 100µ	100 100	**Finish:** One coat of Epoxy based finish paint with glossy finish to IS 14209; DFT- 75µ **Finish:** One coat of acrylic aliphatic polyurethane paint to IS 13213 DFT-25µ Shade: Grey White, RAL9002	75 25	300
40	Limestone mill- Inside surfaces (For temporary protection, until erection only)	FW 735	Blast cleaning to Sa 2½ (Near white metal) with surface profile 40-60µm conforming to ISO 8501-1	**Primer Coat:** One coat of two component moisture curing Inorganic Ethyl Zinc Silicate Primer to IS 14946, (Solid by volume- 60% (min)), (Metallic zinc content 80% (min)) DFT = 70 µm per coat (min.)	70	--	--	70

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	
				Zinc dust composition shall be Type-II as per ASTM D520-00				
41	Gypsum belt filter and accessories Structural items **(Clause 1.04.00 of Part- A Section VI)**	FW 738	Blast cleaning to Sa 2½	**Primer:** Two coats of Epoxy resin based Epoxy Zinc phosphate primer to IS 13238 DFT- 50µ/coat **Intermediate:** One coat of Two component epoxy based intermediate paint pigmented with Tio2 DFT- 100µ	100 100	**Finish:** One coat of Epoxy based finish paint with glossy finish to IS 14209; DFT- 75µ **Finish:** One coat of acrylic aliphatic polyurethane paint to IS 13213 DFT-25µ Shade: Grey White, RAL9002	75 25	300
42	Limestone slurry storage tank, Auxiliary absorber tank, Filtrate tank, Wastage water tank, Hydro cyclone waste water tank, Neutralization tank, Process Water tank, Belt filter washing tank, Primary hydro cyclone feed tank, Clarified water tank Outside surfaces **(Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)**	FW 742 FW 743 FW 744 FW 745 FW 747 FW 748 FW 785 FW 786 FW 800 FW 802	Blast cleaning to Sa 2½ (Near white metal) with surface profile 40-60µm conforming to ISO 8501-1	**Primer:** One coat of Two component moisture curing zinc (ethyl) silicate primer coat (Min 80% metallic zinc content in dry film, solid by volume minimum 60% ±2). Zinc dust composition and properties shall be as per Type II as per ASTM D520-00 DFT- 70µ **Intermediate:** One coat of Two component polyamide cured epoxy with MIO content (containing lamellar MIO Min 30% on pigment, solid by volume min. 80%±2) DFT- 100µ	70 100	**Finish:** Two coats of two pack aliphatic isocyanate cured acrylic polyurethane paint to IS 13213 solid by volume min.55%±2) DFT- 35µ/ coat **Shade:** Grey white, RAL 9002 With gloss retention (SSPC paint spec no.36, ASTM D4587, D2244, D523 of level 2 after min. 1000 hrs exposure, gloss less than 30 and colour change less than 2.0Δ E)	70	240

	BHEL, Ranipet - 632 406, India. Quality Assurance Department. Painting Scheme	BHEL DOC No: **PS:KORB:FGD:G205** Rev: **03** Dt: 15**/09/2020** **NTPC Contract No: CS-2100-109(3)-9-FC-NOA-6843 Dt: 22/08/2019** **NTPC Doc No: 2100-109-PVM-H-001 Rev: 03 Dt: 15/09/2020**
Project	**FGD Package of Korba STPS Stage-I, II & III - BHEL Cust Nos: G205-G207 (3x200 MW) & G505-G508 (4x500 MW)**	

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	
43	Limestone slurry storage tank, Auxiliary absorber tank, Filtrate tank, Wastage water tank, Hydrocyclone waste water tank, Neutralization tank, Process Water tank, Belt filter washing tank, Primary Hydrocyclone feed tank, Clarified water tank, Tank internal structure Inside surfaces - (For temporary protection, until erection only)	FW 742 FW 743 FW 744 FW 745 FW 747 FW 748 FW 749 FW 800 FW 802	Blast cleaning to Sa 2½ (Near white metal) with surface profile 35-50µm	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats) (Liner is inside the tank, hence primer is only envisaged; Protection till erection only)	60	NIL	--	60
44	Process water pipe accessories, Cooling pipe accessories **(Cl 10.00.00 of Section-VI, Part-B, Sub-section: I-M3)**	FW 751 FW 752 FW 860 TO FW 871	Power Tool Cleaning to St3 (SSPC-SP3)	**Primer:** Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats) DFT- 25µ / Coat; **Intermediate:** One coat of Synthetic Enamel intermediate coat to IS 2932; DFT- 50µ	50 50	**Finish(at site):** Two coats of Synthetic Enamel to IS 2932, DFT- 50µ/ coat **Shade:** Grey white RAL 9002 Identification Tag: Sea Green Shade no: 217 as per IS 5	100	200
45	Slurry pipe accessories **(Cl 10.00.00 of Section-VI, Part-B, Sub-section: I-M3)**	FW 753 FW 860 TO FW 871	Power Tool Cleaning to St3 (SSPC-SP3)	**Primer:** Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats) DFT- 25µ / Coat; **Intermediate:** One coat of Synthetic Enamel intermediate coat to IS 2932; DFT- 50µ	50 50	**Finish(at site)::** Two coats of Synthetic Enamel to IS 2932, DFT- 50µ/ coat **Shade:** Grey white RAL 9002 Identification Tag: Sea Green Shade no: 217 as per IS 5	100	200

BHEL	**BHEL, Ranipet - 632 406, India.** **Quality Assurance Department.** **Painting Scheme**	BHEL DOC No: **PS:KORB:FGD:G205** Rev: **03** Dt: 15**/09/2020** **NTPC Contract No: CS-2100-109(3)-9-FC-NOA-6843 Dt: 22/08/2019** **NTPC Doc No: 2100-109-PVM-H-001 Rev: 03 Dt: 15/09/2020**
Project	**FGD Package of Korba STPS Stage-I, II & III - BHEL Cust Nos: G205-G207 (3x200 MW) & G505-G508 (4x500 MW)**	

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	
46	Service Air pipe accessories **(Cl 10.00.00 of Section-VI, Part-B, Sub-section: I-M3)**	FW 754 FW 860 TO FW 871	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coat) **Intermediate:** One coat of Synthetic Enamel intermediate coat to IS 2932; DFT- 50µ	50 50	**Finish(at site):** Synthetic Enamel to IS 2932 Shade: Grey white RAL 9002 (Two coats)- 30µ/ coat Identification Tag: Sky Blue **Shade no:** 101 as per IS 5	100	200
47	Instrument air pipe accessories; Absorber Miscellaneous **(Cl 10.00.00 of Section-VI, Part-B, Sub-section: I-M3)**	FW 755; FW 307 FW 860 TO FW 871	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coat) **Intermediate:** One coat of Synthetic Enamel intermediate coat to IS 2932; DFT- 50µ	50 50	**Finish(at site):** Synthetic Enamel to IS 2932 Shade: Grey white RAL 9002 (Two coats)- 30µ/ coat Identification Tag: Sky Blue **Shade no:** 101 as per IS 5	100	200

BHEL	**BHEL, Ranipet - 632 406, India.** **Quality Assurance Department.** **Painting Scheme**	BHEL DOC No: **PS:KORB:FGD:G205** Rev: **03** Dt: 15**/09/2020** **NTPC Contract No: CS-2100-109(3)-9-FC-NOA-6843 Dt: 22/08/2019** **NTPC Doc No: 2100-109-PVM-H-001 Rev: 03 Dt: 15/09/2020**
Project	**FGD Package of Korba STPS Stage-I, II & III - BHEL Cust Nos: G205-G207 (3x200 MW) & G505-G508 (4x500 MW)**	

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	
48	All valves (Temp <95^{0}C) **(Clause 20.03.00 of Part- C Section VI)**	FW 815 to FW 854	Power Tool Cleaning to St3 (SSPC-SP3)	**Primer:** Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats) DFT- 25µ / Coat; **Intermediate:** One coat of Synthetic Enamel intermediate coat to IS 2932; DFT- 50µ	50 50	**Finish(at site):** Two coats of Synthetic Enamel to IS 2932, DFT- 50µ/ coat **Shade:** Grey white RAL 9002	100	200
49	Structure for Pipe racks, Sub pipe racks Trestle for pipe racks, Structures inside Gypsum dewatering building & Ball mill building, TRESTLE MAIN PIPE R-STRETCH-II **(Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)**	FW 761 FW 765 FW 768 FW 769 FW 787 FW 791	Blast cleaning to Sa 2½ (Near white metal) with surface profile 40-60µm conforming to ISO 8501-1	**Primer:** One coat of Two component moisture curing zinc (ethyl) silicate primer coat (Min 80% metallic zinc content in dry film, solid by volume minimum 60% ±2). Zinc dust composition and properties shall be as per Type II as per ASTM D520-00 DFT- 70µ **Intermediate:** One coat of Two component polyamide cured epoxy with MIO content (containing lamellar MIO Min 30% on pigment, solid by volume min. 80%±2) DFT- 100µ	70 100	**Finish:** Two coats of two pack aliphatic isocyanate cured acrylic polyurethane paint to IS 13213 solid by volume min.55%±2) DFT- 35µ/ coat **Shade:** Grey white, RAL 9002 With gloss retention (SSPC paint spec no.36, ASTM D4587, D2244, D523 of level 2 after min. 1000 hrs exposure, gloss less than 30 and colour change less than 2.0Δ E)	70	240
~~50~~	~~Supports for cable trays, Air~~ receivers, commissioning& Mandatory spares, Tools & tackles **(Clause 20.03.00 of Part- C Section VI)**	~~FW 779~~ FW 798 FW 988 FW 996	~~Power Tool~~ Cleaning to St3 (SSPC-SP3)	~~Red Oxide Zinc Phosphate~~ Primer to IS: 12744 (Two coats)	~~60~~	~~Synthetic Enamel to IS 2932~~ Shade: Grey white RAL 9002 (Two coats)	~~40~~	~~100~~

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Project	**FGD Package of Korba STPS Stage-I, II & III - BHEL Cust Nos: G205-G207 (3x200 MW) & G505-G508 (4x500 MW)**	

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	
1. Gates & Dampers								
01	**Gates & Dampers** > 95° C Insulated Surfaces& Uninsulated surfaces **(Cl 1.04.03 of Part- A Section VI, Sub-section III)**	57 540 57 550 57 583	Power Tool Cleaning to St3 (SSPC-SP3)	HR Aluminium paint to IS 13183 Gr.II (upto 400 deg C) Two coats; 20 µ minimum per coat.	40	--	--	40
02	Seal air piping **(Cl 10.00.00 of Section-VI, Part-B, Sub-section: I-M3)**	57 141	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coat)	60	Synthetic Enamel to IS 2932 **Shade:** Grey white RAL 9002 (Two coats)- 30µ/ coat Identification Tag: Sky Blue Shade no: 101 as per IS 5	60	120
03	Blower with Motor, Knife Gate valve, Mounting bracket, Mandatory spares **(Cl 10.00.00 of Section-VI, Part-B, Sub-section: I-M3)**	57 491 57 497 57 209	Power Tool Cleaning to St3 (SSPC-SP3)	**Primer:** Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats) DFT- 25µ / Coat; **Intermediate:** One coat of Synthetic Enamel intermediate coat to IS 2932; DFT- 50µ	50 50	**Finish(at site):** Two coats of Synthetic Enamel to IS 2932, DFT- 50µ/ coat **Shade:** Grey white RAL 9002	100	200
04	Ladder, Cage for Ladder Toe Guard, Plate Floor Grill, Hand Rails, Hand Rail Post **Clause 31.06.00 of Sec.VI, Part-B, Subsection- IV-D**	57 466 57 566	Blast cleaning to Sa 2½/ Acid Pickling	Hand rails, Gratings- Hot dip galvanizing to 610gms/sq.m (minimum) as per IS: 4736 and to a coating thickness of 87µm (min).				
05	Other Structural Items- Other than sl.no. 3 of above	57 466 57 566	Blast cleaning to Sa 2½ (Near white metal) with	**Primer:** One coat of Two component moisture curing zinc (ethyl) silicate primer coat (Min	70	**Finish:** Two coats of two pack aliphatic isocyanate cured acrylic polyurethane	70	240

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	
	(Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)		surface profile 40-60µm conforming to ISO 8501-1	80% metallic zinc content in dry film, solid by volume minimum 60% ±2). Zinc dust composition and properties shall be as per Type II as per ASTM D520-00 DFT- 70µ **Intermediate:** One coat of Two component polyamide cured epoxy with MIO content (containing lamellar MIO Min 30% on pigment, solid by volume min. 80%±2) DFT- 100µ	100	paint to IS 13213 solid by volume min.55%±2) DFT- 35µ/ coat **Shade:** Grey white, RAL 9002 With gloss retention (SSPC paint spec no.36, ASTM D4587, D2244, D523 of level 2 after min. 1000 hrs exposure, gloss less than 30 and colour change less than 2.0Δ E)		

2. Painting of Damaged Areas

For 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. 04,05,06,09,10,11 of Fans, Sl no.02,03,04, 05,06,07, 09, 13,19,20,21,23,25,27, 29, 31,32 33,38,39,41,42, 49 of FGD and Sl no. 5 of GAD.	Hand/ Power Tool cleaning to Bare metal to minimum 6 inches peripheral area adjoining to damaged area	**Primer:** Zinc rich epoxy to IS 14589 or suitable primer with existing paint scheme, DFT-70µ (If Metal surface exposed) followed by intermediate & finish coat as per respective schemes. If primer is intact- Intermediate & finish as per respective schemes.
2	Paint damaged components failing under other Sl Nos of Fans, FGD& GAD	Power Tool Cleaning to Bare metal	Primer and Finish: As given in respective scheme

बी एच ई एल BHEL	**BHEL, Ranipet - 632 406, India.** **Quality Assurance Department.** **Painting Scheme**	BHEL DOC No: **PS:KORB:FGD:G205** Rev: **03** Dt: 15**/09/2020** **NTPC Contract No: CS-2100-109(3)-9-FC-NOA-6843 Dt: 22/08/2019** **NTPC Doc No: 2100-109-PVM-H-001 Rev: 03 Dt: 15/09/2020**
Project	**FGD Package of Korba STPS Stage-I, II & III - BHEL Cust Nos: G205-G207 (3x200 MW) & G505-G508 (4x500 MW)**	

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	

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 (ie., Purchased) items viz., Agitator / slide bearing and other sub-delivery components 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.
4. In sub-assy, wherever plates / sheets of thickness less than or equal to 5mm and rods are used, very minor items like clamps, small items etc.- Power Tool or Hand Tool Cleaning to SSPC - SP 3 / SP 2 shall be followed and painting under Sl no:01 of Fans shall be followed.
5. Ground shade/colour of finish paints and identification tag/band for equipment, fans, piping, pipe services, supporting structures and other components is followed as per NTPC doc no: QS-01-DIV-W-4 at site.
6. All components covered under different PGMAs are to be 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 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. Painting requirement for all electrical equipment shall be as per the details identified in specification for the respective equipment.
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. Finish coat to be applied after an interval of min 10 hrs and within 6 months (after completion of intermediate coat).
11. Primer coat on steel shall be applied in shop immediately after blast cleaning by airless spray technique.
12. For the portion of steel surfaces embedded in concrete, the surface shall be prepared by Manual cleaning and provided with Primer coat of Chlorinated Rubber based Zinc Phosphate Primer of Minimum 50 Micron DFT.

बी एच ई एल BHEL	**BHEL, Ranipet - 632 406, India.** **Quality Assurance Department.** **Painting Scheme**	BHEL DOC No: **PS:KORB:FGD:G205** Rev: **03** Dt: 15**/09/2020** **NTPC Contract No: CS-2100-109(3)-9-FC-NOA-6843 Dt: 22/08/2019** **NTPC Doc No: 2100-109-PVM-H-001 Rev: 03 Dt: 15/09/2020**
Project	**FGD Package of Korba STPS Stage-I, II & III - BHEL Cust Nos: G205-G207 (3x200 MW) & G505-G508 (4x500 MW)**	

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (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 Packs	Volume of Solids (% Min)	Mode of Application	Min. Over Coating Interval (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 At Shop	24	Grey
03	Epoxy High solid-Polyamide cured Epoxy based MIO pigmented intermediate coat	--	2	80	Airless Spray only At Shop	16	Brown
04	Aliphatic isocyanate acrylic polyurethane paint	IS 13213	2	55	Spray At Shop	16	Windows Grey RAL 7040
05	Heat resistant aluminum paint	IS 13183 Grade II	1	--	Brush/ Spray	24	--
06	Long oil alkyd Synthetic enamel finish paint	IS 2932	1	35	Brush/ Spray	12	Corresponding shade no
07	Synthetic Enamel Intermediate coat	IS 2932	1	40	Brush/ Spray	12	--
08	Red oxide Zinc phosphate primer	IS 12744	1	--	Brush/ spray	12	--

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Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	

PGMA Description & Product Details

Sl No	PGMA	PGMA Description	Product / Items Details
01	FW 212	Slurry recirculation pump system	RC Pumps incl Shaft seal, Common Base Plate, Coupling and Guard, Gear Box, Expansion Bellow, Anchor Bolts & Fasteners, Special Tools
02	FW 219	Absorber system base	Absorber tank bottom plate
03	FW 220	Absorber system structures	Absorber tank structure, Absorber tower structure, Spray headers structure
04	FW 221	Absorber system casing bottom	Absorber tank wall casing- bottom
05	FW 222	Absorber system casing top	Absorber Tank wall casing –Top, Mist Eliminator supports, Spray pipe supports, Internal Beam, Shim plates in Absorber area, Internal Struts
06	FW 223	Absorber system accessories	Nozzles and flanges, Inspection doors & Man holes, Viewing ports, Antifoam dosing equipment, Suction strainers- FRP
07	FW 226	Emergency Quench water tank	Base Plate & its supports, Roof, Shell
08	FW 227	Emergency Quench System	Emergency Quenching Spray Pipe, Nozzle for Emergency Pipe, Fasteners, Gaskets
09	FW 230	Air oxidation System	Oxidation Blowers, Common Base Plate, Coupling and Guard, Anchor Bolts & Fasteners, Expansion Bellow, Special Tools, Suction & Discharge Silencers, Acoustic Enclosure, Water Injection cooling system, Pipe, Valves & Instruments
10	FW 239	Viewing Ports	Viewing Ports
11	FW 244	Oxidation air distribution System	Pipe & Fittings, Flanges, Pipe Hanger, Bottom Elbow, Bottom sliding supports
12	FW 249	Handling Equip- RC Pump	Handling Equip- RC Pump
13	FW 251	Expansion joint between bypass	Expansion joints, Seal Plates & Fasteners
14	FW 252	Expansion joint between scrubbers	Fabric & its fixing fasteners, Sleeves & Flanges, Gaskets
15	FW 255	Ducts between bypass duct inlet & booster fan	Plates & Stiffeners, Guide Vanes
16	FW 256	Ducts between Booster fan & Absorber	Plates & Stiffeners, Guide Vanes
17	FW 257	Ducts between Absorber & stack	Plates & Stiffeners, Guide Vanes
18	FW 260	Duct structure between bypass duct& Booster fan	Duct Supports, Gusset Plate, Divider plate, Internal Struts, Support bearings
19	FW 261 FW 262	Duct structure between booster fan& absorber & Absorber and Stack	Duct Supports, Gusset Plate, Divider plate, Internal Struts, Support bearings
20	FW 292	Structures for Elevator	Columns, Seal Plate, Bracings, Enclosure (Purlin& sheeting)
21	FW 293	Elevator and accessories	Base Frame, Buffer Spring, Mast Section, Cage, Control Panel & AC, Mandatory Spares
22	FW 301	Absorber Beams & Bracings	Absorber Beams & Bracings
23	FW 302, FW 303	Absorber Lower, Upper Floors	Absorber Lower, Upper Floors : R4P9-P4Q0

	BHEL, Ranipet - 632 406, India. Quality Assurance Department. Painting Scheme	BHEL DOC No: **PS:KORB:FGD:G205** Rev: **03** Dt: 15**/09/2020** **NTPC Contract No: CS-2100-109(3)-9-FC-NOA-6843 Dt: 22/08/2019** **NTPC Doc No: 2100-109-PVM-H-001 Rev: 03 Dt: 15/09/2020**
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Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	

Sl No	PGMA	PGMA Description	Product /Items Details
24	FW 304, FW 305	Absorber Floor Grills, Stairs & Handrails	Absorber Floor Grills, Stairs & Handrails
25	FW 307	Absorber Miscellaneous	Absorber Miscellaneous
26	FW 380; FW 381; FW 382;	Elevator Column; Elevator Beam And Bracing; Elevator Floors;	Elevator Column; Elevator Beam And Bracing; Elevator Floors;
27	FW 383; FW 384	Elevator Stair and Hand Rail; Elevator Floor Grill	Elevator Stair and Hand Rail; Elevator Floor Grill
28	FW 385;FW 386	Elevator M/C Room & Guide; Inter-Connecting Platform to Absorber	Elevator M/C Room & Guide; Inter-Connecting Platform to Absorber
29	FW 310	Structures for booster fan handling	Columns, Beams, Bracings, Seal plate
30	FW 322	Absorber system casing intermediate	Absorber system casing intermediate panels
31	FW 610 FW 722	Galleries & railings for Scrubbers, Tank	Stairs, Handrail, Step treads, Floor grills, Ladders, Foundation bolts, Fasteners
32	FW 701	Slurry pumps & accessories	Slurry Pumps incl Shaft seal, Common Base Plate, Coupling and Guard, Belt & Pulley, Expansion Bellow, Anchor Bolts & Fasteners, Motor & accessories, Sump Pumps incl Shaft seal, Common Base Plate, Coupling and Guard, Belt & Pulley, Anchor Bolts & Fasteners, Motor & accessories
33	FW 710	Monorail for hoist& cranes	Insert Plate, Stiffener plate, Monorail beam
34	FW 721	Agitator support	Channels & Beams
35	FW 730	Limestone silo structures	Columns, Beams, Bracings, Seal plate, Angles, channels
36	FW 731	Limestone silo	Base plate & its supports, Shell, Roof
37	FW 723 FW 724 FW 725	Air cannon Bag filter Nozzles & flanges	Bag filter, Air cannon bin activator, Nozzles & Flanges
38	FW 733	Limestone silo approach platforms	Stairs, Handrail, Step treads, Floor grills, Ladders, Foundation bolts, Fasteners
39	FW 734	Limestone mill	Wet ball mill, Hydro cyclone- Mill area, Mill circuit pump, Mill separator tank with Agitator
40	FW 742	Lime stone slurry storage tank	Base plate & its supports, Shell, Roof
41	FW 743	Auxiliary Absorber tank	Base plate & its supports, Shell, Roof
42	FW 744	Filtrate tank	Base plate & its supports, Shell, Roof
43	FW 745	Wastage water tank	Base plate & its supports, Shell, Roof
44	FW 747	Hydro cyclone waste water tank	Base plate & its supports, Shell, Roof

BHEL	**BHEL, Ranipet - 632 406, India.** **Quality Assurance Department.** **Painting Scheme**	BHEL DOC No: **PS:KORB:FGD:G205** Rev: **03** Dt: 15**/09/2020** **NTPC Contract No: CS-2100-109(3)-9-FC-NOA-6843 Dt: 22/08/2019** **NTPC Doc No: 2100-109-PVM-H-001 Rev: 03 Dt: 15/09/2020**
Project	**FGD Package of Korba STPS Stage-I, II & III - BHEL Cust Nos: G205-G207 (3x200 MW) & G505-G508 (4x500 MW)**	

Sl No	Surface Location	PGMA	Surface Preparation	Primer & Intermediate Coats		Finish Coat		Total DFT (µm min)
				Paint	DFT (µm min)	Paint	DFT(µm min)	

Sl No	PGMA	PGMA Description	Product /Items Details
45	FW 748 FW 785 FW 786	Process Water tank Belt filter washing tank Primary Hydro cyclone feed tank	Base plate & its supports, Shell, Roof
46	FW 751 FW 752	Process water pipe accessories Cooling water pipe accessories	CS/FRP Pipes & Fittings, Sight Glass, R Orifice, Gaskets & Fasteners
47	FW 753	Slurry pipe accessories	CSRL/FRP Pipes & Fittings, Strainer (Cone), Expansion Joint-Rubber, R Orifice, Gaskets & Fasteners
48	FW 754	Service air pipe accessories	GI Pipes & Fittings, Flexible Hose, Expansion Joint (Metallic), Hose connector, R Orifice, Gaskets & Fasteners
49	FW 755	Instrument air pipe accessories	SS Pipes & Fittings, Strainer(Y Type), Gaskets & Fasteners
50	FW 815 to FW 851	Valves and fittings	Globe valves, Ball Valves, Butterfly Valves, Diaphragm Valves, Gate Valves, Check Valves, Pinch Valves, Knife Gate Valves, Control Valves, Relief Valves
51	FW 761 FW 765	Structures for Pipe racks Structures for Sub pipe racks	Bracings Columns
52	FW 280 FW 281 FW 282 FW 283 FW 740 FW 760 FW 763	Foundation material for duct structure Foundation material for absorber Foundation material for Tanks Foundation material for Pipe racks Foundation material for Elevator Foundation material for RC pump shed	Foundation bolts Template
53	FW 766	Platforms for Pipe rack	Stairs, Handrail, Step treads, Floor grills, Ladders, Foundation bolts, Fasteners
54	FW 768 FW 769	Trestle for Main & sub Pipe racks	Truss, Beams, Supports for all Pipes
55	FW 779	Supports for cable tray	Double Sup Channel & Base plates, Single Sup Channel & Base plates Cantilever Arm, Fasteners & clamps, Brackets
56	FW 996	Tools	Erection , commissioning, special tools
57	FW 798	Air receivers	Instrument Air receivers, Any Instruments/Valves
58	FW 800	Clarified water tank	Base plate & its supports, Shell, Roof
59	FW 802	Neutralization tank & accessories	Base plate & its supports, Shell, Roof
60	FW 988; FW 997 FW 999	Commissioning spares & Mandatory spares	Startup & commissioning spares, Mandatory spares