

## **Institute of Technology**

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# 7.1.3.A\_Relevant documents of agreements for degradable & non-degradable waste by approved agencies

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### **Composting pit document**

 (SELF-DECLARATION FORM IN RESPECT OF INSTALLING COMPOSIT PIT/COMPOSING MACHINE/BIO-METHANISATION SYSTEM FOR PROCESSING OF WET WASTE GENERATED AT SITE)

#### (TO BE FILLED BY BUILDER/DEVELOPER)

From: Vivekanand Education Society, Chembur.

SUB.: Installation of COMPOSTING PIT/COMPOSING MACHINE/BIO-METHANISATION SYSTEM/any scientific method for wet waste processing at project site. Vermicultural Bin for extension Building No.1 for College Of Architecture and VES I.T. at Plot CTS No.2(pt.), 495(pt.), & 497 (pt.) of Village Wadhavli behind Collector's Colony, Chembur.

With reference to above subject, I, the undersigned Shri Asrani Amarlal .T , Hon.Secretary Of VES.

The Education Trust having office at Plot CTS No.128 A of Village Chembur and declare hereon solemn oath for installation of Composing Pit scientific method which converts wet organic compost for processing as wet waste generated at the above stated project site now as well as after it is occupied.

#### I state that -

1.	The brief description of the p	project is :
	Proposed extension to existi	ng building No.1 of VES I.T. and construction of
	College of Architecture.	And the second of the second o
2.	The details of the building co	onstructed at site are as follows:
a.	Address with CTS No.	2(pt.), 495(pt.) & 497(pt.) of Village Wadhavli.
b.	No. of Buildings constructed on site:	1 No. with 2 nos. extension wings.
c.	No.of Flats [Household]	Each wing: Stilt + 7 upper floors.
d.	No. of Commercial establishments:	Nil.
e.	Total Plot Area :	19667.7 MZ

- As per the conditions stated in the IOD under section C, General
  Conditions to be complied before OC, about the wet waste processing system,
  I, hereby undertake to construct/install and operate forever vermin
  composting pit organic waste converter or any scientific treatment method
  which converts wet organic waste generated by the occupier/successor into
  organic compost.
- The space/plot measuring 2.0 M.x 1.0 M. x 0.9 M.x 2 nos.(one for each wing) is reserved for wet waste processing system at above project site.
- The space/plot allotted for construction/installation of wet waste processing as per details below:

a. Composit pit : Size 2.0 x 1.0 M. x 0.9 M.
b. Compost machine : Make : N.A.
Capacity : N.A.
c. Bio gas processing : Make : N.A.
: Capacity : N.A.



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#### **STP Document**



#### **CERTIFICATE**

Ref. No.: AEPL/VES/001/2019

#### TO WHOMSOEVER IT MAY CONCERN

This is to certify that the Sewage Treatment Plant (STP) in the project of M/s. Vivekananda Education Society's located at RC Marg, Sindhi Society, Chembur East, Mumbai is completed in all respects. The STP comprising of advance technologies like Moving Bed Bioreactor (MBBR) followed by Secondary Settler with Tertiary Filtration system is commissioned & ready for operation. The STP capacity is of 200 m3/day for the above mentioned buildings which is sufficient for entire input quantity. The treated sewage water can now be reused for all secondary purpose or disposed off suitably.

M/s Avion Environment Pvt. Ltd.

Authorized Signatory

Place: Mumbai

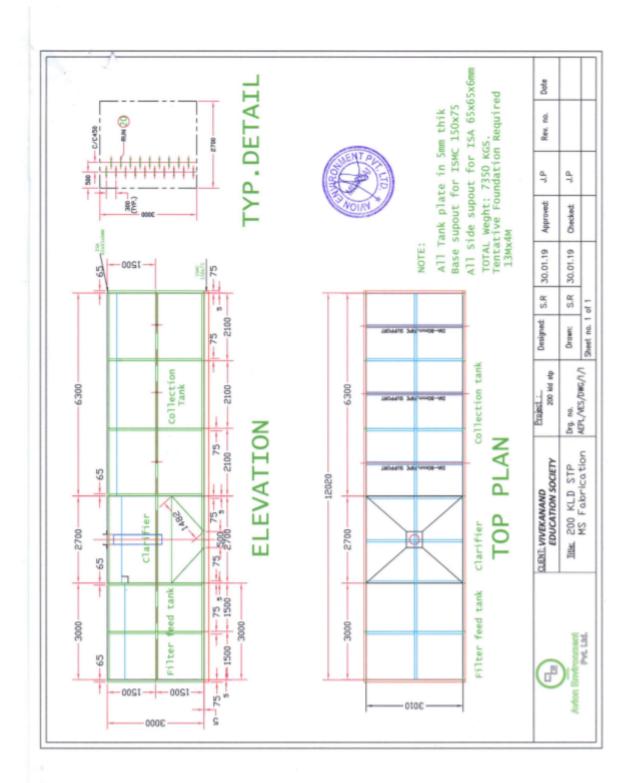
Date: 30/01/2019

CIN No.: U74120MH2012PTC232958

Gala No. 36, Shanta Industrial Estate, I. B. Patel Road, Goregaon (East), Mumbai - 400 063, India. T: 022-6522 1100 / 8800, 022-2686 8885 / 6 I W: www.avionrosystems.com I E: info@avionrosystems.com

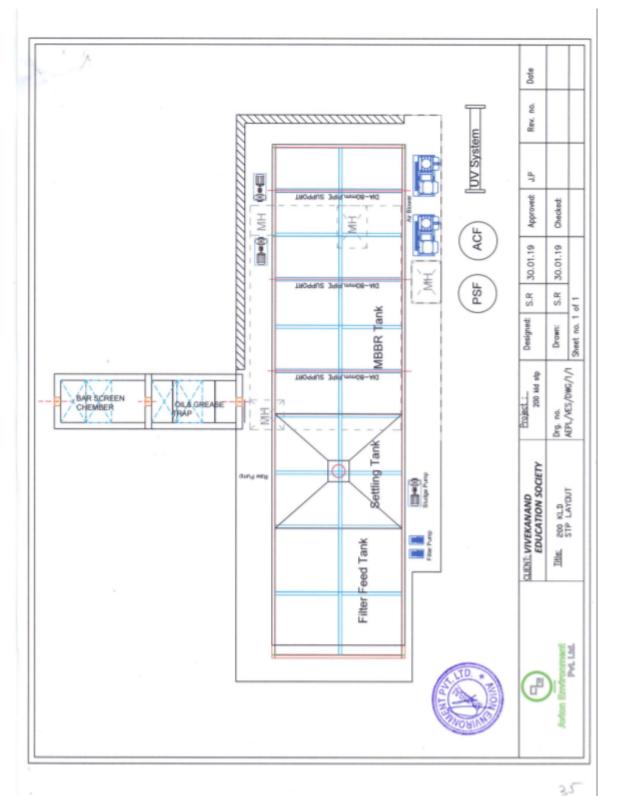


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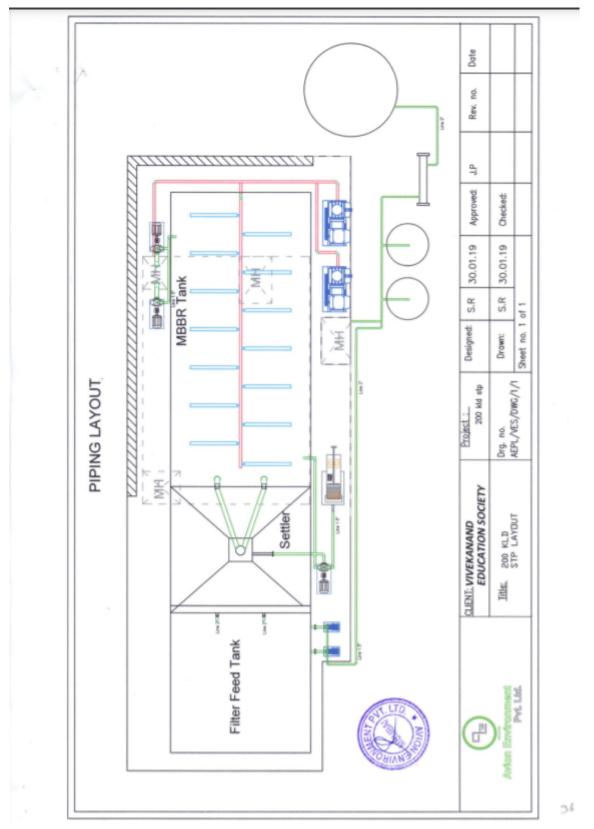


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- - - ♠ Rain Harvesting
- # U-V Purifiers
- - 6 Mineral Water Project
  - # Service Contract (D & M, AMC)



### STANDARD DESIGN DOCUMENT (SDD)

### **FOR**

### SEWAGE TREATMENT PLANT (STP)

Capacity: - 200 KLD

#### Client

### M/s Vivekananda Education Society's At -Chembur

### Avion Environment Pvt. Ltd.

### Office Address and Contact Details

Gala No. 36, Shanta Industrial Estate, I. B. Patel Road, Goregaon (E), Mumbai - 4000 63. India

Tel: +91-22-26868885 / 6 Mobile: +91-8655126600 / 8800

E-mail: jayesh@avionrosystems.com



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- § Sand Carbon & Micron Filters § Swimming Pool Treats





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M/s Vivekananda Education Society's
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BOD Load
Oxygen requirement
Sizing of the tank (Design Basis)
Aeration tank sizing
Secondary settler sizing
Collection tank sizing
Filter Feed Tank

The Standard Design Document (SDD) is prepared for

M/s. Vivekananda Education Society.

Chembur

The Sewage Treatment Plant is designed by M/s Avion Environment Pvt. Ltd,

Gala No. 36, Shanta Industrial Estate, I. B. Patel, Road, Goregaon (East)

Checked by Authorized Signal



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- 6 Softner & D. H. Plants
- Ultra Filteration & R. O. Plants & ETP / STP Water Rev



Calculation of capacity Sewage treatment plant.

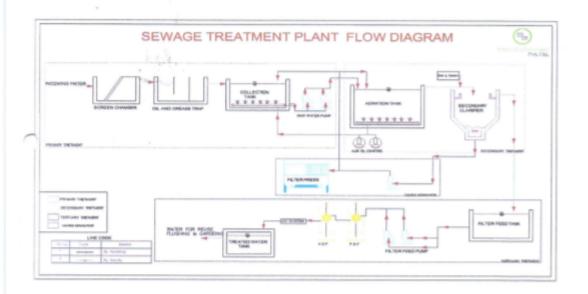
Capacity of STP required = 200 KLD

#### Redesign of STP

#### **Design Parameters**

Parameters	Inlet	Outlet
pH	6-7.5	6-7.5
COD	550-600 ppm	Less Than 50 ppm
BOD	300 ppm	30 ppm
TSS	250-300 ppm	Less than 10 ppm
TDS	200-250 ppm	200-250 ppm

#### Process flow:





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- · Rain Harvesting
- # Ultra Filteration & R. O. Plants. # ETP / STP Water Recycl # Water Ozonster
  - # Mineral Water Project
- ± U-V Purifiers
- Service Contract (O & M, AMC)



#### The sewage shall be treated in three stages:

Primary treatment:

Sewage is received in Bar Screen chamber where coarse screen is placed to prevent inorganic coarse solids and debris from entering the tank and prevent clogging of pipes and equipment. Solids like Plastic bags, bottles, Bottle Cap etc. are trapped and removed manually. Bar screen chamber Overflow to Oil & Grease Trap where oil removed manually. O&G trap overflow to the collection cum Equalization Tank. Coarse bubble diffuser will be provided for Equalization tanks to mix the wastewater. The sewage from the equalization Tank will be submersible pumped to MBBR Tank.

#### Secondary treatment:

The MBBR tank has a combination of suspended and attached growth biological mass. Random floating media is used to facilitate the attached growth. The biomass degrades the dissolved organic matter (BOD/ COD) using aerobic process. The mixing and Oxygen transfer in the bio reactor is provided through fine bubble diffusers using air blower. The MLSS from the MBBR tank overflows to the Hopper bottom Secondary settling tank provided to tube media increase the surface loading rate. Here the bio-solids settles down and gets separated from the sewage. The settled biomass will be recycled back to the MBBR Tank for maintaining the MLVSS concentration. Excess biomass shall be taken to Sludge collection tank. The clear supernatant of the Settling Tank shall overflow to an Intermediate Tank for tertiary treatment.

#### Tertiary treatment:

This biologically treated sewage from intermediate tank shall be pumped through a pressure sand filter (PSF) for removing any fine solids escaping the secondary settling tank & then through Activated Carbon filter for removal of odor & color. An inline dose of NaOCI shall be given for disinfection. The final treated water shall be collected in the final treated water tank.

Treated water from the final tank shall be partly used for filter backwash and major quantity may be used for gardening or floor washing/ flushing purpose or overflow to drainage / disposal system.



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#### Pressure Sand Filter& Activated Carbon Filter:

The clarified and collected water will be feed through pressure sand filter and activated carbon filter with the help of pump. Pressure sand filter will remove suspended solids and activated carbon filter will remove color and odour from sewage water.

#### UV System:

Filtered water will feed / mix / introduce with UV for the disinfection of the treated sewage water. UV light is generated by the UV tube system.

#### Sludge separation process

The excess / surplus bio-sludge from secondary settler will be taken into sludge will feed to filter press for the filtration.

#### Filter Press

The filter press will separate the sludge (into the tray under periodic cleaning) and lechate will recycle back to collection tank.



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TATA Ch	≜ Softner & D	. M. Plants don & R. C. Plants oter	Swinning Pool Treatment Rain Harvesting ETP / STP Water Recycling Mineral Water Project Service Contract [O & M, AMC		Av	ion Env	ironn Pvt.	Ltd.
BOD Load BOD load	=	(Inlet BO	D-Outlet BOD) X flo	w				
			1000					
	(300-10)	200						
	1000							
	,							
	8 Kg/Day							
Oxygen req	uiremen	t						
KG BOD Load X	1 = kgO2 re	equired = 5	8 Kg O2					
Correction fact	or formula							
		O2 req Cs	⊕ (T-20)					
0 2 /hrs =	-							
		α (βCw	v –Co) Hrs (ope)					
Where								
O2 Reg = Kg O2	required =	58 KgO2/	day					
Cs = Saturation	of O2 in pp	m = (9.02)	ppm)					
⊖ = (temperatu	ure correction	on factor) (	1.024)					
T = ambient Te	mp of wate	r (30 degre	e C)					
$\alpha$ = correction	factor for o	xygen tran	sfer ( 0.85)					
$\beta$ = salinity – su	ırface tensio	on factor (C	0.95)					
Cw= waste wat	ter saturatio	n connecti	on (7.44 ppm )					
Co = optimum	concentrati	on (2 ppm)						
Hrs (ope) = Aer	ration system	m operatio	n time per day (24	hrs)				
= 58 X 9.02 x 1.	.024(30-20)							

Gala No. 36, Shanta Industrial Estate, I. B. Patel, Road, Goregaon (East) Mumbai - 400 063. India
T.: 022-26868885 / 06, Web www.avionrosystems.com E-mail: <a href="mailto:layesh@avionrosystems.com"><u>layesh@avionrosystems.com</u></a>

0.85 (0.95 x 7.44-2) 24

= 4.82 kg/hrs oxygen requirement for BOD reduction



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- Rain Harvesting ± Ultra Filteration & R. O. Plants ± ETP / STP Water Recycling
- Mineral Water Project



#### Sizing of the tank (Design Basis)

#### Aeration tank sizing

QD = 200 KLD

BOD Load For MBBR = 5.8 Kg/ m3

Actual BOD

 $= 300 \text{ g/m}^3$ 

Tank depth

= 6 hrs/ day (Assume)

We provider volume of MBBR tank as  $5 \times 3.5 \times 3 = 52.5 \text{ m}^3$ 

#### Secondary settler sizing

Design on 28 m<sup>2</sup>/m<sup>3</sup> /day of overflow rate

We provider Surface area 2.7 x 2.7 = 7.29 m2 (Equal to 200/30= 7.14 m²)

#### Collection tank sizing

Design on 6-8 hrs of RT

We provider volume of Collection tank as 6.7 x 3 x 2.5 = 50.25 m³ (more than 200/24\*6 = 49.98 m3)

#### Filter Feed Tank

Design on 2-4 hrs of RT

We provider volume of Filter feed tank as 3 x 2.5 x 2.5 = 18.75 m<sup>3</sup> (more than 200/24\*2 = 16.66 m3)



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#### Sizing of the tank (Design Basis)

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QD = 200 KLD BOD Load For MBBR =  $5.8 \text{ Kg/m}^3$ Actual BOD =  $300 \text{ g/m}^3$ Tank depth = 3mRT = 6 hrs/day (Assume)

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#### Filter Feed Tank

Design on 2-4 hrs of RT

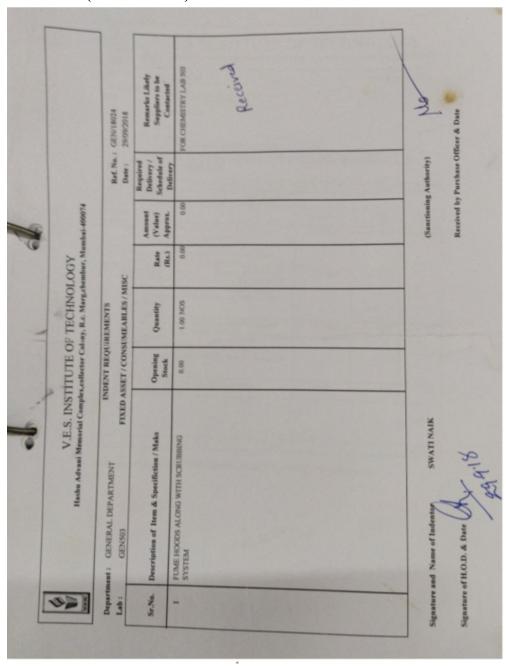
We provider volume of Filter feed tank as  $3 \times 2.5 \times 2.5 = 18.75 \text{ m}^3$  (more than  $200/24^2 = 16.66 \text{ m}^3$ )



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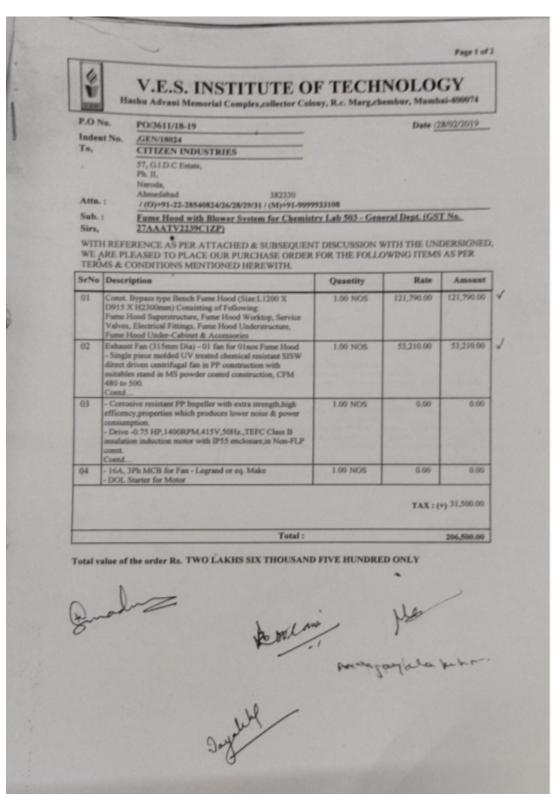
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### Fume hood (PO & Invoice)



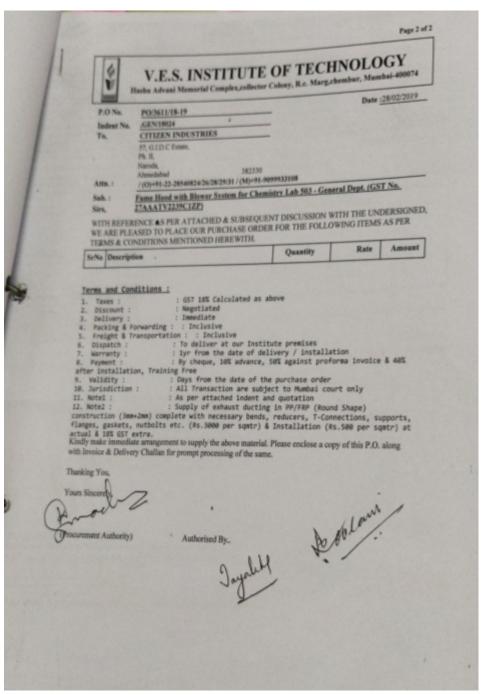


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pater Entry No. : Description of Goods	HSN/SAC	Quantity	Rate	per	Amount
Intilating / Recirculation Hood					
Plume Hoods Contact System Tiger Bendt Fune Hood Size: 1, 1200 K D 915 X H 2300mm	8414	1.00 No.	1,21,790.00	No.	1,21,790.00
Exhaust Farts for Furne Hood Exhaust Fart (315mm Dis) Capacity: 480 - 500 CFM	8414	1.00 No.	53,210.00	No.	53,210.00
					1,75,000.00
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