

SCHEDULE OF QUANTITIES - SEWAGE TREATMENT PLANT

S.No.	Description of items	Unit	Qty.	Rate (INR)
A	SEWAGE TREATMENT PLANT			
	Supply, Fabrication, installation, testing and commissioning of Fully automatic sewage treatment plant based on MBBR process with sewage handling capacity 45 m3 per day. The STP shall be designed as water retaining structures, with necessary chemical dosing as required by the manufacturer's design. All the associated equipments, piping, pumps, air blowers and electrical panel to be housed in the STP. The cost will also include G.I / S.S puddle flange, inlet, outlet, overflow, vent, foot rest, moving ladders & railing and making support for piping. (The entire plant will be constructed in RCC.)			
	Domestic Sewage from Public, Guest Toilets and kitchen effluent. Design to take consideration of the same.			
	Daily average flow : 75 M ³ /Day			
	Effluent Parameter at Inlet to STP:-			
	PH : 7.5 - 8.5			
	BOD : 250 - 300 Mg/l			
	S. Solids : 250 - 400 Mg/l			
	Oil & Grease : 50- 100 Mg/L			
	COD : 400 - 600 Mg/l			
	Ammonical Nitrogen 350 - 400 Mg/L			
	Total Nitrogen (N total) 30 - 50 Mg/L			
	Phosphate (PO4 - P) 6 - 10 Mg/L			
	Effluent discharge standard after treatment :-			
a)	PH : 6.5 - 8.0			
b)	BOD : < 10 Mg/L			
c)	S. Solids : < 10 Mg/L			
d)	Oil & Grease : < 10 Mg/L			
e)	COD : < 50 Mg/L			
f)	Ammonical Nitrogen < 5 Mg/L			
g)	Total Nitrogen (N total) < 10 Mg/L			
h)	Fecal Coliform (FC)			
	(Most probable number			
	Per 100 ML, MPN/100ml) : < 230 Mg/L			
i)	Phosphate (PO4 - P) <2 Mg/L			
	Sewage treatment plant shall include the following items:			
	Screen Chamber			
	Oil & Grease Trap			
	Sewage equalization tank/sump			

S.No.	Description of items	Unit	Qty.	Rate (INR)
	Anoxic tank (MS tank to be Placed after EQT. Tank)			
	MBBR Reactor			
	Secondary Tube Settler Tank			
	Sludge Holding Tank			
	UV System			
	Air Blowers, Pumps & equipment			
	Piping, valves etc			
	Irrigation / Flushing Water tank			
	Electrical Panel & Cabling			
	Centrifuge system			
	Note :-			
	Contractor shall ensure submission of detailed GA drawings (Plan & Section), P&I diagram, schematic diagram for the above said component and additional component if so required for the complete working of the STP. The following list of civil units shall be Client's Scope.			
	Bar screen pit			
	Oil & Grease Chamber			
	Equalization Tank			
	Anoxic Tank			
	Reactor Tank			
	Tube Settler System			
	Filter Feed Tank			
	Main Sludge Holding Tank.			
	Treated Water Tank			
	Drain Sump for STP room			
	Foundations for all the units			
	Centrifuge System			
1	Supply, installation, testing & commissioning of 2 Nos, (SS 304) Stainless Steel fine Screen having 6-8mm bar spacing and coarse screen having 20-30mm bar spacing welded to a angle frame with suitable lifting arrangement.	Nos.	2	45000
2	Supply, installation, testing & commissioning of 2 nos. twin-type air blowers for Air diffuser system of capacity suitable for 70 m ³ /day @ 5000 - 5500mmwg at the pressure of 0.50 kg/cm ² , complete as required. (One set consists of 2 nos. of blower (1 working+ 1 standby)	Set	1	145000
3	Supply, installation, testing & commissioning of diffusers to be installed in Tanks making the system complete. (Fine bubble diffusers with silicon seat in MBBR tank and Course bubble diffusers with EPDM seat in EQT. and Tube settler tank) (Spacing between two diffusers should not more than 500mm)	Lot	1	134000

S.No.	Description of items	Unit	Qty.	Rate (INR)
4	Supply, installation, testing & commissioning of Air piping comprise of pipes droppers/ laterals. Header from Air blower to the tank to be of MS (Heavy Class) and droppers and submerged pipes to be of SS 304, including all fittings such as tees, crosses, plugs, sockets, elbows, reducers, supports & clamps, etc cutting chases in walls/Floor and making the system complete.	Lot	1	187000
5	Supply, installation, testing & commissioning of PVC MBBR media, (minimum surface area 400 Cum./m2/hr) Capacity (Approx.) 2-3 cum. to be installed in MBBR Tanks.	Lot	1	60,000
6	Supply, installation, testing & commissioning of PVC tube deck settling media, Capacity (Approx.) 1.0 cum. to be installed in secondary tube settler tank alongwith suitable sludge removal arrangement by pump	Lot	1	35000
7	Providing, installation, testing and commissioning of all instrumentation i.e isolation control valves, strainer, valves, NRV, pressure gauges, level controllers and electromegtiic flow meter etc. for making the system complete. (ISI Marked) (All instrumentation controls shall be provided as per STP scheme)	Lot	1	87000

S.No.	Description of items	Unit	Qty.	Rate (INR)
8	EQUALIZED WASTE WATER TRANSFER PUMPS :			
	Providing, installation, testing and commissioning of fully submersible sewage handling type pump for raw sewage transfer . The pump shall have complete SS construction, TEFC induction motor, lifting arrangement for the pump, all necessary piping, cable etc. and other accessories as required Solid handling shall be 25-30 mm.			
	Capacity : 4.25 M ³ /hr			
	Discharge Head 8 - 12 M head			
	Operation Time - 20 Hrs			
	Motor HP : As per Manufacture recommendation			
	Type of pump : Sewage handling type pump			
	1 Set - (2 Nos. 1 Working + 1 Standby)	Set	1	69000
9	FILTER FEED PUMPS :			
	Providing, installation, testing and commissioning of Horizontal centrifugal pumps for filtration. The pumps shall be made of CI casing, SS Impeller, SS shaft & sleeve, Mechanical Seal are connected to a TEFC induction motor mounted on a common channel base frame with coupling guard, suitable vibration eliminator pads of approved design. Motor to be suitable for 400/440 V, 3 Phase, 50 cycles AC power supply, including all necessary piping and other accessories and concrete foundation complete as required.			
	Capacity - 4.5 M ³ /Hr.			
	Discharge Head - 30 - 35 M head			
	Operation Time - 16 Hrs			
	Motor HP : As per Manufacture recommendation			
	Type of pump : Horizontal centrifugal pump			
	1 Set - (2 Nos. 1 Working + 1 Standby)	Set	1	78000
10	SLUDGE TRANSFER / RECIRCULATION PUMP :			
	Providing, installation, testing and commissioning of sludge transfer pumps for the transfer of sludge to Sludge holding tank. The pumps shall have CI casing, SS Impeller & SS shaft & sleeve with mechanical rotary shaft seal, suitable vibration eliminator pads of approved design. Motor to be suitable for including all necessary piping, valves and other accessories and concrete foundation complete as required. (1 Working + 1 Stand-by)			
	Capacity - 1.0 M ³ /Hr.			
	Discharge Head - 10 - 15 M head			
	Motor HP : As per Manufacture recommendation			
	Type of pump : Horizontal centrifugal pump			
	1 Set - (2 Nos. 1 Working + 1 Standby)	Set	1	69000
11	MULTIGRADE SAND FILTER :			

S.No.	Description of items	Unit	Qty.	Rate (INR)
	Providing, installation, testing and commissioning of vertical self supporting Dual Media Filter (DMF) fabricated from FRP, complete with pressure gauges at inlet & outlet, sample cock, multiport valves, PVC face piping with ABS multiport valves and all accessories, with initial charge of filter media for Dual media filter with multi grade quartz sand & anthracite, lining inside with PP and FRP wounded outside, testing and commissioning complete.			
	Capacity : 4.5 M ³ /hr			
	Filtration rate : 18-20 M ³ /M2/hr			
	Max. operating pressure : 3.5 kg/sq.cm			
	Test pressure : 5.5 Kg/Sq.cm	Set	1	49000

S.No.	Description of items	Unit	Qty.	Rate (INR)
12	ACTIVATED CARBON FILTER :			
	Providing, installation, testing and commissioning of vertical self supporting Activated Carbon Filter (ACF) fabricated from FRP, complete with pressure gauges at inlet & outlet, sample cock, PVC face piping with ABS multiport valves and all accessories, with initial charge of filter media for activated carbon filter, lining inside with PP and FRP wounded outside, testing and commissioning complete.			
	Capacity : 4.5 M ³ /hr			
	Filtration rate : 18-20 M ³ /M ² /hr			
	Max. operating pressure : 3.5 kg/Sq.cm			
	Test pressure : 5.5 Kg/Sq.cm	Set	1	56000
13	SOFTNER FILTER (OPTIONAL ONLY)			
	Supply, installation, testing and commissioning of Water Softening Plant. The Water softener vessel shall be constructed of FRP/composite material with inner shell of integrated Polyethylene with Fiber Reinforced Plastic as per manufacturer standard. The inner distribution system and the under bed draw off system shall be of Hub & Lateral type / Riser tube with top & bottom strainers of Polypropylene material. Softener shall be supplied with initial charge of cationic resin with supporting media like silex, gravel etc. The softener shall be complete with pressure gauge, sample cock, PVC face piping / interconnected piping, butterfly valve.			
	overflow & drain, outlet fitting complete regeneration assembly comprising of power valve, ejector, brine suction valve and all associated pipe work. A density meter for brine shall be included.			
	Salt Saturation Arrangement:			
	The brine tank shall be provided with salt saturation arrangement (with air agitation) comprising of CPVC. Perforated (Min. 1 inch.) pipe grid laid in the bottom of brine tank, one no. positive discharge air blower of required capacity, valve & NRV on blower and CPVC pipe interconnection from blower to grid complete.			
	Plant Sizes:			
	Input hardness : 400 PPM			
	Output hardness : < 50 PPM			
	OBR : 130 M ³			
	Capacity/Flow rate : 4.5 M ³ /hr			
	Operating Pressure Maximum : 3.5 Kg/Sq.cm			
	Test pressure : 5.5 Kg/Sq.cm	Set	1	90000
14	SCREW PUMPS			
	Providing, fixing, testing & commissioning of Screw pumps for sludge to Filter press complete with all accessories, motor of required capacity. The pumps shall be completed with base frame, delivery header, suitable vibration eliminator pads of approved design. Motor to be suitable for including all necessary piping, valves and other accessories and concrete foundation complete as required. (1 Working + 1 Stand-by)			

S.No.	Description of items	Unit	Qty.	Rate (INR)
	Capacity : 0.5 To 1.0 M ³ /hr			
	Discharge Head - 35 - 40 M head			
	Motor HP : As per Manufacture recommendation			
	Type of pump : Horizontal centrifugal pump			
	1 Set - (2 Nos. 1 Working + 1 Standby)	Set	1	97000

S.No.	Description of items	Unit	Qty.	Rate (INR)
15	CHLORINE DOSING			
	Supplying, Installation, testing and commissioning of Chemical dosing system comprising of Sintex Tank of capacity 100 lts., with inlet/ outlet connection, piping and valves along with metering pump of 0-6 LPH for dosing.	Set	1	5500
16	Ultra Violet Disinfection System			
	Supply, installing, testing & commissioning of ultraviolet dis-infection unit. The unit shall have over 99.9 % bacterial reduction from inlet to outlet. The dis-infection chamber shall be constructed of SS 316L on all welded parts. The UV lamp shall be of low pressure mercury vapour type with hard glass enclosure, the sockets shall be water tight & vibration resistant. The lamp life shall be rated for 6000 hours. The unit shall be complete with temperature safety control, lamp out alert circuit & UV radiometer with 4 – 20 mA output.			
	The UV unit shall have with reactor, cabinet housing, cabinet cooling, treatment chamber, electrical panel, temperature safety control, lamp out alert, UV radiometer along with UV monitoring system and UV monitoring readout panel. The UV Dosage should be > 60,000 uW – Sec / sq.cm. The lamps should be selected based upon the flow requirement of respective unit. Location after ACF.			
	Flow - 4.5 M3/hr	Nos	1	38000
17	Providing, Erection & commissioning of PP plate, CI base frame Filter Press with manual operation mechanism. The Filter press should be complete with frame , filter cloth, handle, effluent water tray & sludge disposal tray.			
	No of Plates (Size: 18" x 18") : 17 Nos.	Set	1	42000
18	Flushing water transfer Pump			
	Providing, installation, testing and commissioning of Horizontal centrifugal pumps made of CI casing, SS Impeller, SS shaft & sleeve, Mechanical Seal are connected to a TEFC induction motor mounted on a common channel base frame with coupling guard, suitable vibration eliminator pads of approved design. Motor to be suitable for 400/440 V, 3 Phase, 50 cycles AC power supply, including all necessary piping, valves and other accessories and concrete foundation complete as required.			
	Capacity - 4.0 M ³ /Hr.			
	Discharge Head - 60 - 65 M head			
	Operation Time - 6 Hrs			
	Motor HP : As per Manufacture recommendation			
	Type of pump : Horizontal centrifugal pump			
	1 Set - (2 Nos. 1 Working + 1 Standby)	Set	1	78000
19	Submersible Sump Pump (STP Plant Room)			
	Providing, installation, testing and commissioning of fully submersible drainage pump for sump dewatering including pressure gauge, lifting arrangement for the pump, all necessary piping, valves, level controller for their automatic operation, cable etc. and other accessories as required. Solid handling shall be 12 mm.(1 Working + 1 Stand-by)			

S.No.	Description of items	Unit	Qty.	Rate (INR)
	Capacity- 10.80 M3/hr			
	Discharge Head - 10 - 15 M head			
	Operation Time - 15 min.			
	1 Set - (2 Nos. 1 Working + 1 Standby)	Set	1	120000

S.No.	Description of items	Unit	Qty.	Rate (INR)
20	Ultra filtration (Optional)			
	Providing, installation, testing and commissioning of 2.8m3/hr capacity UF with 2 No feed pump and 2 No back wash pump. SS skid seprate Panel mwith PLC, brine solution equipment and solonoid valve.	No.	RO	198000
21	ELECTRICAL CONTROL PANEL			
	Design, fabrication, assembling, wiring, supply, installation, testing and commissioning of motor control centre shall be fabricated out of 14 gauge CRCA sheet steel in form in 3b formation with reinforcement of suitable size angle iron, channel 'T' sections irons and /or flats wherever necessary. Cable gland plates shall be provided on top as well as at the bottom of the panels. Panels shall be treated with all anticorrosive process before painting as per specifications with 2 coats of red oxide primer and final approved shade of powder coated paint. 2 Nos. earthing terminals shall be provided for 3 phase, 4 wire, 50 Hz supply system. Lifting hooks shall also be provided in case of large panels. Approval shall be taken for each panel before fabrication. Cadmium Plated hardware shall be used in fabrication of panels. Quoted rates shall inclusive of cables, cable trays, control cabling, earthing (in accordance to specification) with earthing from panel to each motor / equipment.			
a)	MCC –1 (Sewage Treatment Plant)			
i	Incoming			
	100 amps TPN MCCB with the following accessories:			
	a. 0-150 volts 96 x 96 mm square voltmeter with selector switch shall be protected by 2 amps TP MCB 1 Set			
	b. 0-100 amps 96 x 96 mm square ammeter with selector switch and 100/5 amps 10 VA CL:1 CTs. 1 Set			
	c. Phase indicating lamps shall be protected by 2 amp SP MCB 3 Sets			
	Bus Bar			
	125 amps TPN (25 KA) aluminium bus bar with heat shrinkable insulation sleeves			
ii	Outgoings			
	a. 2 Nos. suitable rating MPCB for 1.0 KW DOL starter and outgoing feeder to EQT sewage transfer pumps motor - Main (including 1nos. standby). Each compartment shall contain auto / manual selector swtich and indicating / pushbutton lamps with MCB for ON / OFF / TRIP of motor.			
	b. 2 Nos. suitable rating MPCB for 2.5 KW direct on line starter and outgoing feeder to air blowers (including 1 no. standby). Each compartment shall contain auto/manual selector switch and indicating lamps with MCB's for 'ON/OFF/TRIP' status of motor			

S.No.	Description of items	Unit	Qty.	Rate (INR)
	c. 2 Nos. suitable rating MPCB for 1.0 KW direct on line starter and outgoing feeders to sludge disposal pump (including 1 no. standby). Compartment shall contain auto/manual selector switch and indicating lamps with MCB's for 'ON/OFF/TRIP' status of motor			
	d. 2 Nos. suitable rating MPCB for 1.0 KW direct on line starter and outgoing feeders to Sump pump (including 1 no. standby). Compartment shall contain auto/manual selector switch and indicating lamps with MCB's for 'ON/OFF/TRIP' status of motor			
	e. 2 Nos. suitable rating MPCB for Nos. 2.0 KW direct on line starter and outgoing feeders to filter feed pump including future (including 1 no. standby). Each compartment shall contain auto/manual selector switch and indicating lamps with MCB for 'ON/OFF/TRIP' status of motor			
	f. 2 Nos. suitable rating MPCB for 1.5 KW DOL starter and outgoing feeder to Flushing Water transfer pumps motor - Main (including 1nos. standby). Each compartment shall contain auto / manual selector switch and indicating / pushbutton lamps with MCB for ON / OFF / TRIP of motor.			
	g. 2 Nos. suitable rating MPCB for 2.0 KW direct on line starter and outgoing feeders to Filter press. Compartment shall contain auto/manual selector switch and indicating lamps with MCB's for 'ON/OFF/TRIP' status of motor.			
	h. 1 Nos. suitable rating MPCB for 0.5 KW DOL starter and outgoing feeder to Dosing pumps motor - Main. Each compartment shall contain auto / manual selector switch and indicating / pushbutton lamps with MCB for ON / OFF / TRIP of motor.			
	i.1 Nos. suitable rating MPCB for 1.0 KW or as per vendor recommendation, DOL starter and outgoing feeder to UV. Each compartment shall contain auto / manual selector switch and indicating / pushbutton lamps with MCB for ON / OFF / TRIP of motor.			
	Spare MCB's of following capacities:			
	i. 20 amps TPN MCB's 2 Nos.			
	ii 32 amps TPN MCB's 2 Nos.			
	Note:			
	All MCCB's to be suitable for motor duty and shall be of 25 KA breaking capacity.			
	Provision shall be made for providing potential free contacts to all pumps starters for connection to building automation system.			
	All motor starter shall be provided with Automatic level controller.			

S.No.	Description of items	Unit	Qty.	Rate (INR)
	Overflow alarm must be provided at the plant room			
	Electrical panel must have the Auto annunciator to indicate the system failure if any			
	MCC –1 for STP as described above	Set	1	159000
	TOTAL			1,841,500/-

S.No.	Description of items	Unit	Qty.	Rate (INR)
	Note : The contractor's scope of work shall also include ;			
a)	Basic and detailed Engineering including:-			
	i) Process Flow Sheet			
	ii) Hydraulic profile			
	iii) Layout of plant within given space (refer attached drawing)			
	iv) Basic and detailed drawings of Civil Structures.			
	v) Equipment piping and electrical specifications			
	vi) Piping and electrical & Instrumentation drawings			
b)	Preparation of project report for submission to Pollution Control Board and statutory authority and obtaining approvals.			
c)	All civil works (including GA and RCC details) as per scope.			
d)	Fabrication required in plant			
e)	Supply and installation of all electro-mechanicals as per the scope.			
f)	Erection and commissioning of plant			
g)	Performance Guarantee & Warrantees.			
h)	Training of employer's personnel for operation of the plant.			
i)	Manual on operation and maintenance of the plant.			
j)	Operation and maintenance of STP for two years after successful commissioning of the plant.			
k)	Bypass arrangement shall be provided such that equalization tank pump can be used to pump out sewage to external manhole incase of maintenance of STP.			

Amount (INR)

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Amount (INR)

Amount (INR)

