Description of the Work

Construction ,Supplying of Electro Mechanical equipment, pipe fittings, erection, installation, testing and commissioning MBBR technology Sewage Treatment Plant **(Capacity 480 KLD)** at Koradi Ta- Kamptee Dist- Nagpur under Koradi Lake Conservation Project

1. DESIGN BASIS & PERFORMANCE PROJECTION

A) DESIGN BASIS:

The Sewage Treatment plant has been designed on the basis of following input parameters;

INLET PARAMETERS:

SR. NO.	PARAMETER	UNIT	RESULTS
1.	Flow	Cum/day	480
2.	pH	SU	7.0 – 8.0
3.	COD	mg/l	350 - 400
4.	BOD	mg/l	250 - 300
5.	TSS	mg/l	200 - 250
6.	O & G	mg/l	20 - 30

B) PERFORMANCE PROJECTION:

OUTLET PARAMETERS:

SR. NO.	PARAMETER	UNIT	RESULTS
1.	Flow	Cum/day	480
2.	pH	SU	7.0 – 8.0
3.	COD	mg/l	<50
4.	BOD	mg/l	< 10
5.	TSS	mg/l	< 10
6.	O & G	mg/l	<5

2. BRIEF DESCRIPTION OF PROPOSED SCHEME

2.1 PRE-TREATMENT STAGE

WASTEWATER TRANSPORT

The sewage which is generated from various sources is collected at source and routed towards the treatment plant. All the sewage is allowed to flow by gravity through open/close drains passing through coarse screen respectively.

SCREEN CHAMBER:

Screening is an essential step in sewage treatment for removal of material which would otherwise damage equipments; interfere with satisfactory operation of the treatment units or equipments. One number of screens shall be provided.

OIL & GREASE TRAP:

The screened sewage flows into oil and grease trap where the free-floating oil is removed from the top surface of liquid with the help of oil trap. The presence of oil and grease in wastewater entering any treatment system will have a detrimental effect on its performance.

COLLECTION CUM EQUALIZATION TANK:

The screened sewage will be collected into the collection cum equalization tank. The objective of the collection cum equalization tank is to feed in sewage flow & characteristics in order to provide optimum conditions for subsequent treatment processes. The collection cum equalization tank will be of a sufficient size to adequately absorb wastewater fluctuations caused by variation in plant production scheduling and to dampen the concentrated batches periodically dumped or spilled.

GRIT CHAMBER:

Raw sewage water contains inorganic suspended solids and floating particles (scum). Grit chamber will remove fine and heavy inorganic suspended solids (such as sand and silt particles). Heavy suspended particles shall settle down in the grit chamber unit. Grit chamber incorporated interceptor to remove the scum and floating particles from the sewage water. Those settled grit and floating scum will be removed out into the sludge holding tank which will be mix with biological sludge for subsequent dewatering.

2.2 BIOLOGICAL TREATMENT

ANOXIC TANK

The screened sewage is received in anoxic basin. The Anoxic stage of the process exposes microorganisms to nitrates generated in and recycled from the MBRs. In the absence of dissolved oxygen, bacteria will degrade these nitrates to nitrogen gas in a process known as Denitrification. Not only will the Anoxic Basin serve to convert nitrates to nitrogen gas, but they will also consume BOD, recover some lost alkalinity, and improve sludge quality.

In the Anoxic Basin, a process called Denitrification occurs, whereby heterotrophic bacteria convert nitrates (NO_3^-) to nitrogen gas (N_2) as part of cellular respiration. In short, carbon substrate (BOD) is consumed to synthesize cell mass and nitrate is used as an energy source. The consumption of BOD has the side benefit of reducing aeration requirements, thereby improving the overall energy performance of the system. As part of the denitrification process, some alkalinity is recovered and the pH of the system is partially stabilized. Anoxic basin is provided with blower to keep the basin in mixed conditions.

MOVING BED BIO-REACTOR (MBBR) TANK:

The wastewater enters from the top of the reactor and comes in contact to the microorganisms attached to the Bio Pac Media. This phase of the treatment process utilizes the principal of microbial degradation of pollutants in the presence of oxygen. The MBBR system is an attached growth aeration process that uses a neutrally buoyant plastic media to optimize biomass growth and protection within a bed. The MBBR process employs a submerged Bio Pac Media onto which

microorganisms attach. The Bio Pac Media has a very high surface to volume ratio, allowing for a high concentration of biological growth to thrive within the protected areas of the media. As the media supports a biomass concentration several times that achievable in activated sludge systems, treatment is significantly more productive. The biomass retained on the ring media provides effective treatment for the wastewater. The Bio Pac media are kept in motion by coarse bubble aerators. Apart from oxygenation air introduced into the reactor is sufficient to ensure thorough mixing and turnover of the media within the reactor. The air from the aerator periodically strips of most of the accumulated biomass. This makes it possible to control the Bio Film thickness and age distribution, and prevent the development of anaerobic conditions. The frequency of air shearing is optimized so that the microbes remain in a high growth phase, but they still form a fully developed food chain, in which larger organisms consume smaller ones. The result is more BOD conversion to water and CO_2 and less to biomass, so sludge production is minimized. The need to periodically waste sludge and the requirement to supply a dilute return activated sludge to maintain an appropriate food to microorganisms (F/M) ratio is eliminated. Once acclimated the Bio Film is highly resistant to shock caused by abrupt changes in BOD loading or exposure to toxins. The MBBR process has been shown to be effective in a range of operational conditions including carbonaceous, nitrification and combined carbonaceous & nitrification removal. High loading rates can be applied for carbonaceous removal.

SECONDARY CLARIFIER:

A clarifier with sludge scraping mechanism will be provided for settling of fully aerated sewage from the aeration tank. The clarifier will be provided with adequate volume and surface area to ensure proper settling of sludge from the MBBR tank. Sludge settled at the bottom of the clarifier will be recirculated to the MBBR tank and excess sludge will be transferred for dewatering.

INTERMEDIATE TREATED WATER TANK:

The overflow from secondary clarifier will be collected into the intermediate treated water tank. The treated water will be dosed with ozone for disinfection.

PRESSURE SAND FILTER:

Biologically treated water from the intermediate treated water tank will be pumped to pressure sand filter. Pressure quartz filter is ideal for filtration of water having very fine suspended matter like mud, rust particles and biological growth. Pressure quartz filter is a pressure vessel constructed of welded mild steel and provided with manhole with cover / top and bottom flanged covers, supports, raw water distributor, under drain collection and backwash water jet system.

Biological treated water flows downwards through the filter bed, and the turbidity and suspended matter is retained on the quartz surface. Filtered water is evenly collected by an under drain system in the bottom of the vessel and flows through the outlet to service. At normal flow-rates a clean filter bed presents little resistance to the passage of water but the suspended matter is removed from the water, steady rise in the loss of head occurs across the quartz bed. Cleaning of filter bed is effected by passing a reverse upward flow of water through the filter for approximately 3 to 5 minutes.

ACTIVATED CARBON GUARD FILTER:

After the removal of suspended matter & turbidity in pressure quartz filter and chlorination the water is passed through activated carbon guard filter for removal of color, odor and organic

contamination in the water. Activated carbon guard filter is supplied as pressure vessel constructed of welded mild steel and provided with flanged covers four leg supports raw water distributor, under drain collection and backwash water jet system.

Water after removal of suspended matter flows downwards through the beds of activated carbon guard filter. The color, odor and organic contamination in the water is trapped by adsorption on the surface of activated carbon granules. Filtered water is evenly collected by an under drain system in the bottom of the vessel and flows through the outlet to service. The backwash is carried out by passing a reverse upward flow of water through the filter for approximately 3 to 5 minutes.

DISINFECTION SYSTEM:

The water after removal of suspended particles, odor and organic matter is subjected for disinfection. The disinfection of the water is carried out by ozonization system. The treated water can be utilized for gardening, irrigation, floor washing purpose.

DISINFECTION BY OZONIZATION SYSTEM:

One common method of disinfecting wastewater is ozonation (also known as ozone disinfection). Ozone is an unstable gas that can destroy bacteria and viruses. It is formed when oxygen molecules (O2) collide with oxygen atoms to produce ozone (O3). Ozone is generated by an electrical discharge through dry air or pure oxygen and is generated onsite because it decomposes to elemental oxygen in a short amount of time. Ozone disinfection is generally used at medium- to large - sized plants after at least secondary treatment. Common use for ozone in wastewater treatment is odor control.

Advantages of Ozonization:

- Ozone is more effective than chlorine in destroying viruses and bacteria.
- The wastewater needs to be in contact with ozone for just a short time.
- Ozone decomposes rapidly, and therefore, it leaves no harmful residual that would need to be removed from the wastewater after treatment.
- There is no re-growth of microorganisms after ozonation, unlike ultraviolet and chlorine disinfection.
- Ozone is generated onsite, and thus, there are fewer safety problems associated with shipping and handling.
- Ozonation increases the dissolved oxygen (DO) concentration of the discharged wastewater. The increase in DO can improve the oxygen content of the receiving body of water.

TREATED WATER TANK:

The filter water from pressure sand filter and activated carbon filter will be collected into the treated water tank. The filtered water will be used for gardening, flushing purpose. The tank will be constructed in RCC.

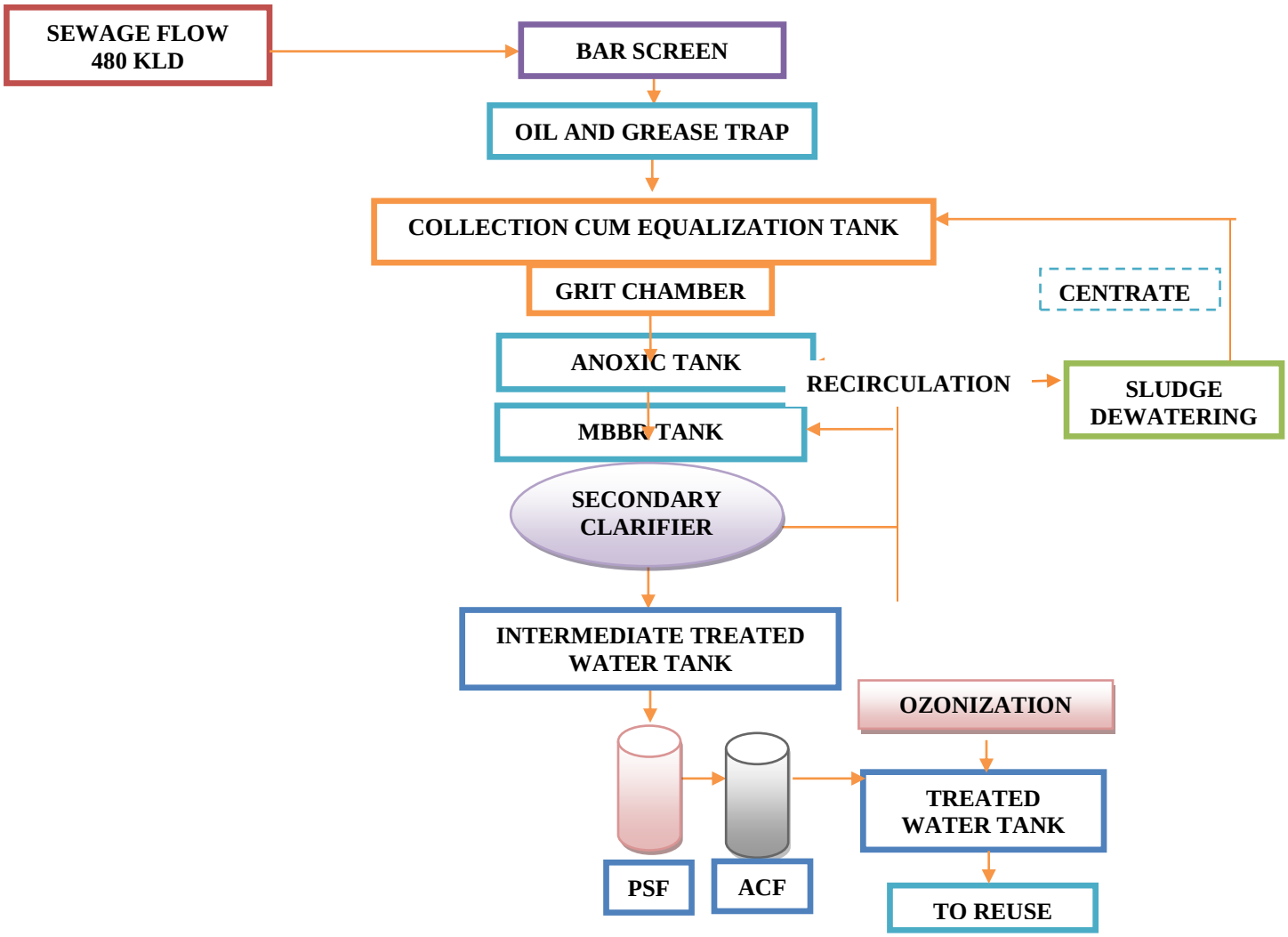
2.3 SLUDGE DEWATERING

BASKET CENTRIFUGE:

The sludge from sludge tank will be pumped to Basket centrifuge for dewatering. The basket centrifuge will generate sludge with 22 to 25% consistency and it will be collected on the sludge storage platform for further drying/shall is sent to compositing. The centrate generated after

dewatering of sludge will be again taken into collection cum equalization tank for treatment. The dried sludge will be utilized as manure in the garden or farms.

PROCESS FLOW DIAGRAM



SCOPE OF WORK OF CLIENT

1. All All civil works related to STP as per **Annexure – I ,II and Technical Specification** including Pipes Inserts, hydraulic testing of all civil units, waterproofing of civil units in case of leakages found during the hydraulic testing.
2. Fabrication of Railing, platforms, ladders, pipe supports with foundation, and steel material required for the same.
3. All consumable and chemicals required during commissioning of the STP, like Urea, DAP, and cow dung etc.
4. Manpower required during the commissioning and operation of the STP, like three operators in three shifts and unskilled labor in general shift.
5. Unloading, safe storage at site, and security of all the electro-mechanical equipments.
6. Sludge disposal from STP site.
7. Operation & Maintenance (O& M) of STP as per the **Annexure – III**

4. BATTERY LIMITS

Entry Point : - Screen Chamber
Exit Point : - Treated Water Tank
Sludge: -Sludge Drying Bed
Power Supply: - To M.C.C.

ANNEXURE I
LIST OF CIVIL UNITS (CLEINT'S SCOPE)

SR. NO.	CIVIL TANKS	QTY.	VOL. M^3	SIZES	MOC
1.	Screen Chamber	1 No.	-	1.0m x 2m x 0.75m SWD	RCC M-30
2.	Oil & Grease Trap	1 No.	3.4	1m x 1.5m x 0.5m SWD	RCC M-30
3.	Collection Cum Equalization Tank	1 No.	122	7m x 7m x 2.5m SWD + 0.5m FB	RCC M-30
4.	Grit Chamber	1 No.		6.0m x 0.15m x 0.75m SWD	RCC M-30
5.	Anoxic Tank	1No.	140	6.8m x 6.8m x 3.0 m SWD +0.5m FB	RCC M-30
6.	MBBR Tank	1 No.	160	7.3m x 7.3m x 3.0 m SWD +0.5m FB	RCC M-30
7.	Secondary Clarifier	1 No.	143	7.8 m Dia x 3.0 m SWD + 0.3 m FB	RCC M-30
8.	Intermediate Treated Water Tank	1 No.	40	3.6 m x 3.6 m x 3.0 m SWD + 0.5 m FB	RCC M-30
9.	Treated Water Tank	1 No.	122	7m x 7m x 2.5m SWD + 0.5m FB	RCC M-30
10.	Sludge Tank	1 No.	0.5-1	1.0m x 0.5m x 1m SWD + 0.3m FB	RCC M-30
11.	Sludge Drying platform	1 No.	-	-	PCC
12.	MCC Room/Lab Room/Centrifuge Room	1 No.	-		RCC M-30
13.	Foundation for Blowers, Pumps, PSF, ACF, Panel etc.	1 Lot.	-		RCC M-30

ANNEXURE II
LIST OF ELECTRO-MECHANICAL EQUIPMENTS
(ORAIPL'S SCOPE)

Sr. No.	EQUIPMENT LIST	QTY.
1.	Coarse Bar Screen	1 No.
2.	Submersible Pumpfor Collection cum Equalization Tank	2 Nos.
3.	Electro-magnetic Flow Meter	1 No.
4.	Blower For Collection cum Equalization Tank	2 Nos.
5.	Air Grid for Collection Tank	1 Lot.
6.	Mixer for Anoxic Tank	1 No.
7.	Blower For MBBR Tank	2 Nos.
8.	Diffusers For MBBR Tank	1 Lot.
9.	Media for MBBR Tank	1 Lot.
10.	Secondary Clarifier Mechanism	1 No.
11.	Sludge Recirculation Pump	2 Nos.

12.	Feed Pump For Pressure Sand Filter	2 Nos.
13.	Pressure Sand Filter (PSF)	1 No.
14.	Activated Carbon Filter (ACF)	1 No.
15.	Media for PSF & ACF	1 Lot.
16.	Ozonization System	1 Set
17.	Poly Dosing System	1 Set.
18.	Nutrient Dosing System	1 Set.
19.	Basket Centrifuge	1 No.
20.	Pipes, Pipe fittings like flanges, tees, bends, nut bolts, gaskets etc.	1 Set.
21.	Valves	1 Lot.
22.	Inserts & Nozzles	1 Lot.
23.	MCC Panel, Electrical Cables & its Accessories	1 Lot.

ANNEXURE III

SCOPE OF WORK FOR OPERATION & MAINTENANCE (O& M) STP:

Compulsory O & M Period Twenty Four months after the commissioning of plant:
On the completion of all work, the contractor shall run the STP to stabilize the same for Twenty Four months (730 days) before handing over the same to the NMRDA officials. .The minimum time period required will be of 24 months. During the O & M all the charges for electricity or diesel for DG sets will be borne by NMRDA. Contractor should quote the rate accordingly

MAINTENANCE DURING DEFECTS LIABILITY PERIOD

All equipment that requires repairing shall be immediately serviced and repaired. Since the period of Mechanical Maintenance runs concurrently with the defects liability period, all replacement parts and labour shall be supplied promptly free-of-charge to the NMRDA

TECHNICAL SPECIFICATIONS

Sr. No.	EQUIPMENT SPECIFICATIONS	
1.	**BAR SCREEN**	
	Civil tank size	2.0 m x 1.0 m x 0.75 m SWD + 0.5 m FB
	No. Of Tank	1 No.
	Purpose	Screening of Wastewater
	Type	Bar Type
	MOC	SS 304
	Flow	25.0 m3/hr
	Opening	10 mm
	Quantity	1 No.
	Make	Fabricated
2.	**SUBMERSIBLE PUMPS FOR COLLECTION CUM EQUALIZATION TANK**	
	No. Of Tank	2 Nos. (1W + 1 SB)
	Type	Vertical, Submersible
	Purpose	To transfer raw effluent from collection cum equalization tank to grit chamber
	MOC	SS 304
	Flow	25 m3/hr, 12 m head
	Quantity	2 nos. (1W + 1SB)
	Make	Grundfos/ABS/Crompton/Lubi/Eq.
	Motor Make	SIEMENS IEE2/ABB/Eq.
3.	**FLOW METER**	
	Type	Magnetic flow meter
	Flow	25 m3/hr
	Qty.	1 No.
	MOC	SS 316
	Make	E& H / Emerson/Adept Fluidyne/Eq.
	Make	Johnson/KSB/Eq.
	Motor Make	SIEMENS IEE2/ABB/Eq.
4.	**BLOWER FOR COLLECTION CUM EQUALIZATION TANK**	
	Type	Roots, Twin lobe
	Material	Cast Iron
	Capacity	170 m3/hour @ 3000 mmWC
	Qty.	2 Nos. (1 W + 1 SB)
	Make	Everest/Kay/Eq.
	MOTOR	
	Type	Horizontal, TEFC, Squirrel Cage, Induction
	Capacity	3.0 HP
	Qty.	1 No. (1 W)

	Make	SIEMENS IEE2/ABB/Eq.
5.	**AIR GRID FOR COLLECTION TANK**	
	Type	UPVC Pipe Grid
	Air flow Capacity	170 m3/hour @ 3000 mmWC
	Make	Pipe Make: Astral /Jindal/Eq.
6.	**MIXER FOR ANOXIC TANK**	
	Type	Submersible Mixer
	MOC	SS 304
	Speed	50-100 rpm
	Make	ABS/CNP/Fivebro/Mathen Platt/Eq
	Qty.	1 No.
7.	**BLOWER FOR MBBR AERATION TANK**	
	Type	Roots, Twin lobe
	Material	Cast Iron
	Capacity	370 m3/hour @ 4000 mmWC
	Pressure	0.4 kg/cm2
	Qty.	2 Nos. (1 W + 1 SB)
	Make	Everest/Kay/Eq.
	MOTOR	
	Type	Horizontal, TEFC, Squirrel Cage, Induction
	Capacity	10 HP
	Qty.	2 Nos. (1 W + 1 SB)
	Make	SIEMENS IEE2/ABB/Eq.
8.	**DIFFUSERS FOR MBBR TANK**	
	Purpose	Supply of oxygen for biological oxidation of organic matter and for proper mixing for Aerobic treatment as per process design requirement.
	Material	Silicon based membrane with anti-microbial properties PP support tube 4.5 mm thick
	Type	Fine bubble air diffuser – Tubular (Retrievable Type)
	Size	63 mm O.D, 2.0 mts. long Pipe aerator density approx. 12%.
	Air Quantity	8-10 m3 air /mtr
	Qty.	1 Lot.
	Make	OTT /Rehau/Equivalent
	Make	JUMO/Emerson /E & H/Forbes Marshall/Eq.
9.	**MEDIA FOR MBBR TANK**	
	MOC	PP Media
	Surface Area per m3	400 m2/m3
	Qty.	1 Lot
	Make	Cooldeck/Guddiplast/MM Aqua/Eq.
10.	**SECONDARY CLARIFIER MECHANISM**	
	Type	Bottom Sludge scrapping mechanism

	MOC	MSEP
	Size	7.8 m dia
	Make	Fabricated
11.	**SLUDGE RECIRCULATION PUMP**	
	Type	Centrifugal, Non-clog, self-priming
	Material	Body-Cast Iron, impeller – SS
	Capacity	25 m3/hour @ 12 m head or recommended by the supplier
	Qty.	2 no. (1 W + 1 SB)
	Make	Johnson/Kirloskar/Eq.
	Motor	
	Type	Horizontal, TEFC, Squirrel Cage, Induction
	Capacity	3 HP or recommended by the supplier
	Make	SIEMENS IEE2/ABB/Eq.
12.	**FEED PUMP PRESSURE SAND FILTER**	
	Type	Mono-block
	MOC	Body-CI, Impeller-SS
	Flow	25.0 m3/hr, 35 m head
	Quantity	2 nos. (1W + 1 SB)
	Make	Kirloskar/CNP/Eq.
13.	**PRESSURE SAND FILTER**	
	Size	1.45 m Dia
	MOC	MSEP
	Loading rate	12 m3/m2/hr
	Quantity	1 no.
	Make	Pentaire/Aventura/Fabricated
14.	**ACTIVATE CARBON FILTER**	
	Size	1.45 m Dia
	MOC	MSEP
	Loading rate	12 m3/m2/hr
	Quantity	1 no.
	Make	Pentaire/Aventura/Fabricated
15.	**OZONATION SYSTEM**	
	Type	Carona discharge type, water cooled through chiller, dual gas flow inside ozone electrode.
	Ozone capacity	200 Gms/hr
	Ozone concentration	8% wt/wt
	Standard	DIN 19627 part 2 i.e. SS 1.4571
	MOC of ozone electrode	SS 316 Ti
	Dielectric	Borosilicate glass with one end fused
	High tension element	Aluminium according to DIN 17007 part 4

	HT element	Individually fused
	Frequency	Max 100 Hzs
	Operating voltage	10000 volts
	Feed gas	Oxygen from PSA plant
	Oxygen purity	93%
	Oxygen dew point	-50 deg cen.
	Dosing system	Through ventury
	Contact column	In covered RCC baffled tank
	Contact time	15 min
	Make	ORAIPL/KAUFMANN/TOSHIBA
16.	**POLYELECTROLYTE DOSING SYSTEM**	
	Dosing Pumps	2 Nos.
	Purpose	For dosing of coagulant/polyelectrolyte
	Chemical	Polyelectrolyte
	Capacity	0 - 10 LPH
	Type	Metering
	Pump make	E Dose/Milton Roy/Prominent
	DOSING TANK	
	No.	1 No.
	MOC	HDPE
	Capacity	100 Ltr.
	Tank Make	Syntex / Plasto/Reno
	MIXER	
	Type of mixer	Turbine type impeller mixer
	MOC	SS-316
	RPM	50 rpm
	Make of mixer	ABS/CNP/Fivebro/Fabricated/Eq.
17.	**NUTRIENT DOSING SYSTEM (UREA & DAP)**	
	Dosing Pumps	4 Nos.
	Capacity	0 - 6 LPH
	Type	Metering
	Pump make	E Dose/Milton Roy
	DOSING TANK	
	No.	4 No.
	MOC	HDPE
	Capacity	300 Ltr.
	Tank Make	Syntex /Plasto/Reno

18.	**BASKET CENTRIFUGE**	
	No.	1 No.
	Sludge feed rate	100 Lit/hr
	Hours of operation/day	8 hrs
	Feed Consistency	2 %
	Cake solids	20 to 25 %
	MOC	SS 316
	Make	NM Patel/Eq.
19.	**PIPING**	
	Qty– 1 Lot.	
	MOC–Sludge Line- HDPE Water Line- UPVC/MS Class B	
	Make - Astral/Supreme/Eq.	
20.	**VALVES**	
	Qty – 1 Lot.	
	MOC - PP/MS/CI	
	Make –Intervalve/Delvalve/Eq.	
21.	**ELECTRICAL**	
	1 Lot, MCCB based MCC Panel	
	Make	Switch gear- ABB/L&T/Siemens/CNS
	Type of Panel	• Double front, Fixed Type, non-compartmentalized floor mounted panels. • Fabrication material - CRCA Sheet - Load bearing surfaces -3MM, Gland Plates – 3MM. • Non load bearing surfaces – 1.6 mm thick Siemens greating powder coating
	IP Protection	IP 54
	Type of Mounting	Free standing Floor Mounted, Cable bottom entry.
	Cables Qty.	1 Lot.
	Cable Make	Polycab /Havells/Eq.

22	**<u>Online Monitoring Parameters at Inlet-Outlet of STP by single following equipment with 2 monitors LCD display with cyclic operation.</u>**	
	TOC	Qty : 1 no.
	TSS	Qty : 1 no.
	Ph	Qty : 1 no.
	FLOW	Qty : 1 no.
	TOC analyser	
A	**ONE CHANNEL ONLINE TOC ANALYSER FOR OUT LET OF STP & CYCLIC INTERMITTANT MEASUREMENT OF INLET PARAMETERS.** **Model: TOC Two stream** Measurement Principle: TOC measurement based on 680^{0}C thermal	

	catalytic combustion and NDIR detection as per US EPA 415.1, CPCB Guide Manual: water & waste water analysis, Item 15, pages 88-89, EN 1484, APHA/ASTM 5310B. Remote **On-line / Remote calibration facility**. Calibration possible from remotely located PC/Laptop/server MCERTS certified. Analogue Output/Load: Four 4-20 mA; Load: 500 ohms. Digital interface: RS-485/Modbus Power supply: 230 VAC; 50 Hz. For outlet of STP. With basic utilities & intermittent cyclic measurement of inlet STP parameters.	
B	Zero Air Generator for item A	
C	Sample drawing pump, piping, valves etc., to bring the sample to analyzers and Panel for analyzers	
D	**ONLINE pH ANALYSER FOR INLET & OUT LET OF STP** Measurement method: Electrochemical Range:0-14 pH Analogue Output/Load: Two 4 – 20mA ; Load: 500 ohms. Digital interface: RS-485 Power supply: 230 VAC; 50 Hz. For outlet of STP.	
E	**ONLINE TSS ANALYZER FOR INLET & OUT LET OF STP** Measurement method: IR LED 880nm scattering (45 degree) Range:0-1500 mg/l Analogue Output/Load: Two 4 – 20mA ; Load: 500 ohms. Digital interface: RS-485 Power supply: 230 VAC; 50 Hz.	
F	**ULTRA SONIC FLOW METER FOR INLET & OUT LET OF STP** Output: 4-20mA; Power: 230 VAC	
G	**A-D converter with software**	
H	**PCB Uploading software**	