

ANNEXURE-XI- PAINTING SPECIFICATION

Sl No	Description	Surface preparation	Primer/ DFT	Intermediate DFT	Finish DFT	Total DFT	Color codes	Remarks
1.0	Indoor surfaces (Structural steel works, piping, vessels, tanks)	Blast cleaning SA2.5	One coat of Zinc Epoxy, 80 µm per coat	NIL	One coat of Epoxy high solid paint, , 80 µm per coat	160 µm (min)	Ref. Annexure A	For the tanks with rubber lining, S.No 1.0 & 2.0 is applicable for external surface only. Internal surface is blasted before it is rubber lined.
2.0	Outdoor surfaces (Surface exposed to atmosphere of Structural steel work, piping, vessel, tanks)	Blast cleaning SA2.5	One coat of Zinc Epoxy, 80 µm per coat	One/two coats of epoxy high solid, total dft of 160 µm	One coat of 2-component polyurethane paint, 50 µm per coat	290 µm (min)	Ref. Annexure A	
3.0	Pumps, motor and other equipment (Outdoor)	Blast cleaning SA2.5	One coat of Zinc Epoxy, 80 µm per coat	One coat of Epoxy high solid, 110µm per coat	One coat of 2-component polyurethane paint, 50 µm per coat	240µm (min)	Ref. Annexure A	
4.0	Pumps, motor and other equipment (Indoor)	Blast cleaning SA2.5	One coat of Zinc Epoxy, 80 µm per coat	NIL	Two coat of Epoxy high solid paint, , 50 µm per coat	180µm (min)	Ref. Annexure A	
5.0	Plant / cooling water pipes	GRP or Steel lined concrete pipes with cathodic protection and coating according to AWWA C 203						

NOTES:

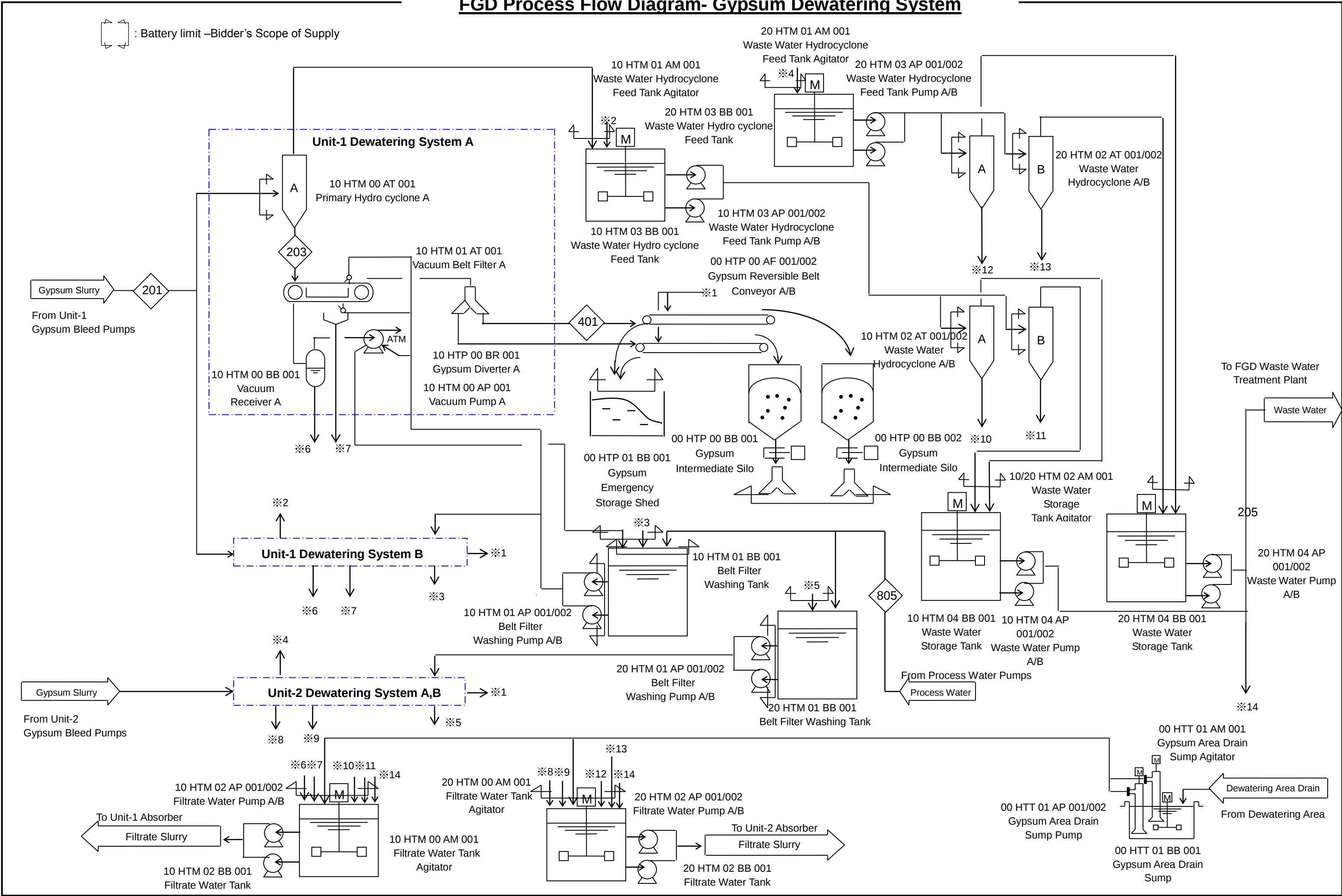
1. Painting of FGD commissioning spares and Mandatory spares shall be as per respective items as above.
2. No painting for SS, Aluminium and Galvanized items.
3. All components covered under different Sl no. are to be painted. In case any component is left out, the same shall be deemed to be included under the relevant section.

COLOUR CODES (Annexure- A)

SL NO	DESCRIPTION ALONG WITH MEDIUM	BASE	BAND/ RING	LETTERING
01	PIPING- Flammable liquids and solids eg. Lube oil, seal oil, hydraulic oil	Signal brown, RAL 8002	Signal red, RAL 3001	Signal White, RAL 9003
02	PIPING- Non-flammable liquids & solids	Signal brown, RAL 8002	Signal black, RAL 9004	Signal White, RAL 9003
03	PIPING- Water	Signal green, RAL 6032		Signal White, RAL 9003
04	PIPING-AIR	Signal White, RAL 9003		Signal Black, RAL 9004
05	EQUIPMENT- ACIDS MEDIUM	Signal Orange, RAL 2010		Signal Black, RAL 9004
06	EQUIPMENT- ALKALI MEDIUM	Signal Violet, RAL 4008		Signal White, RAL 9003
07	Structural steel, steel skids for equipment, ducts, tanks and silo	Windows grey RAL 7040		
08	Panels, Cubicles, Junction boxes	Light grey RAL 7035		

ANNEXURE - XII - PFD GYPSUM DEWATERING BUILDING GA

FGD Process Flow Diagram- Gypsum Dewatering System



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Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099
1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	

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ANNEXURE-XIV-PIPING & VALVES

PROJECT: MAITREE 2X660MW			DATE	15.05.18
ANNEXURE-XIV-PIPE SCHEDULE-GYPSUM DEWATERING SYSTEM				
S.NO	DESCRIPTION	FLUID TYPE	THICKNESS	MATERIAL
1	PRIMARY HYDROCYCLONE OVERFLOW LAUNDER TO WASTE WATER HYDROCYCLONE FEED TANK	GYPSUM SLURRY	SCH40	A53-B + Rubber Lining
2	PRIMARY HYDROCYCLONE UNDERFLOW LAUNDER TO VACUUM BELT FILTER	GYPSUM SLURRY	SCH40	A53-B + Rubber Lining
3	BELT FILTER VENT FAN TO VACUUM BELT FILTER	BELT FILTER VENT	SCH20	A53-B + Rubber Lining
4	FROM BELT FILTER WASHING PUMP TO VACUUM BELT FILTER FOR CAKE & CLOTH WASH	PROCESS WATER	SCH80	A53-B
5	INSTRUMENT AIR TO VACUUM BELT FILTER	INSTRUMENT AIR	SCH40S	A312-TP304
6	FROM VACUUM RECEIVER TO FILTRATE WATER TANK	FILTRATE SLURRY	SCH40	A53-B + Rubber Lining
7	VACUUM PUMP VENT TO OUTDOOR	VACUUM PUMP VENT	SCH20	A53-B
8	FROM VACUUM RECEIVER TO VACUUM PUMP	FILTRATE SLURRY	SCH10	A53-B + Rubber Lining
9	VACUUM PUMP SEALING WATER TO BELT FILTER WASH TANK	PROCESS WATER	SCH40	A53-B
10	BELT FILTER VENT FAN - VENT TO OUTDOOR	BELT FILTER VENT	SCH20	A53-B + Rubber Lining
11	FROM WASTE WATER HYDROCYCLONE OVERFLOW LAUNDER TO WASTE WATER STORAGE TANK	FILTRATE SLURRY	SCH40	A53-B + Rubber Lining
12	FROM WASTE WATER HYDROCYCLONE UNDERFLOW LAUNDER TO FILTRATE WATER TANK	GYPSUM SLURRY	SCH40	A53-B + Rubber Lining

PROJECT: MAITREE 2X660MW

DATE 15.05.18

ANNEXURE-XIV-VALVE SCHEDULE-GYPSUM DEWATERING SYSTEM

S.No	Installation	Valve Type	Rating	Body	Trim	Lining	Connection	Operation/Body Type	Bonnet	Quantity No's for both the units
1	Primary Hydrocyclone Feed valve	PINCH VALVE	CL.150	A126-B	CR	IIR	FF	HAND WHEEL		16
2	Feed valve for cake & cloth washing-1	GATE VALVE	CL.150	A105	13CR	SEAT STL	SW	HAND WHEEL	BB,OS&Y	4
3	Feed valve for cake & cloth washing-2	GATE VALVE	CL.150	A105	13CR	SEAT STL	SW	HAND WHEEL	BB,OS&Y	4
4	Bypass Valve for cake & cloth washing	GLOBE VALVE	CL.150	A105	13CR	SEAT STL	SW	HAND WHEEL	BB,OS&Y	4
5	Feed valve for cake washing	BALL VALVE	CL.150	A105	AISI304	0	RF	LEVER.		4
6	Root valve for Differential Pressure indicator-1	GATE VALVE	CL.150	A105	13CR	SEAT STL	SW	HAND WHEEL	BB,OS&Y	4
7	Root valve for Differential Pressure indicator-2	GATE VALVE	CL.150	A105	13CR	SEAT STL	SW	HAND WHEEL	BB,OS&Y	4
8	Feed valve for cloth washing-1	GLOBE VALVE	CL.150	A105	13CR	SEAT STL	SW	HAND WHEEL	BB,OS&Y	4
9	Feed valve for cloth washing-2	BALL VALVE	CL.150	A105	AISI304	0	RF	LEVER.		4
10	Feed valve for cloth washing-3	BALL VALVE	CL.150	A105	AISI304	0	RF	LEVER.		4
11	Feed valve for Vacuum Box seal-1	BALL VALVE	CL.150	A105	AISI304	0	RF	LEVER.		4
12	Feed valve for Vacuum Box seal-2	GATE VALVE	CL.150	A105	13CR	SEAT STL	SW	HAND WHEEL	BB,OS&Y	4
13	Feed valve for Vacuum Box seal-3	BALL VALVE	CL.150	A105	AISI304	0	RF	LEVER.		4
14	Feed valve for Vacuum Box seal-4	BALL VALVE	CL.150	A105	AISI304	0	RF	LEVER.		4
15	Feed valve for Vacuum Box seal-5	BALL VALVE	CL.150	A105	AISI304	0	RF	LEVER.		4
16	Feed valve for Vacuum Pump seal-1	GLOBE VALVE	CL.150	A105	13CR	SEAT STL	SW	HAND WHEEL	BB,OS&Y	4
17	Feed valve for Vacuum Pump seal-2	BUTTERFLY VALVE ACTUATED BY MOTOR	CL.150	A216-WCB	13CR	EPDM	WAFER	ELECTRIC MOTOR W/L SWITCH		4
18	Feed valve for Vacuum Pump seal-3	GATE VALVE	CL.150	A395	13CR	0	RF	HAND WHEEL	BB,OS&Y	4
19	Feed valve for Vacuum Pump seal-4	GATE VALVE	CL.150	A395	13CR	0	RF	HAND WHEEL	BB,OS&Y	4
20	Feed valve for Vacuum Pump seal-5	GLOBE VALVE	CL.150	A105	13CR	SEAT STL	SW	HAND WHEEL	BB,OS&Y	4
21	Feed valve for Vacuum Pump seal-6	GATE VALVE	CL.150	A105	13CR	SEAT STL	SW	HAND WHEEL	BB,OS&Y	4
22	Drain valve for Belt filter wash water line to Vacuum Pump seal	GATE VALVE	CL.150	A105	13CR	SEAT STL	SW	HAND WHEEL	BB,OS&Y	4
23	Instrument Air feed Valve	GATE VALVE	CL.150	A182-F304	AISI304	0	SW	HAND WHEEL	BB,OS&Y	4
24	Belt Filter Washing Tank Drain	BUTTERFLY VALVE	CL.150	A216-WCB	13CR	EPDM	WAFER	LEVER.		2
25	Belt Filter Washing pump common header Discharge drain valve	GATE VALVE	CL.150	A105	13CR	SEAT STL	SW	HAND WHEEL	BB,OS&Y	2
26	Belt Filter Washing-Min flow line to tank line valve	GATE VALVE	CL.150	A105	13CR	SEAT STL	SW	HAND WHEEL	BB,OS&Y	2
27	Belt Filter Washing pump Suction valve-1	BUTTERFLY VALVE	CL.150	A216-WCB	13CR	EPDM	WAFER	LEVER.		2
28	Belt Filter Washing pump Suction valve-2	BUTTERFLY VALVE	CL.150	A216-WCB	13CR	EPDM	WAFER	LEVER.		2
29	Belt Filter Washing pump discharge valve-1	CHECK VALVE	CL.150	A395	13CR	0	RF	BC,SWING		2
30	Belt Filter Washing pump discharge valve -2	CHECK VALVE	CL.150	A395	13CR	0	RF	BC,SWING		2
31	Belt Filter Washing pump discharge common header valve-1	BUTTERFLY VALVE	CL.150	A216-WCB	13CR	EPDM	WAFER	LEVER.		2
32	Belt Filter Washing pump discharge common header valve-2	BUTTERFLY VALVE	CL.150	A216-WCB	13CR	EPDM	WAFER	LEVER.		2
33	Belt Filter Washing pump discharge drain valve-1	GATE VALVE	CL.150	A105	13CR	SEAT STL	SW	HAND WHEEL	BB,OS&Y	2
34	Belt Filter Washing pump discharge drain valve-1	GATE VALVE	CL.150	A105	13CR	SEAT STL	SW	HAND WHEEL	BB,OS&Y	2
35	Belt Filter Washing pump Suction drain valve-1	GATE VALVE	CL.150	A105	13CR	SEAT STL	SW	HAND WHEEL	BB,OS&Y	2
36	Belt Filter Washing pump Suction drain valve-2	GATE VALVE	CL.150	A105	13CR	SEAT STL	SW	HAND WHEEL	BB,OS&Y	2
37	Belt Filter Washing pump Suction Pressure gauge root valve-1	GATE VALVE	CL.150	A105	13CR	SEAT STL	SW	HAND WHEEL	BB,OS&Y	2
38	Belt Filter Washing pump Suction Pressure gauge root valve-1	GATE VALVE	CL.150	A105	13CR	SEAT STL	SW	HAND WHEEL	BB,OS&Y	2
39	Belt Filter Washing pump discharge valve to Belt Filter-1	BUTTERFLY VALVE ACTUATED BY MOTOR	CL.150	A216-WCB	13CR	EPDM	WAFER	ELECTRIC MOTOR W/L SWITCH		2
40	Belt Filter Washing pump discharge valve to Belt Filter-2	BUTTERFLY VALVE ACTUATED BY MOTOR	CL.150	A216-WCB	13CR	EPDM	WAFER	ELECTRIC MOTOR W/L SWITCH		2
41	Belt Filter Washing pump Discharge Pressure gauge root valve-1	GATE VALVE	CL.150	A105	13CR	SEAT STL	SW	HAND WHEEL	BB,OS&Y	2
42	Belt Filter Washing pump Discharge Pressure gauge root valve-1	GATE VALVE	CL.150	A105	13CR	SEAT STL	SW	HAND WHEEL	BB,OS&Y	2
43	Secondary Hydrocyclone Feed valve	PINCH VALVE	CL.150	A126-B	CR	IIR	FF	HAND WHEEL		16