

Bharat Heavy Electricals Limited Boiler Auxiliaries Plant Ranipet – 632 406

BHEL DOC NO.	PS: Mouda FGD: G503
REVISION NO.	02
DATE	14.05.2019

MOUDA FGD PACKAGE

PAINTING SCHEME for FGD SYSTEM, BOOSTER FAN& GATES& DAMPERS

NTPC CONTRACT NO: CS-9561-109(113)-9-FC-N0A-6722 Dt.18.09.2018

NTPC DRG NO: 9561-109-RP-PVM-H-396

BHEL RANIPET Customer No(s).: G503-G504

Prepared By	Reviewed & Approved By
Jan Jan	
Rajamanickam M	K.C. Gandhi Parimalam
Dy.Manager/QA	DGM/QA

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

RECORD OF REVISION

REV NO	DATE	DETAILS OF REVISION
00	06.02.2019	Original Issue - First Submission
		Revised Issue
		NTPC comments: ACW/ECW system shall be included
		BHEL reply: We would like to submit that ACW/ECW system comes under BHEL-PEM and they will be submitting their painting scheme
		for their scope of supply. Also, we would like to stress that FGD is a system comparable to SG& TG and supplied by seven units namely
		Ranipet, PEM, ISG& EDN, Bangalore, Bhopal, Hyderabad and Trichy. Hence, we have made this painting scheme for Ranipet scope of
		supply for which PGMAs are released by Ranipet Engg.
		NTPC comments: Furnish painting scheme for chimney and its associated components
		BHEL reply: We would like to submit that as stated above, chimney and its associated components doesn't fall under Ranipet scope
		of supply and it comes under BHEL-PEM. Hence this painting scheme does not cover painting for chimney and its associated
		components. We request M/s NTPC to consider and approve the painting scheme envisaged.
Different stru	votural marab	NTPC comments: Color shade shall be as per NTPC standard document doc no: QS-01-DIV-W-4 with latest revision.
Different stru	ictural membe	BHEL reply: We would like to submit that all the color shades mentioned in this document are as per the NTPC standard document
		doc no: QS-01-DIV-W-4 (Latest).
		NTPC comments: SI no: 6 of Fans, how is this line with spec?
		BHEL reply: We wish to submit that Booster fan canopy for motor has been given painting as per the clause 1.04.00 of Part-A, section-VI as its part of FGD system. Also, the painting envisaged as per the spec provides superior resistance to corrosion and polyurethane
01	27.04.2019	finish paint provides glossy surface finish. Hence this painting is in line with the specification only and we request M/s NTPC to approve
01	27.01.2013	the painting envisaged as the same painting is approved for Barh-I and II projects.
		NTPC comments: SI no: 7 of Fans, what is the basis?
		BHEL reply: Axial booster fan rotor is housed inside the housing and is flue gas path. The rotor needs protection till erection only.
		Therefore, the painting envisaged is only the primer as once the fan is commissioned, paint will be completely peeled off as it is in flue
		gas path. Hence, we request M/s NTPC to approve the painting envisaged. Also, we would like to submit that this was approved for
		Barh-I & II painting schemes as same reason was explained.
		NTPC comments: SI no: 10& 11 of Fans, what is the basis of selecting shade?
		BHEL reply: We would like to submit that we have devised color shades as per NTPC standard document: QS-01-DIV-W-4 (latest).
		In the document, for fans it was grey white, hence we have given the same color shade for booster fan and its associated equipment
		also. We request you to kindly approve the same shade envisaged similar to approved Barh-I& II painting schemes.
		NTPC comments: SI no: 01 of FGD, why is this selected?
		BHEL reply: We submit that the paint given was as per clause no 7.05.00 as the surfaces was similar. Slurry recirculation pumps were
		indoor and kept in a building. This surface was only available under clause 7.5.00. This same comment was raised for Barh-I and II as
		well. When we explained the reason, NTPC Engg wanted to follow clause 1.04.00 itself for slurry recirculation pumps, hence we changed

SI					PRIMER		FINISH		IOIAL			
No No	SURFACE LOCA	ATION I	PGMA	SURFACE	DAINT	DFT	DATAIT	DFT	DFT IN			
				PREPARATION	PAINT	(µm min.)	PAINT	(µm min.)	(µm min.)			
						111111.)		111111.)	111111. <i>)</i>			
		<u> </u>										
			nd Barh-	II. Similarly, we have	e changed for Mouda also as per	clause 1.04	.00. We request NTPC to	o approve th	ne painting			
		envisaged.										
			PC comments: SI no: 02 of FGD, basis of selecting shades? EL reply: We would like to submit that basis of selecting shades is as per NTPC standard document for color coding. These internals ag with their supports will be placed inside the absorber.									
			NTPC comments: SI no: 10,11,12& 13 of FGD, why is this selected?									
		BHEL reply: We wish to submit that, sl no: 10, Emergency Quench water tank inside surfaces, Primer is only envisaged as liner is										
		given in the inside surfaces of the tank. SI no: 11 and 12 are given painting as per clause 20.03.00 as temperature is less than 95 deg C. The clause 20.03.00 is used as painting surface under this PGMAs are not covered under any other clause. For sl no: 13, since it is										
					the civil specification. The same varanpura and Barh-I & II as painti							
				approve the same.	aranpura anu barn-1 & 11 as pamu	ing specifica	don is same for all projec	us. Hence, v	we request			
					of FGD, shall be in line with speci	fication						
					nting is as per clause 20.03.00 a		th the specification only	The reason	for giving			
					of flue gas temperature before at							
					lue gas swept surface inside. Hen							
					ners are only given as paint will b							
					we request NTPC to kindly consider				intang mas			
				SI no: 31, 32 & 33 of								
		BHEL reply	: We wis	sh to submit that SI n	o: $31~\&~33$ of FGD are given paint	ting as per t	he civil specification as su	urfaces are	exposed to			
					are of indoor surfaces and house							
		per clause 7	7.05.00 a	as that clause only co	ontains the painting for that type	e of surface	. Hence we request M/s	NTPC to a	prove the			
				s approved for Barh p								
					nting surface of inside surface of L	imestone Si	lo (cylindrical portion) sha	all be same	as painting			
				e silo- outside surface								
					ainting envisaged is until erection							
					te and finish paints will become i							
				•	which offers superior protection a	gainst corro	sion, abrasion and chem	ical resistan	ce. Hence,			
					prove the painting envisaged.							
01	27.04.2019			Note 12 to be incorpo								
				orated in the docume								
_					nt not all structures are in RAL 9	9002, there	is distinction between p	rimary and	secondary			
02	14.05.2019			, same shall be incorp			' '' '					
					e have selected colour shades as							
					have taken reference as SI no: 10				,			
		colour shade	e is indica	ated in SI no: 13, whi	ch are not applicable for our type	or structure	s. непсе we request you	to kindly co	nsider and			

PRIMER

SI

FINISH

TOTAL

SI				PRIMER		FINISH		TOTAL
No	SURFACE LOCATION	PGMA	SURFACE		DFT		DFT	DFT IN
INO	SORI ACE ECCATION	FUNA	PREPARATION	PAINT	(µm	PAINT	(µm	(µm
					min.)		min.)	min.)

approve our painting schedule. Also we would like to submit that same shade only has been envisaged and approved by M/s NTPC for Barh-I, Barh II, North Karanpura, Patratu and Dadri projects also.

NTPC comments: Liner can be provided over paint also. BHEL to follow specification.

BHEL reply: We would like to submit that Emergency quenching tank will be provided with rubber lining at site. For rubber lining at site, paint has to be peeled off to make rubber with metal contact. Therefore, we had envisaged red oxide zinc phosphate primer which can provide protection till erection and can be easily removed for making rubber lining at site. In this regard, we request you to kindly consider and approve the painting envisaged. Also we would like to submit that we had envisaged the same reason for Barh-I, Barh-II, North karanpura and Patratu projects and same was approved by M/s NTPC.

NTPC comments: It should be as per spec.

BHEL reply: We would like to submit that we had given the same reason for Barh-I, Barh-II, North Karnapura, Dadri painting schemes in which the inside surfaces of lime stone silo will be given primer only and same was approved by M/s NTPC. We would like to stress the point that paint will be peeled off completely in the inside surfaces. Once the system is commissioned, application of intermediate and finish paints is redundant. For outside surfaces, we have given all the coats as surfaces will be exposed to atmosphere. At this context, we would like to request again to consider and approve the painting envisaged for inside surfaces of lime stone silo (cylindrical portion).

14.05.2019

02

NTPC comments: SI no: 12 of FGD, why isn't clause 1.04.01 of Part A, Sub section -III page 2 of 5 is used?

BHEL reply: SI no: 12 is of Air oxidation system which comprises of Oxidation blowers and its small auxiliaries. This will be kept inside the acoustic hood which is again housed in a building. It is exposed to operating temperature below 95 deg C and hence clause no: 20.03.00 is used. The clause 1.04.00 is for components where no specific requirement is stipulated. Since the requirements of painting of this PGMA is clearly stipulated in Clause 20.03.00, we have used that clause. Also we would like to submit that we have envisaged the same painting for Barh-I, Barh-II, North Karnapura and Dadri projects also which is approved by M/s NTPC.

NTPC comments: SI no: 19 of FGD, Is it same as Ethyl silicate zinc primer?

BHEL reply: We wish to submit that given paint is Red Oxide Zinc phosphate primer as it is exposed to flue gas in the inside. Red Oxide Zinc phosphate primer will provide protection till erection only, once the system is commissioned, paint will get peeled off due to the flue gases. This is not same as Ethyl silicate zinc primer. This Ethyl silicate zinc primer is given only to the civil structures as it is exposed to atmosphere.

NTPC comments: SI no: 20 of FGD, this should be in line with specification. This temp is less than 90.

BHEL reply: Incorporated in the document.

NTPC comments: SI no: 29 of FGD, why isn't clause 1.04.01 of Part A, Sub section -III page 2 of 5 is used?

BHEL reply: We wish to submit that Miscellaneous FGD system consists of only small orifices, overflow nozzles, vents etc which are very small items and exposed to operating temperature below 95 deg C. Hence primer with finish as per clause 20.03.00 is followed since the painting requirement is stipulated in that clause. Clause 1.04.00 of Part-A, Subsection III is for components where no requirement is stipulated.

SI				PRIMER	FINISH		TOTAL
No	SURFACE LOCATION	PGMA	SURFACE PREPARATION	DF PAINT (µr		DFT (μm	DFT IN (µm
				min	.)	min.)	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	
3	Booster Fan foundation material Booster Fan Handrails & Insert	55 081 55 082	preventive fluid Blast cleaning to	a 2½/ Acid coating thickness of 87µm (min).					
	(Clause 31.06.00 of Sec.VI, Part-B, Subsection- IV-D)		pickling	coating trickness of δ/μπ (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	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	Axial booster cooling/ seal fan (Clause 1.04.00 of Part- A Section VI)	55 084	Blast cleaning to Sa 2½ (SSPC-SP 10)	Primer: Two coats of Epoxy resin based Epoxy Zinc phosphate primer to IS 13238 DFT- 50µ/coat	100	Finish: One coat of Epoxy based finish paint to IS 14209; DFT- 75µ	75	300	

SI				PRIMER		FINISH		TOTAL
No	SURFACE LOCATION	PGMA	SURFACE PREPARATION	PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	DFT IN (µm min.)
				Intermediate: One coat of Two component epoxy based intermediate paint pigmented with MIO/Tio2 DFT- 100µ	100	Finish: One coat of acrylic aliphatic polyurethane paint to IS 13213 DFT-25µ Shade: Grey White, RAL900	25	;
6	Booster fan canopy for motor (Clause 1.04.00 of Part- A Section VI)	55 089	Blast cleaning to Sa 21/2	Primer: Two coats of Epoxy resin-based Epoxy Zinc phosphate primer to IS 13238 DFT- 50µ/coat	100	Finish: One coat of Epoxy based finish paint to IS 14209; DFT- 75µ	75	300
				Intermediate: One coat of Two component epoxy based intermediate paint pigmented with MIO/Tio2 DFT- 100µ	100	Finish: One coat of acrylic aliphatic polyurethane paint to IS 13213 DFT-25µ Shade: Grey White, RAL900	25	
7	Axial booster fan rotor (Clause 20.03.00 of Part- C Section VI)	55 287	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)	55 587	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS 2933 Shade: Grey white RAL 9002 (Two coats)	2 40	100
9	Axial booster fan coupling (Clause 1.04.00 of Part- A Section VI)	55 880	Blast cleaning to Sa 21/2	Primer: Two coats of Epoxy resin based Epoxy Zinc phosphate primer to IS 13238 DFT- 50µ/coat	100	Finish: One coat of Epoxy based finish paint to IS 14209; DFT- 75µ	75	300
				Intermediate: One coat of Two component epoxy based intermediate paint pigmented with MIO/Tio2 DFT- 100µ	100	Finish: One coat of acrylic aliphatic polyurethane paint to IS 13213 DFT-25µ Shade: Grey White, RAL900	25	

SI				PRIMER		FINISH		TOTAL
No	SURFACE LOCATION	PGMA	SURFACE PREPARATION	PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	DFT IN (µm min.)
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 MIO/Tio2 DFT- 100μ	100	Finish: One coat of Epoxy based finish paint to IS 14209; DFT- 75µ Finish: One coat of acrylic aliphatic polyurethane pain to IS 13213 DFT-25µ Shade: Grey White, RAL900	75 t 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 MIO/Tio2 DFT- 100μ	100	Finish: One coat of Epoxy based finish paint to IS 14209; DFT- 75µ Finish: One coat of acrylic aliphatic polyurethane pain to IS 13213 DFT-25µ Shade: Grey White, RAL900	75 t 25	300

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

2. FGD SYSTEM

1	Slurry recirculation pump System (Clause 1.04.00 of Part- A Section VI)	FW 212	Blast cleaning to Sa 21/2	Primer: Two coats of Epoxy resinbased Epoxy Zinc phosphate primer to IS 13238 DFT- 50µ/coat	100	Finish: One coat of Epoxy based finish paint to IS 14209; DFT- 75µ	75	
				Intermediate: One coat of Two component epoxy based intermediate paint pigmented with MIO/Tio2 DFT- 100µ	100	Finish: One coat of acrylic aliphatic polyurethane paint to IS 13213 DFT-25µ Shade: Grey White, RAL9002	25	300
2	Absorber System Internals – Structural items (Clause 1.04.00 of Part- A Section VI)	FW 213	Blast cleaning to Sa 21/2	Primer: Two coats of Epoxy resin based Epoxy Zinc phosphate primer to IS 13238 DFT- 50µ/coat	100	Finish: One coat of Epoxy based finish paint to IS 14209; DFT- 75µ	75	300
				Intermediate: One coat of Two component epoxy based intermediate paint pigmented with MIO/Tio2 DFT- 100µ	100	Finish: One coat of acrylic aliphatic polyurethane paint to IS 13213 DFT-25µ Shade: Grey White, RAL9002	25	300
3	Mist eliminator and accessories- Structural items (Clause 1.04.00 of Part- A	FW 215	Blast cleaning to Sa 21/2	Primer: Two coats of Epoxy resin based Epoxy Zinc phosphate primer to IS 13238 DFT- 50µ/coat	100	Finish: One coat of Epoxy based finish paint to IS 14209; DFT- 75µ	75	300
	Section VI)			Intermediate: One coat of Two component epoxy based intermediate paint pigmented with MIO/Tio2 DFT- 100µ	100	Finish: One coat of acrylic aliphatic polyurethane paint to IS 13213 DFT-25µ Shade: Grey White, RAL9002	25	300

SI				PRIMER		FINISH		TOTAL
No	SURFACE LOCATION	PGMA	SURFACE		DFT		DFT	DFT IN
			PREPARATION	PAINT	(µm	PAINT	(µm	(µm
		l			min.)		min.)	min.)
4	Absorbor System Page	FW 219	Plact cleaning to	Primer: One coat of Two	70	Finish: Two coats of two		
4	Absorber System- Base	FW 219	Blast cleaning to	component moisture curing zinc	70	pack aliphatic isocyanate		
	(Clause 31.03.00 of Sec.VI,		Sa 2½ (Near white metal)	(ethyl) silicate primer coat (Min		cured acrylic polyurethane		240
	Part-B, Subsection- IV-D)		with surface	80% metallic zinc content in dry		paint to IS 13213 solid by		
			profile 40-60µm	film, solid by volume minimum		volume min.55%±2)	´ ´'	,
			conforming to	60% ±2). Zinc dust composition		DFT- 35µ/ coat		
			ISO 8501-1	and properties shall be as per		Shade: Grey white,		
			150 0501 1	Type II as per ASTM D520-00		RAL 9002		
				DFT- 70µ		With gloss retention (SSP)	2	
				Σ , ομ		paint spec no.36, ASTM	-	
				Intermediate: One coat of Two		D4587, D2244, D523 of lev	el	
				component polyamide cured epoxy	100	2 after min. 1000 hrs		
				with MIO content (containing		exposure, gloss less than 3	80	
				lamellar MIO Min 30% on pigment,		and colour change less tha		
				solid by volume min. 80%±2)		2.0Δ E)		
				, DFT- 100μ		,		
				·				
5	Absorber system structures	FW 220	Blast cleaning to	Primer: One coat of Two	70	Finish: Two coats of two		
	(Clause 31.03.00 of Sec.VI,		Sa 2½ (Near	component moisture curing zinc		pack aliphatic isocyanate		
	Part-B, Subsection- IV-D)		white metal)	(ethyl) silicate primer coat (Min		cured acrylic polyurethane		240
			with surface	80% metallic zinc content in dry		paint to IS 13213 solid by	/ 7)
			profile 40-60µm	film, solid by volume minimum		volume min.55%±2)		
			conforming to	60% ±2). Zinc dust composition		DFT- 35µ/ coat		
			ISO 8501-1	and properties shall be as per		Shade: Grey white,		
				Type II as per ASTM D520-00		RAL 9002	_	
				DFT- 70μ		With gloss retention (SSP)	-	
				Intermediates One cost of Time		paint spec no.36, ASTM	امر	
				Intermediate: One coat of Two	100	D4587, D2244, D523 of lev 2 after min. 1000 hrs	el	
				component polyamide cured epoxy with MIO content (containing	100		20	
				` `		exposure, gloss less than 3		
				lamellar MIO Min 30% on pigment, solid by volume min. 80%±2)		and colour change less tha 2.0Δ E)	111	
				DFT- 100µ		2.UA L)		
		1		Di 1- 100μ	1			

S				PRIMER		FINISH		TOTAL
No		PGMA	SURFACE PREPARATION	PAINT	DFT (µm min.)		DFT (µm min.)	DFT IN (µm min.)
6	Absorber system casing bottom (Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)	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	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 leve 2 after min. 1000 hrs exposure, gloss less than 30 and colour change less than 2.0Δ E))	240
7	Absorber system casing top (Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)	FW 222	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	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 leve 2 after min. 1000 hrs exposure, gloss less than 30 and colour change less than 2.0Δ E)	,	240
8	Absorber system accessories (Clause 20.03.00 of Part- C Section VI)	FW 223	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

SI				FINISH		TOTAL		
No	SURFACE LOCATION	PGMA	SURFACE PREPARATION	PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	DFT IN (µm min.)
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	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 (SSPO paint spec no.36, ASTM D4587, D2244, D523 of lev 2 after min. 1000 hrs exposure, gloss less than 3 and colour change less than 2.0Δ E)	70 el 0	240
10	Emergency Quench water tank- Inside surfaces	FW 226	Blast cleaning to Sa 2½ (Near white metal) with surface profile 35-50µm	Primer: Two coats of Red Oxid		nosphate primer, DFT-30µ/cc is given in inside surfaces of		
11	Emergency quench system (Clause 20.03.00 of Part- C Section VI)	FW 227	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS 293 Shade: Grey white RAL 9002 (Two coats)	2 60	120
12	Air oxidation system (Clause 20.03.00 of Part- C Section VI)	FW 230	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS 293 Shade: Grey white RAL 9002 (Two coats)	2 40	100
13	Duct supports Bypass duct, Booster fan, Scrubber, Stack (Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D	FW 232 FW 233 FW 234	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, RAL 9002		240

SI				PRIMER		FINISH		TOTAL
No	SURFACE LOCATION	PGMA	SURFACE PREPARATION	PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	DFT IN (µm min.)
			I	DET 70		Will I I I GOD	<u>, </u>	
				DFT- 70µ Intermediate: One coat of Two		With gloss retention (SSPO paint spec no.36, ASTM D4587, D2244, D523 of lev		
				component polyamide cured epoxy with MIO content (containing lamellar MIO Min 30% on pigment, solid by volume min. 80%±2)	100	2 after min. 1000 hrs exposure, gloss less than 3 and colour change less tha 2.0Δ E)		
				DFT- 100µ		,		
14	Structures for RC pump house (Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D	FW 236	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	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 (SSPO paint spec no.36, ASTM D4587, D2244, D523 of lev 2 after min. 1000 hrs exposure, gloss less than 3 and colour change less than 2.0Δ E)	70 C el	240
15	Oxidation Air distribution system (Clause 1.04.00 of Part- A Section VI)	FW 244	Blast cleaning to Sa 21/2	Primer: Two coats of Epoxy resin based Epoxy Zinc phosphate primer to IS 13238 DFT- 50µ/coat	100	Finish: One coat of Epoxy based finish paint to IS 14209; DFT- 75μ	75	300
				Intermediate: One coat of Two component epoxy based intermediate paint pigmented with MIO/Tio2 DFT- 100µ	100	Finish: One coat of acrylical aliphatic polyurethane pair to IS 13213 DFT-25µ Shade: Grey White, RAL900	nt 25	5

SI					PRIMER		FINISH		TOTAL	
No	SURFACE L	OCATION	PGMA	SURFACE PREPARATION	PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	DFT IN (µm min.)	
16	Expansion joint between bypass	Flue gas swept surface Insulated	FW 251	Power Tool Cleaning to St3 (SSPC-SP3) Power Tool	Red Oxide Zinc Phosphate Primer to IS: 12744 (two coats) HR Aluminium paint to IS 13183	60	 NIL		60	
	(Clause 20.03.00 of Part- C Section VI)	surfaces		Cleaning to St3 (SSPC-SP3)	Gr.II (upto 400 deg C)					
17	Expansion joint between scrubbers	Flue gas swept surface	FW 253	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL		60	
	(Clause 20.03.00 of Part- C Section VI)	Insulated surfaces		Power Tool Cleaning to St3 (SSPC-SP3)	HR Aluminium paint to IS 13183 Gr.II (upto 400 deg C)	40	NIL		40	
18	Ducts between bypass duct inlet&	Flue gas swept surface	FW 255	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL		60	
	booster fan (Clause 20.03.00 of Part- C Section VI)	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	Ducts between Booster fan& Scrubber	Flue gas swept surface	FW 256	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL		60	
	(Clause 20.03.00 of Part- C Section VI)	Insulated surfaces		Power Tool Cleaning to St3 (SSPC-SP3)	HR Aluminium paint to IS 13183 Gr.II (upto 400 deg C)	40	NIL		40	

SI	SI				PRIMER		FINISH		TOTAL
No	SURFACE I	LOCATION	PGMA	SURFACE PREPARATION	PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	DFT IN (µm min.)
20	Ducts between Scrubber& Stack	Flue gas swept surface	FW 257	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	NIL		60
	(Clause 20.03.00 of Part- C Section VI)	Insulated surfaces		Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	60	Synthetic Enamel to IS 293 Shade: Grey white RAL 9002 (Two coats)	2 40	100
21	Duct structu du (Clause 31.03 Part-B, Subse	cts .00 of Sec.VI,	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	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 (SSPO paint spec no.36, ASTM D4587, D2244, D523 of lev 2 after min. 1000 hrs exposure, gloss less than 3 and colour change less than 2.0Δ E)	70 2 el 0	240
22	Duct structu scrul (Clause 31.03 Part-B, Subs	bber .00 of Sec.VI,	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	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, RAL 9002 With gloss retention (SSPO paint spec no.36, ASTM D4587, D2244, D523 of lev 2 after min. 1000 hrs	70	240

SI				PRIMER		FINISH		TOTAL
No	SURFACE LOCATION	SURFACE LOCATION PGMA SURFACE PREPARATION	PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	DFT IN (µm min.)	
23	Duct structure between		Blast cleaning to	with MIO content (containing lamellar MIO Min 30% on pigment, solid by volume min. 80%±2) DFT- 100µ Primer: One coat of Two	70	exposure, gloss less than 3 and colour change less than 2.0 Δ E)		
	scrubber (Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)	FW 262	Sa 2½ (Near white metal) with surface profile 40-60µm conforming to ISO 8501-1	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	100	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 leve 2 after min. 1000 hrs exposure, gloss less than 3 and colour change less than 2.0Δ E)	70 el 0	240

SI			<u> </u>	PRIMER		FINISH		TOTAL	
No	SURFACE LOCATION	PGMA	SURFACE PREPARATION	PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	DFT IN (µm min.)	
24	Foundation material for	FW 280		Temporary rust preventive fluid	l applicatio	n as per PRQA 523			
	duct structures, scrubbers,	FW 281		DFT-					
	Elevators, tanks, pipe racks	FW 282		d other surfaces of foundation bolt a					
		FW 740	preventive fluid.	During execution of civil works the	dried film	of coating will be removed	using O	rganic	
		FW 763		Solve					
25	Structures for Elevator	FW 292	Blast cleaning to	Primer: One coat of Two	70	Finish: Two coats of			
	(Clause 31.03.00 of Sec.VI,		Sa 2½ (Near	component moisture curing zinc		two pack aliphatic			
	Part-B, Subsection- IV-D)		white metal) with	(ethyl) silicate primer coat (Min		isocyanate cured acrylic		240	
			surface profile 40-	80% metallic zinc content in dry		polyurethane paint to	70		
			60µm conforming	film, solid by volume minimum		IS 13213 solid by			
			to ISO 8501-1	60% ±2). Zinc dust composition		volume min.55%±2)			
				and properties shall be as per		DFT- 35µ/ coat			
				Type II as per ASTM D520-00		Shade: Grey white,			
				DFT- 70μ		RAL 9002			
						With gloss retention			
				Intermediate: One coat of Two		(SSPC paint spec no.36,			
				component polyamide cured	100	ASTM D4587, D2244,			
				epoxy with MIO content		D523 of level 2 after			
				(containing lamellar MIO Min 30%		min. 1000 hrs			
				on pigment, solid by volume min.		exposure, gloss less			
				80%±2)		than 30 and colour			
				DFT- 100µ		change less than			
						2.0Δ E)			
26	Elevator and accessories	FW 293	Power Tool	Red Oxide Zinc Phosphate Primer	60	Synthetic Enamel to IS	60	120	
	(Clause 20.03.00 of Part- C	FW 716	Cleaning to st3	to IS: 12744 (Two coats)		2932 Shade: Grey			
	Section VI)		(SSPC-SP3			white			
						RAL 9002 (Two coats)			

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

		E	I 51				1	
27	Structures for booster fan	FW 310	Blast cleaning to	Primer: One coat of Two component	70	Finish: Two coats of two		
	handling		Sa 2½ (Near	moisture curing zinc (ethyl) silicate		pack aliphatic isocyanate		
	(Clause 31.03.00 of		white metal)	primer coat (Min 80% metallic zinc		cured acrylic polyurethane		240
	Sec.VI, Part-B,		with surface	content in dry film, solid by volume		paint to IS 13213 solid by	70	
	Subsection- IV-D)		profile 40-60µm	minimum 60% ±2). Zinc dust		volume min.55%±2)		
			conforming to	composition and properties shall be		DFT- 35µ/ coat		
			ISO 8501-1	as per Type II as per ASTM D520-00		Shade: Grey white,		
				DFT- 70μ		RAL 9002		
						With gloss retention (SSPC		
				Intermediate: One coat of Two		paint spec no.36, ASTM		
				component polyamide cured epoxy		D4587, D2244, D523 of		
				with MIO content (containing	100	level 2 after min. 1000 hrs		
				lamellar MIO Min 30% on pigment,		exposure, gloss less than		
				solid by volume min. 80%±2)		30 and colour change less		
				DFT- 100μ		than 2.0Δ E)		
28	Handling Equipment-	FW 311	Power Tool	Red Oxide Zinc Phosphate Primer to	60	Synthetic Enamel to IS	60	120
	Booster Fan		Cleaning to st3	IS: 12744 (Two coats)		2932 Shade: Grey white		
	(Clause 20.03.00 of Part-		(SSPC-SP3			RAL 9002 (Two coats)		
	C Section VI)							
29	Miscellaneous – FGD		Power Tool	Red Oxide Zinc Phosphate Primer to	60	Synthetic Enamel to IS	40	100
29	system	FW 314	Cleaning to st3	IS: 12744 (Two coats)	00	2932 Shade: Grey white	10	100
	(Clause 20.03.00 of Part-	1 44 214	(SSPC-SP3	13. 12744 (Two coats)		RAL 9002 (Two coats)		
	•		(33FC-3F3			RAL 9002 (TWO COats)		
	C Section VI)			T				
30	Galleries and railings for	EW 227						
	Scrubbers, Tanks, Stair	FW 237						
	(Clause 31.06.00 of	FW 610	Blast cleaning to					
	Sec.VI, Part-B,	FW 722	Sa 2½/ Acid	Hand rails, Gratings- Hot dip galvar	izing to	610gms/sq.m (minimum) and	to a co	ating
	Subsection- IV-D)		pickling	thickne	ss of 87	'µm (minimum)		
			Picking					
	l .	l	1					

SI		PRIMER			FINISH		TOTAL	
No	SURFACE LOCATION	PGMA	SURFACE PREPARATION	PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	DFT IN (µm min.)
31	Galleries and railings for Scrubbers, Tanks, Stair – Structures other than the above (Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)	FW 237 FW 610 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	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
32	Slurry pumps & accessories. (Referred from cl. 7.05.00 of Section-VI, Part-B, Sub section-I-M5)	FW 701	Power Tool Cleaning to St3 (SSPC-SP3)	Primer: Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats) Intermediate: One coat of Synthetic Enamel intermediate coat to IS 2932; DFT- 50µ	50	Two coats of Synthetic Enamel to IS 2932, DFT- 50µ/ coat Shade: Light blue RAL 5012	100	210
33	Monorail for hoist & cranes (Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)	FW 710	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	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

SI				PRIMER		FINISH		TOTAL
No	SURFACE LOCATION	PGMA	SURFACE PREPARATION	PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	DFT IN (µm min.)
34	Handling Equipment in FGD (Clause 20.03.00 of Part-C Section VI)	FW 715	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
35	Agitator support Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)	FW 721	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	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
36	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	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

SI				PRIMER		FINISH		TOTAL
No	SURFACE LOCATION	PGMA	SURFACE PREPARATION	PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	DFT IN (µm min.)
37	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	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
38	Lime stone Silo- Inside surfaces (Conical portion)	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
39	Lime stone Silo- Inside surfaces (Cylindrical portion)	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
40	Limestone silo & Tank accessories (Clause 20.03.00 of Part- C Section VI)	FW 732 FW 750	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

SI				PRIMER		FINISH		TOTAL
No	SURFACE LOCATION	PGMA	SURFACE PREPARATION	PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	DFT IN (µm min.)
41	Limestone silo approach platform, Platform for Pipe racks (Clause 31.06.00 of Sec.VI, Part-B, Subsection- IV-D)	FW 733 FW 766	Blast cleaning to Sa 2½/ Acid pickling	Hand rails, Ladders, Gratings- Hot d coating thi		inizing to 610gms/sq. m (min of 87µm (minimum)	imum) a	and to a
42	Limestone silo approach platform, Pipe racks platform- Structures other than the above (Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)	FW 733 FW 766	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	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
43	Limestone Mill – Outside surfaces (Clause 1.04.00 of Part- B Section VI)	FW 734	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 MIO/Tio2 DFT- 100µ	100	Finish: One coat of Epoxy based finish paint to IS 14209; DFT- 75µ Finish: One coat of acrylic aliphatic polyurethane paint to IS 13213 DFT-25µ Shade: Grey White, RAL9002	75	300
44	Lime stone mill- Inside surfaces	FW 734	Blast cleaning to Sa 2½ (Near white metal)	Primer Coat: One coat of two component moisture curing Inorganic Ethyl Zinc Silicate Primer to IS 14946,	70			70

SI				PRIMER		FINISH		TOTAL
No	SURFACE LOCATION	PGMA	SURFACE PREPARATION	PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	DFT IN (µm min.)
45	Primary Hydro cyclone and accessories Structural items (Clause 1.04.00 of Part- B Section VI)	FW 736	with surface profile 40-60µm conforming to ISO 8501-1 Blast cleaning to Sa 2½	(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 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 MIO/Tio2 DFT- 100μ	100	Finish: One coat of Epoxy based finish paint to IS 14209; DFT- 75µ Finish: One coat of acrylic aliphatic polyurethane paint to IS 13213 DFT-25µ Shade: Grey White, RAL9002	75	300
46	Secondary Hydro cyclone and accessories Structural items (Clause 1.04.00 of Part- B Section VI)	FW 737	Blast cleaning to Sa 21/2	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 MIO/Tio2 DFT- 100µ	100	Finish: One coat of Epoxy based finish paint to IS 14209; DFT- 75µ Finish: One coat of acrylic aliphatic polyurethane paint to IS 13213 DFT-25µ Shade: Grey White, RAL9002	75	300
47	Gypsum belt filter and accessories Structural items (Clause 1.04.00 of Part- B 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	100	Finish: One coat of Epoxy based finish paint to IS 14209; DFT- 75μ	75 25	300

SI				PRIMER		FINISH		TOTAL
No	SURFACE LOCATION	PGMA	SURFACE PREPARATION	PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	DFT IN (µm min.)
				intermediate paint pigmented with MIO/Tio2 DFT- 100µ		Finish: One coat of acrylic aliphatic polyurethane paint to IS 13213 DFT-25µ Shade: Grey White, RAL9002		
48	Lime stone slurry storage tank, Auxiliary absorber tank, Filtrate tank, Wastage water tank, Hydro cyclone waste water tank, Process Water tank, Belt filter washing tank, Primary Hydro cyclone feed 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	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	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
49	Lime stone slurry storage tank, Auxiliary absorber tank, Filtrate tank, Wastage water tank, Hydrocyclone waste water tank, Process Water tank, Belt filter washing tank, Primary Hydro cyclone feed tank Inside surfaces	FW 742 FW 743 FW 744 FW 745 FW 747 FW 748 FW 785 FW 786	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

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

50	Process water pipe accessories (Referred from cl. 7.05.00 of Section-VI, Part-B, Sub section-I-M5)	FW 751	Power Tool Cleaning to St3 (SSPC-SP3)	Primer: Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats) Intermediate: One coat of Synthetic Enamel intermediate coat to IS 2932; DFT- 50µ	60 50	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	210
51	Slurry pipe accessories (Referred from cl. 7.05.00 of Section-VI, Part-B, Sub section-I-M5)	FW 753	Power Tool Cleaning to St3 (SSPC-SP3)	Primer: Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats) Intermediate: One coat of Synthetic Enamel intermediate coat to IS 2932; DFT- 50µ	60 50	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	210
52	Service Air pipe accessories (Referred from cl. 10.00 .00 of Section-VI, Part-B, Sub section-I-M3)	FW 754	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
53	Instrument air pipe accessories (Referred from cl. 10.00 .00 of Section-VI, Part-B, Sub section-I-M3)	FW 755	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
54	Valves and fittings (Temp <95 deg C)	FW 758	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)- 30µ/ coat	60	120

SI				PRIMER		FINISH		TOTAL
No	SURFACE LOCATION	PGMA SSISSISS	SURFACE PREPARATION	PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	DFT IN (µm min.)
55	Structure for Pipe racks Trestle for pipe racks (Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)	FW 761 FW 769	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
56	Structures inside Gypsum dewatering building & Ball Mill Building (Referred from cl. 7.05.00 of Section-VI, Part-B, Sub section-I-M5)	FW 787	Power Tool Cleaning to St3 (SSPC-SP3)	Primer: Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats) Intermediate: One coat of Synthetic Enamel intermediate coat to IS 2932; DFT- 50µ	60 50	Two coats of Synthetic Enamel to IS 2932, DFT- 50µ/ coat Shade: Grey White RAL 9002	100	210
57	Supports for Cable trays, Tools, Air receivers, (Clause 20.03.00 of Part- C Section VI)	FW 779 FW 790 FW 798	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

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

3. GATES & DAMPERS

01	Gates & Dampers > 95° C Insulated Surfaces& Uninsulated surfaces	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)	40			40
02	Seal air piping (Referred from 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	57 491 57 497 57 209	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
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	57 566	Blast cleaning to Sa 2½/ Acid Pickling	Hot Dip Galvanizing to 610 gm pe	•	r (minimum) and to a coatir inimum)	ng thickne	ss of 87
05	Other Structural Items- Other than sl.no. 3 of above (Clause 31.03.00 of Sec.VI, Part-B, Subsection- IV-D)	57 566	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	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, RAL 9002	70	240

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

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

4. 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	SURFACE LOCATION	SURFACE PREPARATION	PRIMER, INTERMEDIATE & FINISH
NO			
1	Paint damaged Components falling under Sl.no. 04,05,06,09,10,11 of Fans, Sl no. 01,02,03,04, 05,06,07, 09, 13, 14, 15, 21, 22, 23,25, 27, 31, 33,35, 36, 37, 42,43, 45,46, 47, 48, 55 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: Epoxy Zinc rich primer to IS 14589, DFT-70µ (If Metal surface exposed) followed by intermediate & finish coat as per respective scheme If primer is intact- Intermediate & finish as per respective scheme
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

SI				PRIMER		FINISH		TOTAL
No	SURFACE LOCATION	PGMA	SURFACE		DFT		DFT	DFT IN
140	SORI ACE LOCATION	FGMA	PREPARATION	PAINT	(µm	PAINT	(µm	(µm
					min.)		min.)	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 Power Tool or Hand Tool Cleaning to SSPC SP 3 / SP 2 shall be followed and painting under SI no:01 of Fans shall be followed.
- 5. Ground shade/colour of finish paints and identification tag/band for equipments, 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.

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

PAINTING SCHEME- DETAILS OF PROCUREMENT & APPLICATION PROCESSES

SL NO	TYPE OF PAINT	SPECIFICATION OF PAINT	NO OF PACK	VOLUME OF SOLIDS (% Min)	MODE OF APPLICATION	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	Epoxy based finish paint	IS 14209	2	62	Spray	16	Corresponding shade no
05	Aliphatic isocyanate acrylic polyurethane paint	IS 13213	2	55	Spray At Shop	16	Corresponding shade no
06	Heat resistant aluminium paint	IS 13183 Grade II	1		Brush/ Spray	24	
07	Long oil alkyd Synthetic enamel finish paint	IS 2932	1	35	Brush/ Spray	12	Corresponding shade no
08	Synthetic Enamel undercoat	IS 2932	1	40	Brush/Spray	12	
09	Red oxide Zinc phosphate primer	IS 12744	1		Brush/ spray	12	

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

PGMA DETAILS

SNO	PGMA	PGMA DESCRIPTION	PGMA 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
			Suction & Discharge Silencers
			Acoustic Enclosure
			Water Injection cooling system

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

	Pipe, Valves & Instruments
	Special Tools

SNO	PGMA	PGMA DESCRIPTION	PGMA DETAILS
10	FW 244	Oxidation air distribution System	Pipe & Fittings
			Flanges
			Pipe Hanger, Bottom Elbow, Bottom sliding supports
11	FW 251	Expansion joint between bypass	Expansion joints
			Seal Plates & Fasteners
12	FW 253	Expansion joint between scrubbers	Fabric & its fixing fasteners
			Sleeves & Flanges
			Gaskets
13	FW 255	Ducts between bypass duct inlet &	Plates & Stiffeners
		booster fan	Guide Vanes
14	FW 256	Ducts between Booster fan & Scrubber	Plates & Stiffeners
			Guide Vanes
15	FW 257	Ducts between scrubber & stack	Plates & Stiffeners
			Guide Vanes
16	FW 260	Duct structure between ducts	Duct Supports
			Gusset Plate
			Divider plate
			Internal Struts
			Support bearings
17	FW 261	Duct structure between scrubber	Duct Supports
	FW 262		Gusset Plate
			Divider plate
			Internal Struts
			Support bearings
18	FW 292	Structures for Elevator	Columns
			Seal Plate
			Bracings
			Enclosure (Purlin& sheeting)
19	FW 293	Elevator and accessories	Base Frame
			Buffer Spring
			Mast Section
			Cage
			Control Panel & AC
			Mandatory Spares

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

SNO	PGMA	PGMA DESCRIPTION	PGMA DETAILS
20	FW 310	Structures for booster fan handling	Columns Beams Bracings Seal plate
21	FW 311	Handling Equipment- Booster fan	Electric hoist
22	FW 314	Miscellaneous- FGD system	Services & other small items like vents, over flow nozzles, orifices if any
23	FW 610 FW 722	Galleries & railings for Scrubbers, Tank	Stairs Handrail Step treads Floor grills Ladders Foundation bolts Fasteners
24	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
25	FW 710	Monorail for hoist& cranes	Insert Plate Stiffener plate Monorail beam
26	FW 715	Handling Equipment in FGD	Electrically operated Hoists Underslung Cranes Chain Pulleys
27	FW 721	Agitator support	Channels & Beams
28	FW 730	Limestone silo structures	Columns Beams Bracings Seal plate Angles, channels

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

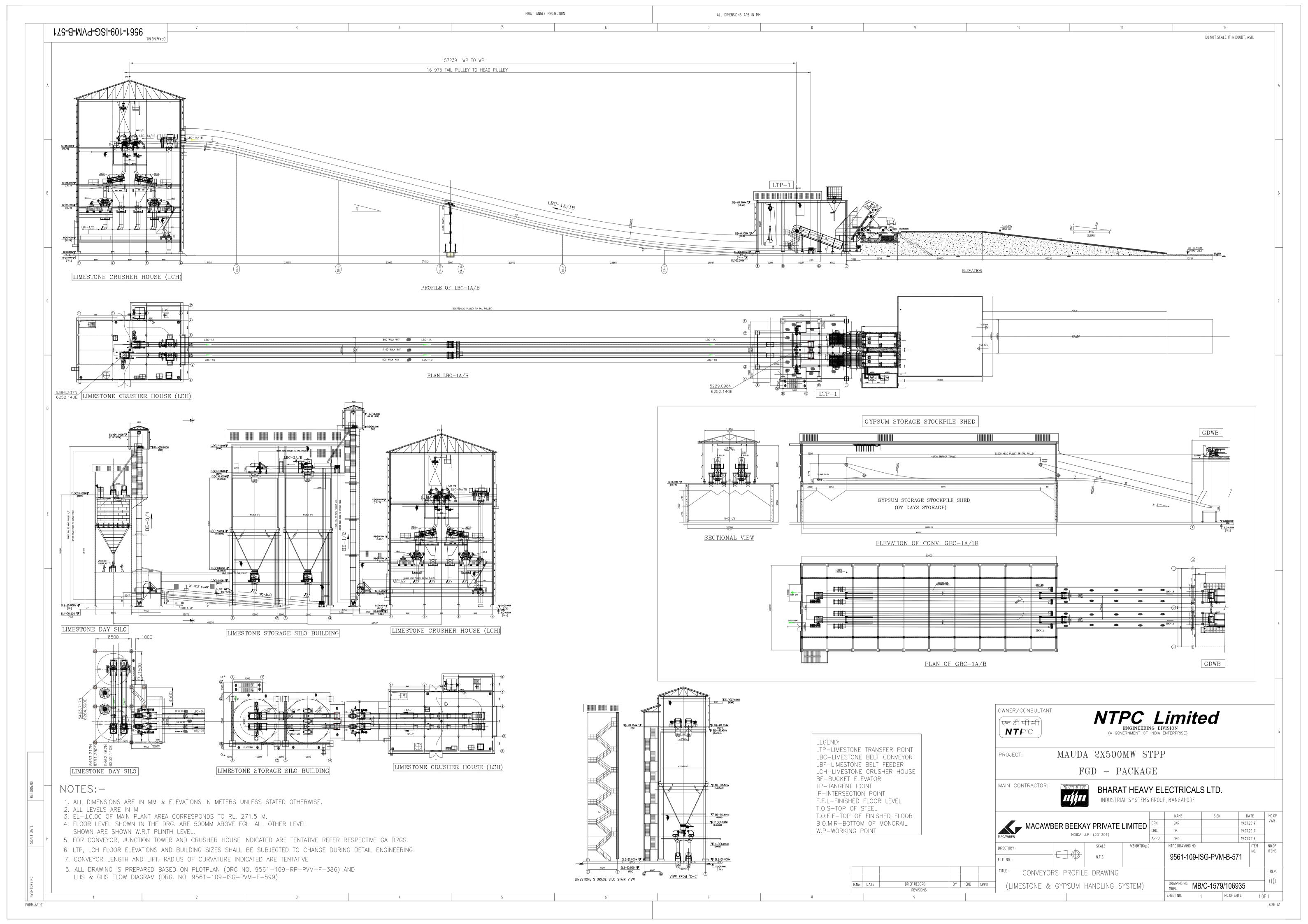
29			
	FW 731	Limestone silo	Base plate & its supports Shell, Roof
30	FW 732	Limestone silo accessories	Bag filter
			Air cannon bin activator
			Slide gate & bar gate for day silo
31	FW 733	Limestone silo approach platforms	Stairs
			Handrail
			Step treads
			Floor grills
			Ladders
			Foundation bolts
			Fasteners
32	FW 734	Limestone mill	Wet ball mill
			Hydro cyclone- Mill area
			Mill circuit pump
			Mill separator tank with Agitator
33	FW 742	Lime stone slurry storage tank	Base plate & its supports
			Shell, Roof
34	FW 743	Auxiliary Absorber tank	Base plate & its supports
		_	Shell, Roof
35	FW 744	Filtrate tank	Base plate & its supports
			Shell, Roof
36	FW 745	Wastage water tank	Base plate & its supports
			Shell, Roof
37	FW 747	Hydro cyclone waste water tank	Base plate & its supports
			Shell, Roof
38	FW 748	Process Water tank	Base plate & its supports
			Shell, Roof
39	FW 751	Process water pipe accessories	CS/FRP Pipes & Fittings
			Sight Glass
			R Orifice
			Gaskets & Fasteners
40	FW 753	Slurry pipe accessories	CSRL/FRP Pipes & Fittings
			Strainer (Cone)
			Expansion Joint-Rubber
			R Orifice
			Gaskets & Fasteners

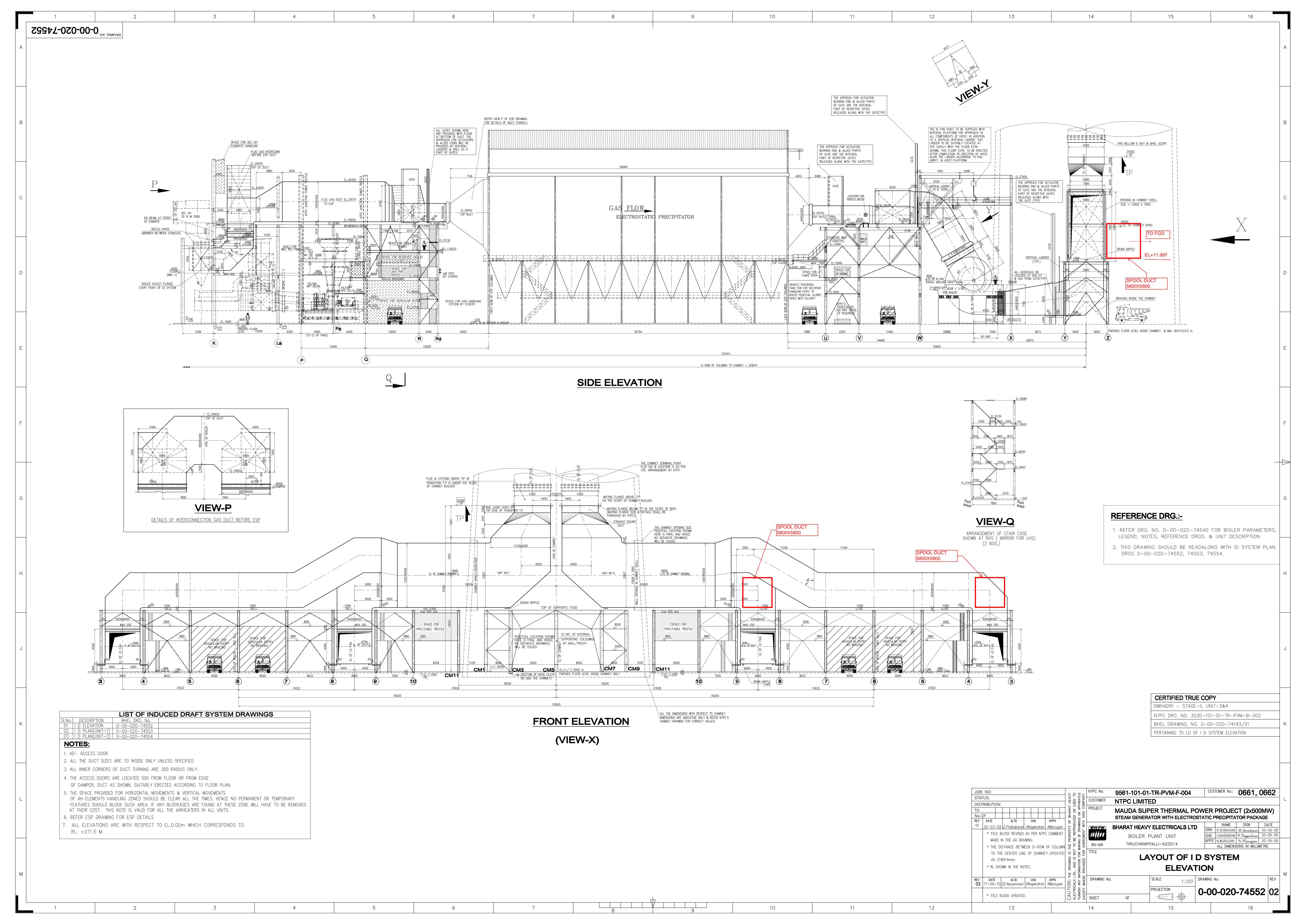
SI				PRIMER		FINISH		TOTAL
No	SURFACE LOCATION	PGMA	SURFACE PREPARATION	PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	DFT IN (µm min.)

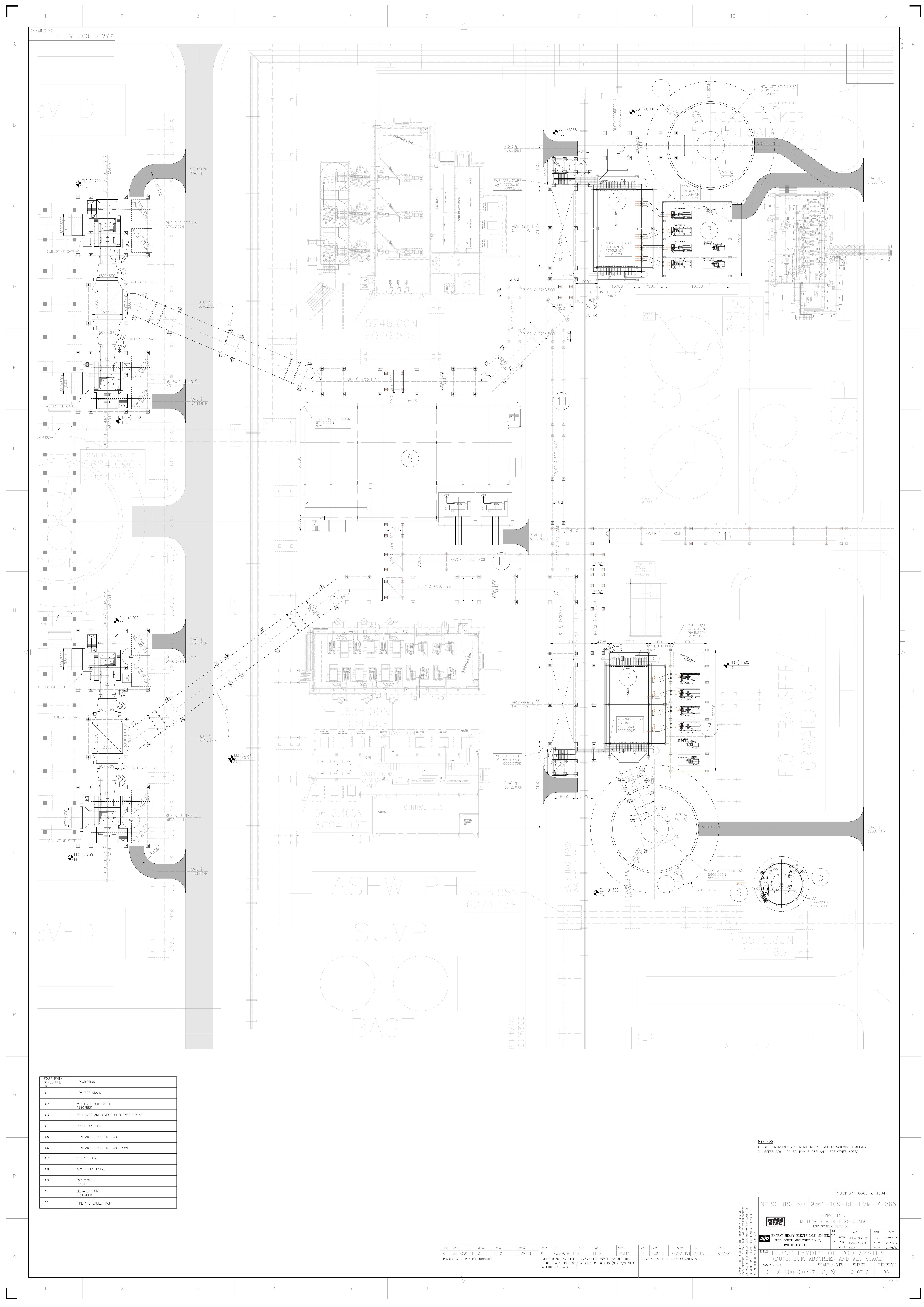
SNO	PGMA	PGMA DESCRIPTION	PGMA DETAILS
41	FW 754	Service air pipe accessories	GI Pipes & Fittings
			Flexible Hose
			Expansion Joint (Metallic)
			Hose connector
			R Orifice
			Gaskets & Fasteners
42	FW 755	Instrument air pipe accessories	SS Pipes & Fittings
			Strainer(Y Type)
			Gaskets & Fasteners
43	FW 758	Valves and fittings	Globe valves
			Ball Valves
			Butterfly Valves
			Diaphragm Valves
			Gate Valves
			CheckValves
			Pinch Valves
			Knife Gate Valves
			Control Valves
			Relief Valves
44	FW 761	Structures for Pipe racks	Bracings
		-	Columns
45	FW 280	Foundation material for duct structure	Foundation bolts
	FW 281	Foundation material for scrubber	Template
	FW 740	Foundation material for Tanks	
	FW 763	Foundation material for Pipe racks	
46	FW 766	Platforms for Pipe rack	Stairs
		·	Handrail
			Step treads
			Floor grills
			Ladders
			Foundation bolts
			Fasteners
47	FW 769	Trestle for Pipe racks	Truss
			Beams, Supports for all Pipes
48	FW 779	Supports for cable tray	Double Sup Channel & Base plates
		, ,	Single Sup Channel & Base plates
			Cantilever Arm
			Fasteners & clamps
			Brackets
49	FW 790	Tools	Erection , commissioning, special tools

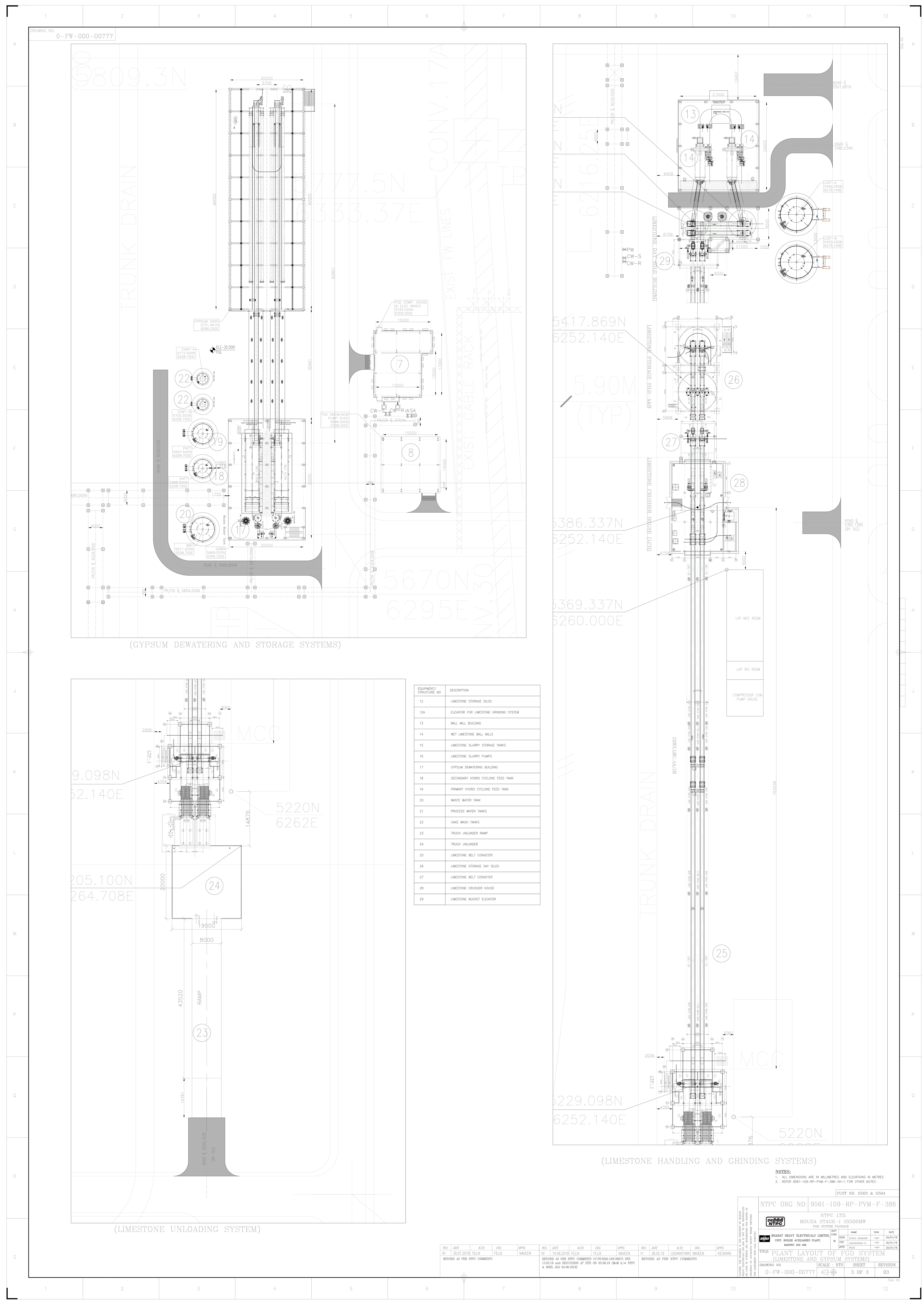
SI				PRIMER		FINISH		TOTAL
No.	SURFACE LOCATION	PGMA	SURFACE		DFT		DFT	DFT IN
140	SORIACE ESCATION	PREPARATION	PAINT	(µm	PAINT	(µm	(µm	
					min.)		min.)	min.)

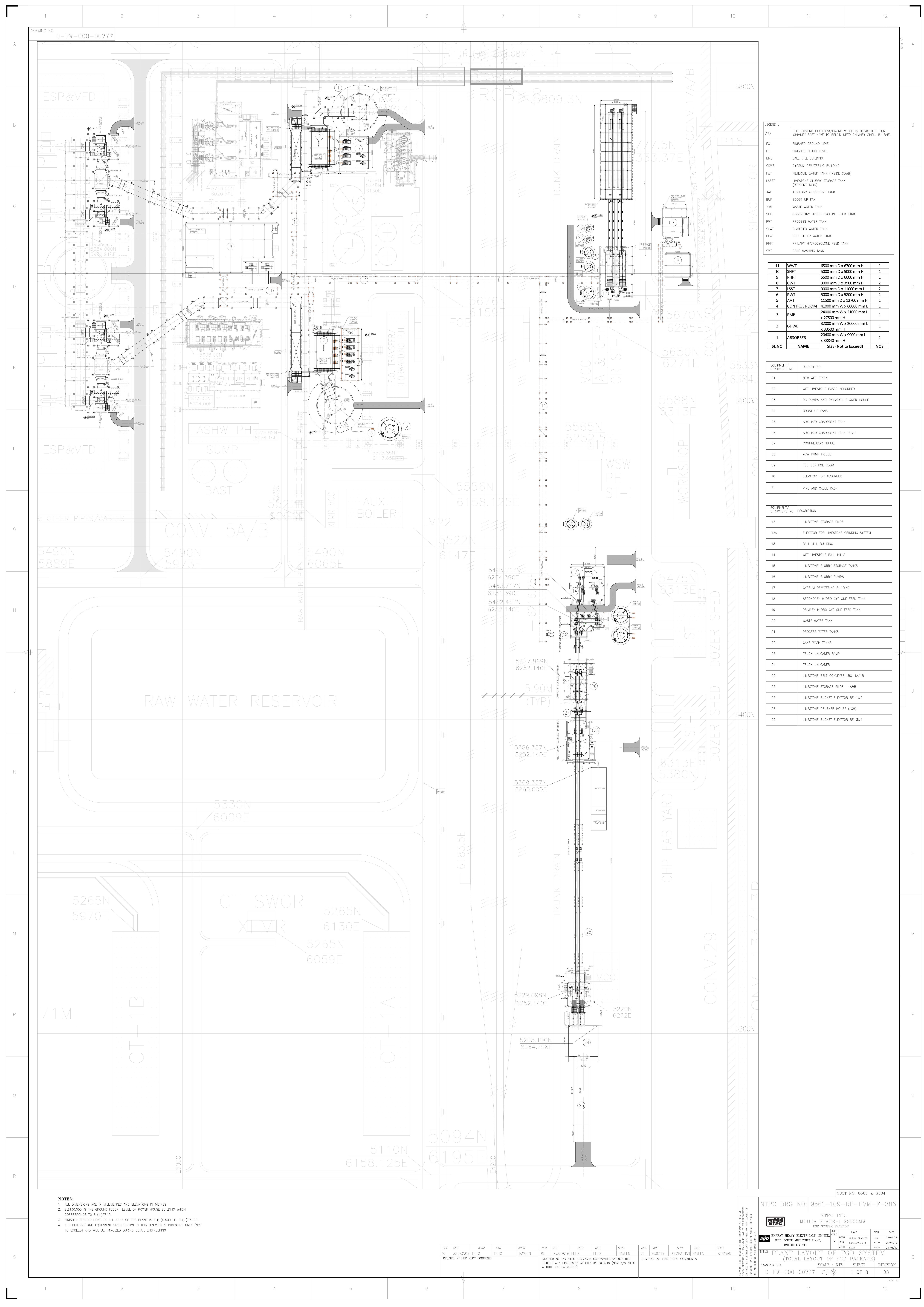
SNO	PGMA	PGMA DESCRIPTION	PGMA DETAILS
50	FW 798	Air receivers	Instrument Air receivers Any Instruments/Valves
51	FW 800	Clarified water tank	Base plate & its supports Shell, Roof
52	FW 802	Neutralization tank & accessories	Base plate & its supports Shell, Roof
53	FW 988	Commissioning spares	Startup & commissioning spares

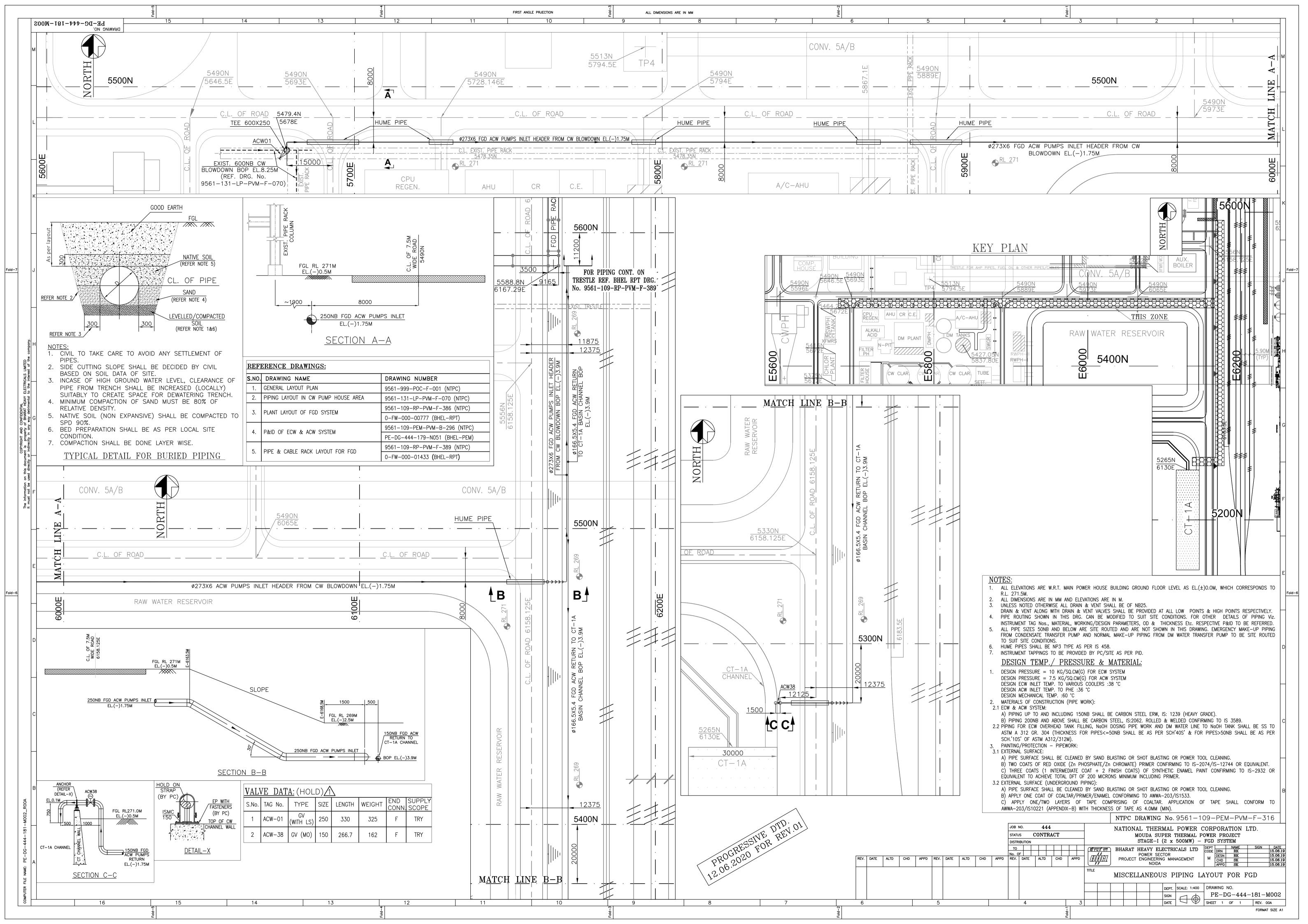












Hire Charges on Issue of Capital Tools & Plants

- The rates of hire charges for capital Tools and Plants and Operator's charges circulated vide letter No. PWR:FM: T&P Hire 2021-23 dated 31.08.2021 The Revised Rates effective from 25.09.2023 are enclosed as detailed below:
- (i) Annexure C1 & T1: Rates of hire charges applicable to contractors working for BHEL
- (ii) Annexure C2 & T2: Rates of hire charges applicable to outside agencies other than Contractors working for BHEL.
- 2. The Crane Operator's charges will be as follows:
 - A. If BHEL operator is utilised Rs. 9500/- (Rupees Nine thousand five hundred only) per day of 8 hours. For services less than 4 hours, half of per day rate will be charged. For services for 4 hours or more but up to 8 hours, full day rate will be charged. Overtime Allowance (OTA) will be charged at double the rate on hourly basis.
 - B. If vendor sourced operator is provided, the rates shall be the actual cost to BHEL with 30% overheads.
- The hire charges of Capital Tools & Plants are exclusive of operating expenses e.g. fuel & consumables. All Operating expenses are chargeable to User's account.
- 4. All other terms and conditions / aspects governing the Issue of T&P on Hire "will remain the same as already circulated vide our letter of even number dated 22.1.1992 (copy enclosed).
- The revised rates will be effective from 25.09.2023 and shall remain valid up to 31.08.2025. This will be subject to revision thereafter.

DATE:18/09/2023

REVISED RATES OF T&P HIRE CHARGES FOR CRANES & TRAILERS ETC. FOR SUB-CONTRACTORS WORKING FOR BHEL FOR DOING BHEL JOBS

SL NO.	ITEM DESCRIPTION	USEFUL LIFE (IN YRS)	Revised rates (Rs./Hour) valid from 25/09/2023 to 31/8/2025 (WITHIN USEFUL LIFE)	(Rs./Hour) valid from 25/09/2023 to 31/8/2025 (BEYOND
I.	CRANES:-			
1	Portal Gantry Crane 500T	15	26040.00	26040.00
2	100MT Crawler Crane ZOOMLION CRANE-QUY-100	10	11470.00	11470.00
3	Heavy Lift Crawler Crane 600MT Class DEMAG Model CC2800	15	56920.00	56920.00
4	PORTAL CRANE, 360T	15	14230.00	14230.00
5	600MT Class Crawler Crane- Manitowoc Model 18000-UPGRADED	15	56070.00	56070.00
6	600MT Class Crawler Crane- Liebherr Model LR1600-2 (Upgraded	15	69370.00	69370.00
7	CRAWLER CRANE FMC/LINKBELT 718, 250T (WITH RINGER)	15	33880.00	33880.00
8	CRAWLER CRANE FMC/LINKBELT 718, 250T (WITH-OUT RINGER)	15	21170.00	21170.00
9	MANITOWOC M-250T TRUCK CRANE	15	30490.00	30490.00
10	270 MT Class Crawler Crane- Manitowoc Model 2250	15	32010.00	32010.00
11	300MT Crane Crawler Crane LIEBHERR Model LR-1350/1	15	26680.00	26680.00
11.A	300MT Crane Crawler Crane LIEBHERR Model LR-1350/1 (UPGRADED)	15	36740.00	36740.00
12	250MT Class Mid range Crawler Crane- Kobelco Model CKE2500-2	15	15290.00	15290.00
12.A	250MT Class Mid range Crawler Crane- Kobelco Model CKE2500-2	15	19180.00	19180.00
13	LINKBELT LS- 248H CRAWLER CRANE (180T)	15	16940.00	16940.00
14	MANITOWAC MODEL 888 CRAWLER CRANE (200 MT)	15	22020.00	22020.00
15	CRAWLER CRANE SUMITOMO, 150T	15	11010.00	11010.00
16	All Terrain Crane, 150MT- Liebherr Model LTM1150	15	13550.00	13550.00
17	CRAWLER CRANE, 120 T Fushun Model QUY120	10	10920.00	10920.00
18.A	CRAWLER CRANE 135MT Kobelco Model CK1350- 1F	15	10840.00	10840.00
18.B	CRAWLER CRANE 135MT Kobelco Model CK1350	15	8970.00	8970.00
19	CRAWLER CRANE 120MT - Tata-Sumitomo Model SCX1200-2	15	10160.00	10160.00
20	CRAWLER CRANE 100 T (KH 500)	15	10160.00	10160.00
21	Hydraulic Crawler Crane 80MT, Fushun Model QUY 80B	10	5460.00	5460.00
22	ROUGH TERRAIN CRANE 75T (RT880)	12	6200.00	6200.00
23	CRAWLER CRANE, 75T -Tata Model 955ALC/TFC280	. 12	5430.00	5430.00
24	Mobile Crane, 55MT (TIL)	12	4460.00	4460.00
25	CRAWLER CRANE, 25T -Tata Model TFC75	10	3050.00	3050.00
26	MOBILE CRANE, 20MT (TIL)	10	2290.00	2290.00
27	MOBILE CRANE, 20MT (ESCORTS)	10	2290.00	2290.00
28	MOBILE CRANE ESCORTS- 14MT	10	720.00	720.00
29	HYDAULIC PICK & CARRY CRANE, 8/9/10/11/12 MT	10	390.00	390.00
30	FORK LIFT 5T	5	650.00	650.00
31	FORK LIFT 3T	5	540.00	540.00

REVISED RATES OF T&P HIRE CHARGES FOR CRANES & TRAILERS ETC. FOR OUTSIDE AGENCIES

SL NO.	ITEM DESCRIPTION	USEFUL LIFE (IN YRS)	Revised rates (Rs./Hour) valid from 25/09/2023 to 31/8/2025 (WITHIN USEFUL LIFE)	Revised rates (Rs./Hour) valid from 25/09/2023 to 31/8/2025 (BEYOND USEFUL LIFE)
I.	CRANES:-			002, 022, 27
1	Portal Gantry Crane 500T	15	28930.00	28930.00
2	100MT Crawler Crane ZOOMLION CRANE-QUY-100	10	12740.00	12740.00
3	Heavy Lift Crawler Crane 600MT Class DEMAG Model CC2800	15	63240.00	63240.00
4	PORTAL CRANE, 360T	15	15810.00	15810.00
5	600MT Class Crawler Crane- Manitowoc Model 18000-UPGRADED	15	62300.00	62300.00
6	600MT Class Crawler Crane- Liebherr Model LR1600-2 (Upgraded version)	15	77080.00	77080.00
7	CRAWLER CRANE FMC/LINKBELT 718, 250T (WITH RINGER)	15	37640.00	37640.00
8	CRAWLER CRANE FMC/LINKBELT 718, 250T (WITH-OUT RINGER)	15	23520.00	23520.00
9	MANITOWOC M-250T TRUCK CRANE	15	33880.00	33880.00
10	270 MT Class Crawler Crane- Manitowoc Model 2250	15	35570.00	35570.00
11	300MT Crane Crawler Crane LIEBHERR Model LR-1350/1	15	29640.00	29640.00
11.A	300MT Crane Crawler Crane LIEBHERR Model LR-1350/1 (UPGRADED)	15	40820.00	40820.00
12	250MT Class Mid range Crawler Crane- Kobelco Model CKE2500-2	15	16990.00	16990.00
12.A	250MT Class Mid range Crawler Crane- Kobelco Model CKE2500-2	15	21310.00	21310.00
13	(LIPGRADED) LINKBELT LS- 248H CRAWLER CRANE (180T)	15	18820.00	18820.00
14	MANITOWAC MODEL 888 CRAWLER CRANE (200 MT)	15	24470.00	24470.00
15	CRAWLER CRANE SUMITOMO, 150T	15	12230.00	12230.00
16	All Terrain Crane, 150MT- Liebherr Model LTM1150	15	15050.00	15050.00
17	CRAWLER CRANE, 120 T Fushun Model QUY120	10	12130.00	12130.00
18.A	CRAWLER CRANE 135MT Kobelco Model CK1350- 1F	15	12040.00	12040.00
18.B	CRAWLER CRANE 135MT Kobelco Model CK1350	15	9970.00	9970.00
19	CRAWLER CRANE 120MT - Tata-Sumitomo Model SCX1200-2	15	11290.00	11290.00
20	CRAWLER CRANE 100 T (KH 500)	15	11290.00	11290.00
21	Hydraulic Crawler Crane 80MT, Fushun Model QUY 80B	10	6060.00	6060.00
22	ROUGH TERRAIN CRANE 75T (RT880)	12	6890.00	6890.00
23	CRAWLER CRANE, 75T -Tata Model 955ALC/TFC280	12	6030.00	6030.00
24	Mobile Crane, 55MT (TIL)	12	4950.00	4950.00
25	CRAWLER CRANE, 25T -Tata Model TFC75	10	3390.00	3390.00
26	MOBILE CRANE, 20MT (TIL)	10	2540.00	2540.00
27	MOBILE CRANE, 20MT (ESCORTS)	10	2540.00	2540.00
28	MOBILE CRANE ESCORTS- 14MT	10	800.00	800.00
29	HYDAULIC PICK & CARRY CRANE, 8/9/10/11/12 MT	10	430.00	430.00
30	FORK LIFT 5T	5	730.00	730.00
31	FORK LIFT 3T	5	600.00	600.00

SL NO.	ITEM DESCRIPTION	Revised rates (Rs./Day) valid from 25/09/2023 to 31/8/2025
l.	LIFTING EQUIPMENTS	
1	Strand Jack System for Boiler Drum Lifting	21030
2	MULTI SHEAVE PULLEY BLOCK 40/50T/60T	310
3	MULTI SHEAVE PULLEY BLOCK 100T	630
4	MULTI SHEAVE PULLEY BLOCK 150T	1270
5	ELCTRIC WINCH 5T	1280
6	ELCTRIC WINCH 10T	2370
7	ELECTRIC WINCH 15 T	2170
8	PASSENGER CUM GOODS HOIST 1T	2290
9	FURNACE MAINTENANCE PLATFORM	5060
10	Gang Operated Hydraulic Jack (Set of 4 Jacks - 175 MT each)	2100
II	WELDING & HEAT TREATMENT EQUIPMENT	
. 1	125KW, 3KHZ, AIR-COOLED INDUCTION HEATING EQUIPMENT	16460
2	75KW, 10 KHZ, COMPACT INDUCTION HEATING EQUIPMENT	8230
3	WELDING GENERATOR 320/300 A	300
4	WELDING RECTIFIER 400A/300A	300
5	WELDING RECTIFIER 600A	400
6	DIESEL WELDING GENERATOR 400A/300A	400
7	TRANSFORMER,600A	300
8	TRANSFORMER 300/400A	200
III	SERVICE PLANTS & ALLIED EQUIPT.	0
2	500KVA DIESEL GENERATOR TRANSFORMER OIL FILTERATION EQUIPMENT 6000LPH CAPACITY	3830 6400
2	WITHOUT STORAGE TANK	0400
3	-DO- , WITH STORAGE TANK	7310
4	OIL FILTERATION M/C, 250/500 LPH (OTHER THAN SILICON OIL)	910
5	OIL FILTERATION M/C, 250GPH/1000LPH (OTHER THAN SILICON OIL)	1370
6	OIL FILTERATION M/C, 500GPH/2500LPH (OTHER THAN SILICON OIL)	1820
7	OIL FILTERATION M/C, 1000GPH/5000LPH (OTHER THAN SILICON OIL)	3650
8	Portable Lube Oil Purification Unit (Centrifuge M/c) Capacity: 750 LPH	1280
9	Low Vacuum de-hydration unit	640
10	DIESEL GENERATING SET,250 KVA	1780
11	DIESEL GENERATING SET,25 KVA	510
12	VACUUM PUMP(ABSOLUTE V.C.)	540
13	ACID CIRCULATING PUMP WITH MOTOR 120M HEAD, 150T/HR	1090
14	ACID TRANSFER PUMP 20/50 T/HR	540

SL NO.	ITEM DESCRIPTION	Revised rates (Rs./Day) valid from 25/09/2023 to 31/8/2025
15	DEWATERING PUMP (Kirloskar make,11KW/15HP)	80
16	HP Air compressor (32 Kg/Sq. Cm, 150 CFM)	4260
17	AIR COMPRESSORS 250/300/330/360/350 CFM	2740
18	AIR COMPRESSORS 140/150/190/210 CFM	910
19	ACID CIRCULATING PUMP WITH MOTOR & STARTER, 200T/HR, 150M, 220 HP	1820
20	Industrial Blower 2000CFM	1280
21	Air Leak Test Blower (Flow: 40000 m³/Hr)	1160
22	Air Blower (Flow: 20000 m³/Hr)	940
IV	METAL FORMING /CUTTING EQUIPMENT	
1	TUBE EXPANDING M/C PNEUMATIC 60-100 MM	640
2	ELECTRO HYDRAULIC PIPE BENDING M/C 4"	1640
3	BOLTING MACHINE (ALCOA/AVLOCK/ HUCK)	1810
4	-do- Gun with nose Assembly only	540
٧	TESTING/INSPECTION EQUIPMENT	
1	DATA LOGGER for PG TESTING	37110
2	MOTORISED HYDRAULIC TEST PUMP 250kg/cmsq	800
3	MOTORISED HYDRAULIC TEST PUMP 400-450kg/cmsq	1090
4	MOTORISED HYDRAULIC TEST PUMP 600 KG/CMSQ	1280
5	HYDRAULIC TEST PUMP 800 KG/CMSQ	1340
6	HYDRAULIC TEST PUMP 1000 KG/CMSQ	2250
7	BOLT STRETCHING DEVICE	910
8	BOROSCOPE/FIBROSCOPE FLEXIBLE TYPE (FLEXUX) IMPORTED	3650
9	ULTRASONIC FLAW DETECTOR	2740
10	MPI TEST KIT	360
11	GAS LEAK DETECTOR	270
12	VIBRATION/SOUND LEVEL METER IRD-306	360
13	VIBRATION/SOUND LEVEL METER IRD-308	360
14	VIBRATION ANALYSER/DYNAMIC BALANCING M/C IRD 350	1460
15	VIBRATION ANALYSER/DYNAMIC BALANCING M/C IRD 360	2560
16	SHOCK PULSE METER	640
17	HV.DC TEST KIT UPTO 50 KV	540
18	HV.DC TEST KIT ABOVE 50 KV	1000
19	HV.AC TEST KIT UPTO 50KV	820
20	HV.AC TEST KIT ABOVE 50KV	2920
21	MOTORISED MEGGER 2.5KV	400
22	MOTORISED MEGGAR 5KV	450
23	OSCILLOSCOPE-DUAL BEAM INDIGENOUS	450
24	OSCILLOSCOPE-DUAL BEAM IMPORTED	1090
25	WAVEFORM ANALYSER	910
26	OSCILLOGRAPH/UV RECORDER 24 CHANNEL	1640
27	OSCILLOGRAPH/UV RECORDER 12 CHANNEL	1090
28	OSCILLOGRAPH/UV RECORDER 6 CHANNEL	910
29	DIGITAL LOW RESISTANCE METER	640
30	DC POTENTIOMETER	180
31	PRECISION DEAD WEIGHT TESTER	1000
32	OPTICAL ALIGNMENT KIT	1370
33	BOROSCOPE/FIBROSCOPE(NON FLEXIBLE)	1200
34	VERNIER THEODOLITE, PRECISION	1200
35	VERNIER THEODOLITE, ORDINARY	200

L NO.	ITEM DESCRIPTION	Revised rates (Rs./Day) valid from 25/09/2023 to 31/8/2025
37	ISKAMATIC 'A'	3210
38	CALIBRATOR '03'	1000
39	48 POLE EXTENDER CARD	200
40	MULTIJET NPM	400
41	OSCILLOMETER	10240
42	VOC EQUIPMENT	1400
43	BINARY SIGNAL GENERATOR	290
44	ELECTRIC COUNTER	690
45	FREQUENCY GENERATOR	1000
46	DBF 3 VIBRATION RECORDER/ANALYSER	3290
47	L&T GOULD OSCILLOGRAPH 2-CHANNEL	490
48	L&T GOULD OSCILLOGRAPH 6-CHANNEL	1180
49	VIBROPORT 41/FFT ANALYSER	
	ELCID kit	5480
50		10060
51	UNIVERSAL CALIBRATION SYSTEM	2740
52	NATURAL FREQUENCY TESTER	2920
53	DIGITAL HARDNESS TESTER	360
54	ADRE 208 VIBRATION ANALYSER	7310
55	PCB DIAGONISTIC REPAIR KIT	2010
56	SECONDARY INJECTION RELAY TEST KIT	5300
57	MICRO OHM METER	1460
58	DIGITAL MICRO OHM METER	3250
	MEASURING RANGE: 200 μΩ ΤΟ 20ΚΩ	
59	PMI Machine OLYMPUS make	3370
60	Mobile Lighting Mast -	870
	9 metres (4X400 W)	
61	10KVA RESISTANCE BRAZING MACHINE	140
62	RECURRENT SURGE OSCILLOGRAPH (RSO) TEST KIT WITH	460
	PORTABLE HANDHELD OSCILLOSCOPE.	
63	HYDROGEN GAS LEAK DETECTOR	60
64	STATOR WEDGE ANALYZER KIT WITH COMPLETE ACCESSORIES	5020
65	WEDGE DEFLECTION KIT	80
66	TILE PRESSING MACHINE FOR GAS TURBINE	270
67	INDUCTION BRAZING MACHINE	4910
68	MAGNETIC COHESIVE FORCE (MCF) EQUIPMENT	3650
69	ULTRASONIC FLOW METER	180
70	PORTABLE VIBRATION ANALYSER (MODEL 811T)	40
71	CENTRIFUGAL PUMP SET FOR ACID CLEANING (WITH MOTOR AND PANEL): PRESSURE -14KG/SQ CM.; FLOW 60 M3/HR	470
72	CENTRIFUGAL PUMP SET FOR ACID CLEANING (WITH MOTOR AND	430
73	PANEL): PRESSURE -30KG/SQ CM.; FLOW 15 M3/HR HI SPEED MEMORY RECORDER, MAKE -YOKOGAWA, MODEL	1820
74	DL850E-Q-HE/B5/HD1 TROLLEY MOUNTED HYDRAULIC JACK (100 MT)	1260
75	5KV Insulation Tester	450
76	4 Channel Digital Oscilloscope /Fast Recorder	1720
77	4 Channel Oscillographic Recorder	
78		590
	Sound Level Meter	230
79	Thermal Imaging Camera	780
	Videoscope (Video Boroscope)	1530
80	IDO (Diagables Ossessas) Master (Otto decorate)	
80 81	DO (Dissolve Oxygen) Meter (0 to 1500 ppb)	1320
80	DO (Dissolve Oxygen) Meter (0 to 1500 ppb) Conductivity Meter Core Flux Test Kit	1320 80 7340

SL NO.	ITEM DESCRIPTION	Revised rates (Rs./Day) valid from 25/09/2023 to 31/8/2025
85	3 Phase Secondary Injection Kit (Relay Test)	3790
86	FRF Filtration Kit	1340
87	FFT Analyser	2310
88	Flue Gas Analyser	1030
89	Oil Test Kit (Mineral Oil)-Transformer	1020
90	Winding Resistance kit (R L C Load)	880
91	SFRA test Kit	1200
92	Tan Delta test Kit	4090
93	PF Meter	330
94	Ultrasonic Flow Meter	840
95	Oil Particle Counter	360
96	Plasma Cutting Machine (With complete accessories)	320
97	JCB make DG Set 80 KVA	690
98	Diesel Generating Set 82.5 KVA	640
99	Portable Jacking Oil Pump	1110
100	Alloy Analyser	1820

SL NO.	ITEM DESCRIPTION	Revised rates (Rs./Day) valid from 25/09/2023 to 31/8/2025
1.	LIFTING EQUIPMENTS	
1	Strand Jack System for Boiler Drum Lifting	23370
2	MULTI SHEAVE PULLEY BLOCK 40/50T/60T	350
3	MULTI SHEAVE PULLEY BLOCK 100T	700
4	MULTI SHEAVE PULLEY BLOCK 150T	1410
5	ELCTRIC WINCH 5T	1420
6	ELCTRIC WINCH 10T	2640
7	ELECTRIC WINCH 15 T	2410
8	PASSENGER CUM GOODS HOIST 1T	2540
9	FURNACE MAINTENANCE PLATFORM	5620
10	Gang Operated Hydraulic Jack (Set of 4 Jacks - 175 MT each)	2340
11	WELDING & HEAT TREATMENT EQUIPMENT	
1	125KW, 3KHZ, AIR-COOLED INDUCTION HEATING EQUIPMENT	18290
2	75KW, 10 KHZ, COMPACT INDUCTION HEATING EQUIPMENT	9140
3	WELDING GENERATOR 320/300 A	330
4	WELDING RECTIFIER 400A/300A	330
5	WELDING RECTIFIER 600A	440
6	DIESEL WELDING GENERATOR 400A/300A	440
7	TRANSFORMER,600A	330
8	TRANSFORMER 300/400A	220
III	SERVICE PLANTS & ALLIED EQUIPT.	
1	500KVA DIESEL GENERATOR	4250
2	TRANSFORMER OIL FILTERATION EQUIPMENT 6000LPH CAPACITY WITHOUT STORAGE TANK	7110
3	-DO- , WITH STORAGE TANK	8130
4	OIL FILTERATION M/C, 250/500 LPH (OTHER THAN SILICON OIL)	1010
5	OIL FILTERATION M/C, 250GPH/1000LPH (OTHER THAN SILICON OIL)	1520
6	OIL FILTERATION M/C, 500GPH/2500LPH (OTHER THAN SILICON OIL)	2030
7	OIL FILTERATION M/C, 1000GPH/5000LPH (OTHER THAN SILICON OIL)	4060
8	Portable Lube Oil Purification Unit (Centrifuge M/c) Capacity: 750 LPH	1420
9	Low Vacuum de-hydration unit	710
10	DIESEL GENERATING SET,250 KVA	1980
11	DIESEL GENERATING SET,25 KVA	560
12	VACUUM PUMP(ABSOLUTE V.C.)	600
13	ACID CIRCULATING PUMP WITH MOTOR 120M HEAD, 150T/HR	1210
14	ACID TRANSFER PUMP 20/50 T/HR	600
15	DEWATERING PUMP (Kirloskar make,11KW/15HP)	90
16	HP Air compressor (32 Kg/Sq. Cm, 150 CFM)	4730
17	AIR COMPRESSORS 250/300/330/360/350 CFM	3040
18	AIR COMPRESSORS 140/150/190/210 CFM	1010
19	ACID CIRCULATING PUMP WITH MOTOR & STARTER, 200T/HR, 150M, 220 HP	2030
20	Industrial Blower 2000CFM	1420
21	Air Leak Test Blower (Flow: 40000 m³/Hr)	1290
22	Air Blower (Flow: 20000 m³/Hr)	1050

DT: 18/09/2023

SL NO.	ITEM DESCRIPTION	Revised rates (Rs./Day) valid from 25/09/2023 to 31/8/2025
IV	METAL FORMING /CUTTING EQUIPMENT	
1	TUBE EXPANDING M/C PNEUMATIC 60-100 MM	710
2	ELECTRO HYDRAULIC PIPE BENDING M/C 4"	1820
3	BOLTING MACHINE (ALCOA/AVLOCK/ HUCK)	2010
4	-do- Gun with nose Assembly only	600
٧	TESTING/INSPECTION EQUIPMENT	
1	DATA LOGGER for PG TESTING	41230
2	MOTORISED HYDRAULIC TEST PUMP 250kg/cmsq	890
3	MOTORISED HYDRAULIC TEST PUMP 400-450kg/cmsq	1210
4	MOTORISED HYDRAULIC TEST PUMP 600 KG/CMSQ	1420
5	HYDRAULIC TEST PUMP 800 KG/CMSQ	1490
6	HYDRAULIC TEST PUMP 1000 KG/CMSQ	2490
7	BOLT STRETCHING DEVICE	1010
8	BOROSCOPE/FIBROSCOPE FLEXIBLE TYPE (FLEXUX) IMPORTED	4060
9	ULTRASONIC FLAW DETECTOR	3040
10	MPI TEST KIT	400
11	GAS LEAK DETECTOR	300
12	VIBRATION/SOUND LEVEL METER IRD-306	400
13	VIBRATION/SOUND LEVEL METER IRD-308	400
14	VIBRATION ANALYSER/DYNAMIC BALANCING M/C IRD 350	1620
15	VIBRATION ANALYSER/DYNAMIC BALANCING M/C IRD 360	2840
16	SHOCK PULSE METER	710
17	HV.DC TEST KIT UPTO 50 KV	600
18	HV.DC TEST KIT ABOVE 50 KV	1110
19	HV.AC TEST KIT UPTO 50KV	910
20	HV.AC TEST KIT ABOVE 50KV	3250
21	MOTORISED MEGGER 2.5KV	440
22	MOTORISED MEGGAR 5KV	500
23	OSCILLOSCOPE-DUAL BEAM INDIGENOUS	500
24	OSCILLOSCOPE-DUAL BEAM IMPORTED	1210
25	WAVEFORM ANALYSER	1010
26	OSCILLOGRAPH/UV RECORDER 24 CHANNEL	1820
27	OSCILLOGRAPH/UV RECORDER 12 CHANNEL	1210
28	OSCILLOGRAPH/UV RECORDER 6 CHANNEL	1010
29	DIGITAL LOW RESISTANCE METER	710
30	DC POTENTIOMETER	200
31	PRECISION DEAD WEIGHT TESTER	1110
32	OPTICAL ALIGNMENT KIT	1520
33	BOROSCOPE/FIBROSCOPE(NON FLEXIBLE)	1340
34	VERNIER THEODOLITE, PRECISION	1340
35	VERNIER THEODOLITE, ORDINARY	220
36	ENGINEERS PRECISION LEVEL/DUMPY LEVEL	130
37	ISKAMATIC 'A'	3570
38	CALIBRATOR '03'	1110
39	48 POLE EXTENDER CARD	220
40	MULTIJET NPM	440
41	OSCILLOMETER	11380
42	VOC EQUIPMENT	1560
43	BINARY SIGNAL GENERATOR	320
44	ELECTRIC COUNTER	770

DT: 18/09/2023

SL NO.	ITEM DESCRIPTION	Revised rates (Rs./Day) valid from 25/09/2023 to 31/8/2025
45	FREQUENCY GENERATOR	1110
46	DBF 3 VIBRATION RECORDER/ANALYSER	3650
47	L&T GOULD OSCILLOGRAPH 2-CHANNEL	540
48	L&T GOULD OSCILLOGRAPH 6-CHANNEL	1320
49	VIBROPORT 41/FFT ANALYSER	6090
50	ELCID kit	11170
51	UNIVERSAL CALIBRATION SYSTEM	3040
52	NATURAL FREQUENCY TESTER	3250
53	DIGITAL HARDNESS TESTER	400
54	ADRE 208 VIBRATION ANALYSER	8130
55	PCB DIAGONISTIC REPAIR KIT	2230
56	SECONDARY INJECTION RELAY TEST KIT	5890
57	MICRO OHM METER	1620
58	DIGITAL MICRO OHM METER	3610
50	MEASURING RANGE: 200 μΩ ΤΟ 20ΚΩ	5010
59	PMI Machine OLYMPUS make	3740
60	Mobile Lighting Mast -	970
00	9 metres (4X400 W)	970
C4	10KVA RESISTANCE BRAZING MACHINE	160
61		160 520
62	RECURRENT SURGE OSCILLOGRAPH (RSO) TEST KIT WITH	520
	PORTABLE HANDHELD OSCILLOSCOPE.	
63	HYDROGEN GAS LEAK DETECTOR	60
64	STATOR WEDGE ANALYZER KIT WITH COMPLETE	5580
	ACCESSORIES	
65	WEDGE DEFLECTION KIT	90
66	TILE PRESSING MACHINE FOR GAS TURBINE	300
67	INDUCTION BRAZING MACHINE	5460
68	MAGNETIC COHESIVE FORCE (MCF) EQUIPMENT	4060
69	ULTRASONIC FLOW METER	200
70	PORTABLE VIBRATION ANALYSER (MODEL 811T)	50
71	CENTRIFUGAL PUMP SET FOR ACID CLEANING (WITH MOTOR	520
	AND PANEL): PRESSURE -14KG/SQ CM.; FLOW 60 M3/HR	
72	CENTRIFUGAL PUMP SET FOR ACID CLEANING (WITH MOTOR	480
	AND PANEL): PRESSURE -30KG/SQ CM.; FLOW 15 M3/HR	
73	HI SPEED MEMORY RECORDER, MAKE -YOKOGAWA, MODEL	2020
	DL850E-Q-HE/B5/HD1	
74	TROLLEY MOUNTED HYDRAULIC JACK (100 MT)	1400
75	5KV Insulation Tester	500
76	4 Channel Digital Oscilloscope /Fast Recorder	1910
77	4 Channel Oscillographic Recorder	650
78	Sound Level Meter	260
79	Thermal Imaging Camera	870
80	Videoscope (Video Boroscope)	1700
81	DO (Dissolve Oxygen) Meter (0 to 1500 ppb)	1470
82	Conductivity Meter	90
83	Core Flux Test Kit	8160
84	Primary Current Injection Kit (2000A)	970
85	3 Phase Secondary Injection Kit (Relay Test)	4210
86	FRF Filtration Kit	1490
87	FFT Analyser	2570
88	Flue Gas Analyser	1150
89	Oil Test Kit (Mineral Oil)-Transformer	1130
90	Winding Resistance kit (R L C Load)	980

ANNEXURE-T II

DT: 18/09/2023

SL NO.	ITEM DESCRIPTION	Revised rates (Rs./Day) valid from 25/09/2023 to 31/8/2025
91	SFRA test Kit	1330
92	Tan Delta test Kit	4550
93	PF Meter	370
94	Ultrasonic Flow Meter	930
95	Oil Particle Counter	400
96	Plasma Cutting Machine (With complete accessories)	350
97	JCB make DG Set 80 KVA	770
98	Diesel Generating Set 82.5 KVA	710
99	Portable Jacking Oil Pump	1230
100	Alloy Analyser	2030