



ADHIPARASAKTHI DENTAL COLLEGE & HOSPITAL

Recognised by Dental Council of India
Affiliated to The Tamilnadu Dr.M.G.R Medical University

A Unit of Adhiparasakthi Charitable, Medical, Educational & Cultural Trust

7.1.4: Describe the facilities in the institution for the management of the following types of degradable and nondegradable waste (within 500 words)

1.Solid waste management

2.Liquid waste management

3.Biomedical waste management

4.E-waste management

5.Waste recycling system

6.Hazardous chemicals and radioactive waste management

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Om Sakthi



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CERTIFICATE OF THE HEAD OF INSTITUTION



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**Dr. S. KARTHIGA KANNAN, MDS.,
PRINCIPAL**


TO WHOMSOEVER IT MAY CONCERN

This is to certify that, our Institution has facilities for handling degradable and nondegradable wastes

- 1.Solid waste management
- 2.Liquid waste management
- 3.Biomedical waste management
- 4.E-waste management
- 5.Waste recycling system
- 6.Hazardous chemicals and radioactive waste management

details are given:




PRINCIPAL
Prof. Dr. S. Karthiga Kannan, MDS.,
ADHIPARASAKTHI
DENTAL COLLEGE & HOSPITAL
Hospital Road, Melmaruvathur
Cheyyur Taluk, Chengalpattu District
Tamil Nadu - 603 319



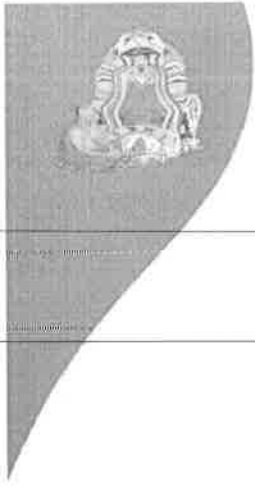


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AGREEMENTS / MoUS WITH GOVERNMENT AND OTHER APPROVED AGENCIES



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SOLID WASTE MANAGEMENT



SOLID WASTE MANAGEMENT



The solid waste generated in the dental college and hostel premises include both biodegradable and non-biodegradable components. The non-biodegradable solid waste generated in the campus are collected and sent for either disposal or recycling. Biodegradable waste are converted into organic manure and used for agricultural purposes.



S. Karthiga Kannan
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LIQUID WASTE MANAGEMENT



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LIQUID WASTE MANAGEMENT



The liquid waste includes septic tank effluents, wastewater from dental college and hostel. Effluent treatment and recycling plant has been installed to purify the waste water.



S. Karthiga Kannan
PRINCIPAL
Prof. Dr. S. Karthiga Kannan, MDS.,
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BIOMEDICAL WASTE MANAGEMENT

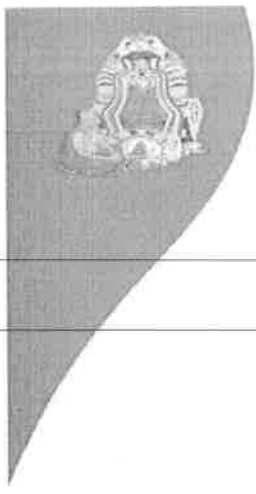


BIOMEDICAL WASTE MANAGEMENT



A safe, sustainable and effective management of biomedical waste (BMW) is practiced in the institution for healthy and cleaner environment. The college has a separate committee and team to follow characterization, quantification, segregation, storage, transport, and treatment of biomedical waste management in the college.

S. Karthiga Kannan
PRINCIPAL
Prof. Dr. S. Karthiga Kannan, MDS.,
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DENTAL COLLEGE & HOSPITAL
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Cheyyur Taluk, Chengalpattu District
Tamil Nadu - 603 319



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HAZARDOUS CHEMICALS AND RADIOACTIVE WASTE MANAGEMENT



HAZARDOUS CHEMICALS AND RADIOACTIVE WASTE MANAGEMNT



Hazardous wastes are managed with utmost care and are disposed carefully. All Staffs, Non-teaching staffs and students are trained in this aspect.



S.K. Karthiga Kannan

PRINCIPAL
Prof.Dr.S.Karthiga Kannan, MDS.,
ADHIPARASAKTHI



DENTAL COLLEGE & HOSPITAL
Hospital Road, Melmaruvethur,
Cheyyur Taluk, Chengalpattu District,
Tamil Nadu - 605 319



TAMILNADU POLLUTION CONTROL BOARD

Additional Conditions:

1. The unit shall adhere to the Ambient Air Quality /emission standards prescribed by the Board.
2. The unit shall adhere to the Ambient Noise Level standards prescribed by the Board.
3. The unit shall ensure that no odour nuisance is created by its functioning.
4. The unit shall continue to develop greenbelt covering 25% of its area as Green belt area by planting and maintaining 2000 trees of thick canopy with in its premises at the rate of 400 trees per hectare.
5. In case of revision of consent fee by the Government, the unit shall remit the difference in amount within one month from the date of notification, Failing to remit the consent fee, this consent order will be withdrawn without any notice and further action will be initiated against the unit as per law

S. INDIRAGANDHI

Digitally signed by S.
INDIRAGANDHI
Date: 2017.06.02 18:12:49 +05'30'

District Environmental Engineer,
Tamil Nadu Pollution Control Board,
MARAIMALAI NAGAR

To

Vice President,

M/s.ADHIPARASAKTHI CHARITABLE MEDICAL, EDUCATIONAL AND CULTURAL TRUST,

R.S NO: 34 Melvaruthur Village, Cheyyur Taluk, Kancheepuram.,

Pin: 603319

Copy to:

1. The Commissioner, CHITHAMUR-Panchayat Union, Cheyyur Taluk, Kancheepuram District .
2. Copy submitted to the Member Secretary, Tamil Nadu Pollution Control Board, Chennai for favour of kind information.
3. Copy submitted to the JCEE-Monitoring, Tamil Nadu Pollution Control Board, Chennai for favour of kind information.
4. File

S. Indiragandhi

PRINCIPAL
Prof. Dr. S. Karthiga Kannan, M.D.
ADHIPARASAKTHI
DENTAL COLLEGE & HOSPITAL
Hospital Road, Melmaruthur
Cheyyur Taluk, Chengalpattu District
Tamil Nadu - 603319

Adhiparasakthi Dental College and Hospital
Melmaruthur - 603319

POLLUTION PREVENTION PAYS

அகம் தூய்மை வாய்மைக்கு ! புறம் தூய்மை வாழ்வுக்கு !



TAMILNADU POLLUTION CONTROL BOARD

Additional Conditions:

1. The unit shall operate and maintain the Sewage Treatment Plant to treat the sewage to achieve the standards prescribed by the Board
2. The unit shall provide tertiary treatment systems viz Activated carbon filter, Pressure sand filter to treat the sewage from the secondary clarifier and , UV disinfection systems to disinfect the treated sewage before being utilized for gardening
3. The unit shall provide sophisticated high efficiency High shear mechanical sludge dewatering system to handle the sludge generated from the STP
4. The unit shall comply with STP standards as prescribed in the CPCB letter dated 21.04.2015 (pH- 6.5- 9, TSS - not more than 20 mg/L, COD not more than 50 mg/L, BOD not more than 10 mg/L, Fecal coliform less than 100(MPN/100mL), Total Nitrogen not more than 10 mg/L, Ammoniacal Nitrogen (NH4-N) not more than 5 mg/L).
5. The unit shall provide the Electro Magnetic Flow Meter (EMFMs) with automatic recorder and display arrangement at the inlet/outlet of STP and at the disposal points of the treated sewage for gardening.
6. The unit shall provide energy meter for the continuous operation of STP.
7. The unit shall not clean the STP tanks manually and it should be carried out only by mechanical system.
8. The unit shall utilize the sludge generated from the STP as manure for gardening.
9. In case of revision of consent fee by the Government, the unit shall remit the difference in amount within one month from the date of notification, Failing to remit the consent fee, this consent order will be withdrawn without any notice and further action will be initiated against the unit as per law

S. INDIRAGANDHI

Digitally signed by S.
INDIRAGANDHI
Date: 2017.06.02 18:10:58 +05'30'

**District Environmental Engineer,
Tamil Nadu Pollution Control Board,
MARAIMALAI NAGAR**

To

Vice President,

M/s. ADHIPARASAKTHI CHARITABLE MEDICAL, EDUCATIONAL AND CULTURAL TRUST,

R.S NO: 34 Melvaruthur Village, Cheyyur Taluk, Kancheepuram.,

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3. Copy submitted to the JCEE-Monitoring, Tamil Nadu Pollution Control Board, Chennai for favour of kind information.
4. File



I. Karthiga
PRINCIPAL
Prof. Dr. S. Karthiga Kannan, MDS.,
ADHIPARASAKTHI
DENTAL COLLEGE AND HOSPITAL
Hospital Road, Melvaruthur,
Cheyyur Taluk, Kancheepuram District,
Tamil Nadu - 603319.

POLLUTION PREVENTION PAYS

அகம் தூய்மை வாய்மைக்கு ! புறம் தூய்மை வாழ்வுக்கு !



CONSENT ORDER NO. 170818889125 DATED: 02/06/2017
TAMILNADU POLLUTION CONTROL BOARD

PROCEEDINGS NO.F.1548MMN/RS/DEE/TNPCB/MMN/W/2017 DATED: 02/06/2017

SUB: Tamil Nadu Pollution Control Board - RENEWAL OF CONSENT - M/s. ADHIPARASAKTHI CHARITABLE MEDICAL, EDUCATIONAL AND CULTURAL TRUST, S.F.No. 34, MELMARUVATHUR village, Cheyyur Taluk and Kancheepuram District - Renewal of Consent for the operation of the plant and discharge of sewage and/or trade effluent under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 as amended in 1988 (Central Act 6 of 1974) - Issued- Reg.

REF: 1. CTO Proceedings No. Proceedings No DEE/KPM/OS-627/W&A/2003 dt: 28-02-2003
 2. RCO Proceedings No. DEE/TNPCB/MMN/F.1836/OS/W&A/2012 dt: 11-01-2012
 3. Unit's Application For - CTO / Air & Water / renew vide application No 8889125 dt: 28-04-2017 and resubmitted on 30-05-2017
 4. IR.No : F.1548MMN/RS/AB/MMN/2017 dated 02-06-2017

RENEWAL OF CONSENT is hereby granted under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 as amended in 1988 (Central Act, 6 of 1974) (hereinafter referred to as "The Act") and the rules and orders made there under to

Vice President

M/s.ADHIPARASAKTHI CHARITABLE MEDICAL, EDUCATIONAL AND CULTURAL TRUST,
 S.F.No. 34,
 MELMARUVATHUR Village ,
 Cheyyur Taluk ,
 Kancheepuram District .

Authorising the occupier to make discharge of sewage and /or trade effluent.

This is subject to the provisions of the Act, the rules and the orders made there under and the terms and conditions incorporated under the Special and General conditions stipulated in the Consent Order issued earlier and subject to the special conditions annexed.

This RENEWAL OF CONSENT is valid for the period ending March 31, 2022

S. INDIRAGANDHI
 Digitally signed by S. INDIRAGANDHI
 Date: 2017.06.02 18:09:57 +05'30'

District Environmental Engineer,
 Tamil Nadu Pollution Control Board,
 MARAIMALAI NAGAR

Skalya Kannan
PRINCIPAL
 Prof.Dr.S.Karthiga Kannan, M.D.S.,
 ADHIPARASAKTHI
 DENTAL COLLEGE & HOSPITAL
 Hospital Road, Melmaruvathur
 Cheyyur Taluk, Chengampet District,
 Tamil Nadu - 603 317



POLLUTION PREVENTION PAYS

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TAMILNADU POLLUTION CONTROL BOARD

FORM III

(See Rule 10)

AUTHORISATION No: 19BAC18375055 Dated 23/03/2019

Proceeding No: T4/TNPCB/F.2005MMN/BWA/RL/MMN/2016 Dated 23/03/2019

Sub: Tamil Nadu Pollution Control Board – Bio-Medical Waste Authorization - Fresh-HCF-
M/s. ADHIPARASAKTHI CHARITABLE MEDICAL EDUCATIONAL AND
CULTURAL TRUST, S.F.No.Old S. No. 68/1 New S. No. 68/1, 68/3, 68/4, 68/5, 68/6,
68/7, 68/8, 68/9, 68/10 & 68/11, KASAVARAYANPETTAI village, CHEYYUR
Taluk, Kancheepuram District - Authorization under Rule 10 of the Bio-Medical Waste
Management Rules, 2016 enacted under Environment (Protection) Act, 1986 – Issued- Reg.

Ref: 1. Unit's application for Authorisation on 01.11.2018/ 11.02.2019
2. BMW-IR.No. F.2005MMN/BWA/RL/DEE/PANDY/2019 dated 02/03/2019

AUTHORISATION FOR OPERATING A FACILITY FOR GENERATION, COLLECTION, RECEPTION,
TREATMENT, STORAGE, TRANSPORT AND DISPOSAL OF BIO-MEDICAL WASTES

1. File number of authorization: 19BAC18375055 and date of issue: 23/03/2019
2. The Vice President of M/s. ADHIPARASAKTHI CHARITABLE MEDICAL EDUCATIONAL AND CULTURAL TRUST, an occupier or operator of the facility located at S.F.No.Old S. No. 68/1 New S. No. 68/1, 68/3, 68/4, 68/5, 68/6, 68/7, 68/8, 68/9, 68/10 & 68/11, KASAVARAYANPETTAI Village, CHEYYUR Taluk, Kancheepuram District is hereby granted an Authorisation for Generation, Segregation, Collection, Storage, Packaging, Disposal of Bio-Medical Waste
3. M/s. ADHIPARASAKTHI CHARITABLE MEDICAL EDUCATIONAL AND CULTURAL TRUST is hereby authorized for handling of Bio-Medical waste as per the capacity given below.



S. Lakshmi
PRINCIPAL
ADHIPARASAKTHI
DENTAL COLLEGE AND HOSPITAL
Hospital No. 10, Cheyyur Taluk,
Tamil Nadu - 602 214



TAMILNADU POLLUTION CONTROL BOARD

i)	Number of beds of HCF	750	Nos
ii)	Quantity of Bio-Medical Waste handled, treated or disposed		
Category	Type of Waste	Quantity permitted for handling	Unit
Yellow	a) Human Anatomical Waste	181	Kg/day
	b) Animal Anatomical Waste	0	Kg/day
	c) Soiled Waste	43	Kg/day
	d) Expired or Discarded Medicines	2	Kg/day
	e) Chemical Solid Waste	0	Kg/day
	f) Chemical Liquid Waste in KLD	37	KLD
	g) Discarded linen, mattresses, beddings contaminated with blood or body fluid routine mask and gown	2	Kg/day
	h) Microbiology, Biotechnology and other clinical laboratory waste	4	Kg/day
Category	Type of Waste	Quantity permitted for handling	Unit
Red	Contaminated waste (Recyclable)	73	Kg/day
White(Translucent)	Waste sharps including Metals	32	Kg/day
Blue	Glassware	25	Kg/day
	Glassware Metallic Body		Kg/day

- The authorization shall be in force for a period up to 31/03/2023
- The authorization is issued subject to the conditions stated below and to such other conditions as may be specified in the rules for the time being in force under the Environment (Protection) Act, 1986



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Prof. Dr. S. Karthiga Kannan, MDS.
ADHIPARASAKTHI
DENTAL COLLEGE & HOSPITAL
 Hospital Road, Pimpri-Chinchwad
 Dist. - Chennai - 605 009

J. T. ... 25/3/19

For Member Secretary
 Tamil Nadu Pollution Control Board
 Chennai

TERMS AND CONDITIONS OF AUTHORIZATION

- The authorization shall comply with the provisions of the Environment (Protection) Act, 1986 and the rules made there under.
- The authorization or its renewal shall be produced for inspection at the request of an officer authorized by the Tamil Nadu State Pollution Control Board.
- The person authorized shall not rent, lend, sell, transfer or otherwise transport the Bio-Medical wastes without obtaining prior permission of Tamil Nadu State Pollution Control Board.



TAMILNADU POLLUTION CONTROL BOARD
SPECIAL CONDITIONS

1. This renewal of consent is valid for operating the facility for the manufacture of products/byproducts (Col. 2) at the rate (Col.3) mentioned below. Any change in the product/byproduct and its quantity has to be brought to the notice of the Board and fresh consent has to be obtained.

Sl. No.	Description	Quantity	Unit
Product Details			
1.	Details of the treatment facilities provided a) Sewage Generated from the Temple premises	300	KLD
2.	b) Laundry Waste Water from the Hospital premises	20	KLD

2. This renewal of consent is valid for operating the facility with the below mentioned outlets for the discharge of sewage/trade effluent. Any change in the outlets and the quantity has to be brought to the notice of the Board and fresh consent has to be obtained.

Outlet No.	Description of Outlet	Maximum daily discharge in KLD	Point of disposal
Effluent Type : Sewage			
1.	Sewage	300.0	On land for gardening
Effluent Type : Trade Effluent			
1.	Trade Effluent	20.0	On land for irrigation

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Cheyyur Taluk, Chengalpattu District
Tamil Nadu - 603 319



POLLUTION PREVENTION PAYS

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1000000000



தமிழ்நாடு TAMIL NADU

46AA 749214

2017
17-2-17

AGREEMENT *பி.சி.சி.சி.சி.*
 Department of Health, Government of Tamil Nadu
 No. 46AA 749214
 16/04/2017

This agreement is entered into on the 1st of April 2017

Between:

M/s. TamilNadu Waste Management Ltd., functioning at Level 4, 'Diamond Dune', 323, Poonamallee High Road, Chennai - 600 029, and having its registered office at 6-3-1089/10&11, Gubnohar Avenue, Rajbhavan Road, Somajiguda, Hyderabad - 500082 herein after called as TNWML, represented by Mr. M. Sridhar Reddy, Regional Manager.

And

M/s. Melmaruvathur Adhiparasakthi Institute of Medical, Sciences and Research, (MAPIMS) Melmaruvathur - 603 319 herein after called as MAPIMS, Melmaruvathur, Whereas TNWML has setup a common facility in accordance with the Bio-Medical Wastes (Management and Handling) Rules, 1996, for collection, transportation, treatment and disposal of the bio-medical wastes generated by the 'Health Care Establishments' (Hospitals, Nursing Homes, Clinics, Diagnostic Centers, Dental Clinics...)

Medical Director
 MELMARUVATHUR ADHIPARASAKTHI
 INSTITUTE OF MEDICAL SCIENCES & RESEARCH
 MELMARUVATHUR-603 319



Shanthi Kumar
 PRINCIPAL
 Prof. Dr. S. Karthiga Kannan, MDS.,
 ADHIPARASAKTHI
 DENTAL COLLEGE & HOSPITAL
 Hospital Road, Melmaruvathur
 Chervur Taluk, Chengalpattu District,
 Tamil Nadu - 603319



Whereas, **MAPIMS, Melmaruvathur** is a hospital having 700 (Nos) of beds generating bio-medical wastes which need to be managed in accordance with the Bio-Medical Wastes (Management and Handling) Rules, 1998, of Govt. of India.



Whereas TNWML offers to provide the services required for Bio-Medical Waste Management to be compliant with the above said rules on a user-pay-principle at **Rs. 7.00/bed/day** plus taxes/duties if applicable.

Whereas **MAPIMS, Melmaruvathur** agrees to utilize the services of TNWML the terms and conditions of the agreement shall be as stated hereunder:

1. **MAPIMS, Melmaruvathur** should segregate the wastes as trained by TNWML in accordance with the Bio-Medical Wastes (Management and Handling) Rules, 1998 of Govt. of India.
2. **MAPIMS, Melmaruvathur** will give its Bio-Medical Wastes, properly packed in color coded bags as per TamilNadu Pollution Control Board regulation for treatment and disposal to TNWML. The waste should be given at one single point by **MAPIMS, Melmaruvathur** to TNWML's Vehicle.
3. Whereas TNWML offers to provide the services required to **MAPIMS, Melmaruvathur** be complied with the above said rules, on a 'user-pay-principle' at **Rs.7.00/bed/day** plus taxes /duties if applicable. This charges will be fixed for a period of one year from date of this agreement and thereafter subject to mutually agreed terms and conditions.
4. **M/s. MAPIMS, Melmaruvathur** shall pay **Rs. 575/-** (Rupees Five hundred Seventy Five only) yearly as **Membership fees** while renewal. (non refundable)
5. TNWML & TNPCB will make periodic inspections of **MAPIMS, Melmaruvathur** regarding collections and segregation of Bio-Medical Wastes etc.
6. TNWML shall provide the initial training, free of cost, about segregation of wastes, collection of wastes in color coded bags as well as occupational safety in management and handling of Bio-Medical Wastes.
7. TNWML shall distribute color coded bags. The bag sizes - 18" x 22" – **Rs. 3.00** per bag Colour - Yellow & Red plus taxes if applicable.


Medical Director
MELMARUVATHUR ADHIPARASAKTHI
INSTITUTE OF MEDICAL SCIENCES & RESEARCH
MELMARUVATHUR-603 319






PRINCIPAL
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ADHIPARASAKTHI
DENTAL COLLEGE & HOSPITAL
Hospital Road, Melmaruvathur
Cheyyur Taluk, Chengam District
Tamil Nadu - 603 319

8. TNWML shall collect the wastes from **MAPIMS, Melmaruvathur** daily or mutually agreed by both the parties. TNWML will not collect the bio-medical wastes which are not segregated or properly packed. TNWML will not collect general Garbage.
9. TNWML shall be liable for violation under the Bio - Medical Wastes (Management and Handling) Rules, 1998 from the time the waste is handed over to TNWML at the premises of **MAPIMS, Melmaruvathur** and shall meet all the rules and regulations stipulated by the TamilNadu Pollution Control Board.
10. In case **MAPIMS, Melmaruvathur** finds any irregularities in collection of waste they can send a notice in writing to TNWML for immediate action. All complaints (if any) shall be attended to in the shortest possible time, (48 hours).
11. (i) TNWML shall send the bill for the preceding month by the 3rd of the next month and the same shall be paid by D.D. or Cheque drawn in favour of "**TAMILNADU WASTE MANAGEMENT LTD.**", payable at **Chennai**.
- (ii) **MAPIMS, Melmaruvathur** will ensure timely payment to TNWML before 15th of every month.
- (iii) Payment made after 15th, will attract an additional levy of Rs. 10/- Per day till the payment is made.
12. In case of non-receipt of payment on the agreed date from the **MAPIMS, Melmaruvathur**, TNWML will stop the collection of waste immediately with intimation to TamilNadu Pollution Control Board. The delayed payment will be collected as per item 10(iii) above.
13. Agreement can be terminated by giving one month notice from either side or will be automatically terminated if the services are not started within a month by either side from the date of this agreement.

All the above points will have legal bindings for a minimum period of one year from date of this agreement.

This Agreement is valid from **01.04.2017** to **31.03.2018**

FOR MAPIMS

Medical Director
Authorised Signatory
MELMARUVATHUR ADHIPARASAKTHI
INSTITUTE OF MEDICAL SCIENCES & RESEARCH
MELMARUVATHUR-603 319

FOR TNWML

Authorised Signatory

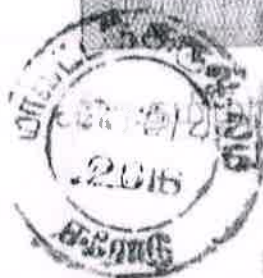




PRINCIPAL
Prof. Dr. S. Karthiga Kannan, MDS.,
ADHIPARASAKTHI
DENTAL COLLEGE & HOSPITAL
MELMARUVATHUR, Melmaruvathur
Chennai Tamil Nadu District
Tamil Nadu - 603 319

SAP code : 1005124

Balance : 1000000



① तमिलनाडु TAMIL NADU

6344
S.M.P.

49AA 345926

AGREEMENT

This agreement is entered into on the 1st of April 2018

Between

M/s. TamilNadu Waste Management Ltd., functioning at Level 4, 'Diamond Dune', 323, Poonamallee High Road, Chennai – 600 029, and having its registered office at 6-3, 1089/10&11, Gulmohar Avenue, Rajbhavan Road, Somajiguda, Hyderabad – 500082 herein after called as TNWML represented by Mr. M. Sridhar Reddy, Regional Manager.

And

M/s. Melmaruvathur Adhiparasakthi Institute of Medical, Sciences and Research. (MAPIMS) & Adhiparasakthi Dental College & Hospital (APDCH), Melmaruvathur herein after called as MAPIMS & APDCH, Melmaruvathur, Whereas TNWML has setup a common facility in accordance with the Bio-Medical Wastes (Management and Handling) Rules, 2016, for collection, transportation, treatment and disposal of the bio-medical wastes generated by the "Health Care Establishments" (Hospitals, Nursing Homes, Clinics, Diagnostic Centers, Dental Clinics....)



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 DENTAL COLLEGE & HOSPITAL
 Melmaruvathur, Melmaruvathur
 Chennai - 605 012
 Tamil Nadu - 605 012




Whereas, **MAPIMS & APDCH, Melmaruvathur** is a hospital having 700 (Nos) of beds generating bio-medical wastes which need to be managed in accordance with the Bio-Medical Wastes (Management and Handling) Rules, 2016, of Govt. of India.

Whereas TNWML offers to provide the services required for Bio-Medical Waste Management to be compliant with the above said rules on a user-pay-principle at Rs. 7.00/bed/day plus taxes/duties if applicable.

Whereas **MAPIMS & APDCH, Melmaruvathur** agrees to utilize the services of TNWML the terms and conditions of the agreement shall be as stated hereunder:

1. **MAPIMS & APDCH, Melmaruvathur** should segregate the wastes as trained by TNWML in accordance with the Bio-Medical Wastes (Management and Handling) Rules, 2016 of Govt. of India.
2. **MAPIMS & APDCH, Melmaruvathur** will give its Bio-Medical Wastes, properly packed in color coded bags as per TamilNadu Pollution Control Board regulation for treatment and disposal to TNWML. The waste should be given at one single point by **MAPIMS & APDCH, Melmaruvathur** to TNWML's Vehicle.
3. Whereas TNWML offers to provide the services required to **MAPIMS & APDCH, Melmaruvathur** be complied with the above said rules, on a 'user-pay-principle' at Rs.7.00/bed/day plus taxes /duties if applicable. This charges will be fixed for a period of one year from date of this agreement and thereafter subject to mutually agreed terms and conditions.
4. **M/s. MAPIMS & APDCH, Melmaruvathur** shall pay Rs. 590/- (Rupees Five hundred Ninety only) yearly as **Membership fees** while renewal. (non refundable)
5. TNWML & TNPCB will make periodic inspections of **MAPIMS & APDCH, Melmaruvathur** regarding collections and segregation of Bio-Medical Wastes etc.
6. TNWML shall provide the initial training, free of cost, about segregation of wastes, collection of wastes in color coded bags as well as occupational safety in management and handling of Bio-Medical Wastes.
7. TNWML shall distribute color coded bags. The bag sizes - 18" x 22" - Rs. 4.50 per bag Colour - Yellow & Red plus Gst if applicable.




PRINCIPAL
Prof. Dr. S. Karthiga Kannan, MDS.
ADHIPARASAKTHI
A DENTAL COLLEGE & HOSPITAL
Melmaruvathur, Melmaruvathur
Cheyvan Chud, Cheyvan Chud District
Tamil Nadu - 605 017



8. TNWML shall collect the wastes from **MAPIMS & APDCH, Melmaruvathur** daily or mutually agreed by both the parties. TNWML will not collect the bio-medical wastes which are not segregated or properly packed. TNWML will not collect general Garbage.

9. TNWML shall be liable for violation under the Bio - Medical Wastes (Management and Handling) Rules, 2016 from the time the waste is handed over to TNWML at the premises of **MAPIMS & APDCH, Melmaruvathur** and shall meet all the rules and regulations stipulated by the TamilNadu Pollution Control Board.

10. In case **MAPIMS & APDCH, Melmaruvathur** finds any irregularities in collection of waste they can send a notice in writing to TNWML for immediate action. All complaints (if any) shall be attended to in the shortest possible time, (48 hours).

11. (i) TNWML shall send the bill for the preceding month by the 3rd of the next month and the same shall be paid by D.D. or Cheque drawn in favour of "**TAMILNADU WASTE MANAGEMENT LTD.**", payable at **Chennai**.

(ii) **MAPIMS & APDCH, Melmaruvathur** will ensure timely payment to TNWML before 15th of every month.

(iii) Payment made after 15th, will attract an additional levy of Rs. 10/- Per day till the payment is made.

12. In case of non-receipt of payment on the agreed date from the **MAPIMS & APDCH, Melmaruvathur**, TNWML will stop the collection of waste immediately with intimation to TamilNadu Pollution Control Board. The delayed payment will be collected as per item 10(iii) above.

13. Agreement can be terminated by giving one month notice from either side or will be automatically terminated if the services are not started within a month by either side from the date of this agreement.

All the above points will have legal bindings for a minimum period of one year from date of this agreement.

This Agreement is valid from 01.04.2018 to 31.03.2019

FOR MAPIMS & APDCH

Authorised Signatory



FOR TNWML

Authorised Signatory

S. Karthiga Kannan
PRINCIPAL
Prof. Dr. S. Karthiga Kannan, MDS.
ADHIPARASAKTHI
DENTAL COLLEGE & HOSPITAL
Hospital Road, Melmaruvathur
Cheyur Taluk, Chengalpattu District
Tamil Nadu - 603 319



தமிழ்நாடு தமில்நாடு TAMIL NADU
தமிழ்நாடு
TAMILNADU WASTE MANAGEMENT
LTD.
விலா : CHENNAI 29.
பெண் 23-4-2019 4002
பொருள் 10/-

51AA 208621
R. [Signature]
பெண் 23-4-2019 4002
பொருள் 10/-

AGREEMENT

This agreement is entered into on the 1st of April 2019

M/s. TamilNadu Waste Management Ltd., functioning at Level 4, 'Diamond Dune', 323, Poonamallee High Road, Chennai – 600 029, and having its registered office at 6-3-1089/10&11, Gulmohar Avenue, Rajbhavan Road, Somajiguda, Hyderabad – 500082 herein after called as TNWML represented by Mr. M. Sridhar Reddy, Regional Manager.

And

M/s. Adhiparasakthi Hospitals (APH) & M/s. Adhiparasakthi Dental College & Hospital (APDCH), Melmaruvathur – 603 319 herein after called as APH & APDCH, Melmaruvathur, whereas TNWML has setup a common facility in accordance with the Bio-Medical Wastes (Management and Handling) Rules, 2016, for collection, transportation, treatment and disposal of the bio-medical wastes generated by the "Health Care Establishments" (Hospitals, Nursing Homes, Clinics, Diagnostic Centers, Dental Clinics...)

[Signature]
CORRESPONDENT
ADHIPARASAKTHI
DENTAL COLLEGE & HOSPITAL
Melmaruvathur - 603 319
Kanniyakumari Dist., Tamil Nadu



[Signature]
PRINCIPAL
Prof. Dr. S. Karthiga Kannan, M.D.
ADHIPARASAKTHI
DENTAL COLLEGE & HOSPITAL
Hospital Road, Melmaruvathur
Cheyyur Taluk, Chennai District
Tamil Nadu - 603 319

Whereas, APH & APDCH, Melmaruvathur is a hospital having 100 (Nos) of beds generating bio-medical wastes which need to be managed in accordance with the Bio-Medical Wastes (Management and Handling) Rules, 2016, of Govt. of India.

Whereas TNWML offers to provide the services required for Bio-Medical Waste Management to be compliant with above said rules on a user-pay-principle at Rs.8.00/bed/day plus taxes/duties if applicable.

Whereas APH & APDCH, Melmaruvathur agrees to utilize the services of TNWML the terms and conditions of the agreement shall be as stated hereunder.

1. APH & APDCH, Melmaruvathur should segregate the wastes as trained by TNWML in accordance with the Bio-Medical Wastes (Management and Handling) Rules, 2016 of Govt. of India.
2. APH & APDCH, Melmaruvathur will give its Bio-Medical Wastes, properly packed in color coded bags as per Tamil Nadu Pollution Control Board regulation for treatment and disposal to TNWML. The waste should be given at one single point by APH, Melmaruvathur to TNWML's Vehicle.
3. Whereas TNWML offers to provide the services required to APH & APDCH, Melmaruvathur be complied with the above said rules, on a 'user-pay-principle' at Rs.8.00/bed/day plus taxes/duties if applicable. This charges will be fixed for a period of one year from date of this agreement and thereafter subject to mutually agreed terms and conditions.
4. M/s. APH & APDCH, Melmaruvathur shall pay Rs. 590/- (Rupees Five hundred Ninety only) yearly as Membership fees while renewal. (non refundable)
5. TNWML & TNPCB will make periodic inspections of APH & APDCH, Melmaruvathur regarding collections and segregation of Bio-Medical Wastes etc.
6. TNWML shall provide the initial training, free of cost, about segregation of wastes, collection of wastes in color coded bags as well as occupational safety in management and handling of Bio-Medical Wastes.
7. TNWML shall distribute color coded bags. The bag sizes – 18" x 22" – Rs.3.00 per bag Colour – Yellow & Red plus GST if applicable.


CORRESPONDENT
ADHIPARASAKTHI
DENTAL COLLEGE & HOSPITAL
Melmaruvathur - 603 319
Kanchipuram Dist., Tamil Nadu




PRINCIPAL
Prof. Dr. S. Karthiga Kannan, MDS.,
ADHIPARASAKTHI
DENTAL COLLEGE & HOSPITAL
Hospital Road, Melmaruvathur
Cheyyar Taluk, Chengalpattu District
Tamil Nadu - 603 319





8. TNWML shall collect the wastes from APH & APDCH, Melmaruvathur daily or mutually agreed by both the parties. TNWML will not collect the bio-medical wastes which are not segregated or properly packed. TNWML will not collect general Garbage.
9. TNWML shall be liable for violation under the Bio-Medical Wastes (Management and Handling) Rules, 2016 from the time the waste is handed over to TNWML at the premises of APH & APDCH, Melmaruvathur and shall meet all the rules and regulations stipulated by the Tamil Nadu Pollution Control Board.
10. In case APH & APDCH, Melmaruvathur finds any irregularities in collection of waste they can send a notice in writing to TNWML for immediate action. All complaints (if any) shall be attended to in the shortest possible time, (48 hours).
11. (i) TNWML shall send the bill for the preceding month by the 3rd of the next month and the same shall be paid by D.D. or Cheque drawn in favour of "TAMILNADU WASTE MANAGEMENT LTD", payable at Chennai.
- (ii) APH & APDCH, Melmaruvathur will ensure timely payment to TNWML before 15th of every month.
- (iii) Payment made after 15th, will attract an additional levy of Rs. 10/- Per day till the payment is made.
12. In case of non-receipt of payment on the agreed date from the APH & APDCH, Melmaruvathur, TNWML will stop the collection of waste immediately with intimation to TamilNadu Pollution Control Board. The delayed payment will be collected as per item 10(iii) above.
13. Agreement can be terminated by giving one month notice from either side or will be automatically terminated if the services are not started within a month by either side from the date of this agreement.



All the above points will have legal bindings for a minimum period of one year from date of this agreement.

This Agreement is valid from 01.04.2019 to 31.03.2020.

FOR APH & APDCH


Authorised Signatory
CORRESPONDENT

ADHIPARASAKTHI
DENTAL COLLEGE & HOSPITAL
Melmaruvathur - 605 319
Villupuram Dist., Tamil Nadu


PRINCIPAL
Prof. Dr. S. Karthiga Kannan, MD
ADHIPARASAKTHI
DENTAL COLLEGE & HOSPITAL
Hospital Road, Melmaruvathur,
Cheyvir Taluk, Chengam District
Tamil Nadu - 605 319

FOR TNWML

Authorised Signatory

TAMILNADU WASTE
MANAGEMENT LTD
CHENNAI



தமிழ்நாடு தமிழ்நாடு TAMIL NADU
04.03.2021.

90AB 483896
A. DHANALAKSHMI
Stamp Vendor
L.No.20028/B4/B/B7/94
164, Amman Koil Street.
Chennai-600 001.

AGREEMENT

This agreement is entered into on the 01ST APRIL -2021

Between

TamilNadu Waste Management Ltd. functioning at Level 4, 'Diamond Dune' 323, Poonamalle High Road, Chennai – 600 029, and having its registered office at 6-3- 1089/10&11, Gulumohar Avenue, Rajbhavan Road, Somajiguda, Hyderabad -500082 here after called as TNWML represented by Mr.M.Bridhar Reddy- Regional manager .

And

M/s **ADHIPARASAKTHI DENTAL COLLEGE AND HOSPITAL,,MELMARUVATHUR** whereas TNWML has setup a common facility in accordance with the Bio-Medical Wastes (and Handling) Rules, 2016, for collection, transportation, treatment and disposal of the bio-medical waste generated by the "Health Care Establishments" (Hospitals, Nursing clinics, Medical Colleges, Diagnostic Centers, Dental Clinic



Cont...2



S. Karthiga Kannan
PRINCIPAL
Prof.Dr.S.Karthiga Kannan, MDS.,
ADHIPARASAKTHI
DENTAL COLLEGE & HOSPITAL
Hospital Road, Melmaruvathur
Chennai-603 319, Chengalpattu District,
Tamil Nadu - 603 319

8. TNWML shall collect the waste from M/s. **ADHIPARASAKTHI DENTAL COLLEGE AND HOSPITAL** daily or mutually agreed by both the parties TNWML will not collect the bio- medical wastes which are not segregated or properly packed. TNWML will not collect General garbage waste.
9. In case TNWML fails to collect waste within 24 hours of previous collection M/s **ADHIPARASAKTHI DENTAL COLLEGE AND HOSPITAL** shall inform TNWML and the same shall be cleared within the next 24 hours.
10. TNWML shall be liable for violation under the Bio – Medical waste (management and Handling) Rules, 2016 from the time waste is handed over to TNWML at the premises of M/s **ADHIPARASAKTHI DENTAL COLLEGE AND HOSPITAL** and shall meet all the rules and regulations stipulated by the TamilNadu Pollution Control Board.
11. In case M/s **ADHIPARASAKTHI DENTAL COLLEGE AND HOSPITAL** found any irregularities in collection of waste they can send a notice in writing to TNWML for immediate action. All complaints (if any) shall be attended to in the shortest possible time, (48 hours)
12. TNWML shall send the bill for the preceding month by the 3rd of the next month and the same shall be paid by D.D or cheque drawn in favor of "Tamil Nadu Waste Management Ltd.," payable at Chennai.
 - (i) M/s. **ADHIPARASAKTHI DENTAL COLLEGE AND HOSPITAL** will ensure timely payment to TNWML before 15th of every month.
 - (ii) Payment made after 15th, will attract an additional levy of Rs. 10 per day till the payment is made
13. In case of non-receipt of payment on the agreed date from the **ADHIPARASAKTHI DENTAL COLLEGE AND HOSPITAL** TNWML will stop the collection of waste immediately with intimation to TamilNadu Pollution Control Board. The delayed payment will be collected as per item 13(ii) above.
14. Agreement can be terminated by giving one month notice from either side or will be automatically terminated if the services are not started within a month by either side from the date of this agreement.

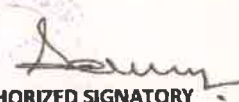
All the above points will have legal binding for a minimum period from date of this agreement.

This Agreement is Effective from 01.04.2021 to 31.03.2024

FOR

AUTHORIZED SIGNATORY
CORRESPONDENT

ADHIPARASAKTHI
DENTAL COLLEGE & HOSPITAL
Palmanur - 602 519
Kanchipuram Dist., Tamil Nadu

FORTNWML

AUTHORIZED SIGNATORY




PRINCIPAL
Prof. Dr. S. Karthiga Kannan, MDS.,
ADHIPARASAKTHI
DENTAL COLLEGE & HOSPITAL
Hospital Road, Palmanur
Kanchipuram - 602 519, Tamil Nadu

Whereas M/s ADHIPARASAKTHI DENTAL COLLEGE AND HOSPITAL generating biomedical waste which is need to be managed in accordance with the Bio – Medical waste (Management and Handling) Rules, 2016, of Govt. of India;

Whereas TNWML offers to provide the services required for Bio-Medical waste Management to be compliance with the above said rules on a user-pay principle at Rs.10000 (Ten Thousand only) per month plus taxes duties if applicable.

Whereas M/s ADHIPARASAKTHI DENTAL COLLEGE AND HOSPITAL agrees to utilize the services of TNWML for disposal of Bio-Medical Waste on the terms and conditions set forth herein;

1. M/s ADHIPARASAKTHI DENTAL COLLEGE AND HOSPITAL Should segregate properly & store the waste in Non – chlorinated color coded bags as trained by TNWML in accordance with the Bio-Medical waste (Management and Handling) Rules , 2016, Govt of India
2. M/s. ADHIPARASAKTHI DENTAL COLLEGE AND HOSPITAL will give Its Bio-Medical wastes including all the disposable plastic material (i.e. Gloves, Tubes, IV Sets ,plastic IV Sets , Plastic IV Bottles and urine bags etc), with properly packed in color coded bags as per Tamil Nadu Pollution Control Board Regulation for treatment and disposal to TNWML. The waste should be given at one single point by M/s. ADHIPARASAKTHI DENTAL COLLEGE AND HOSPITAL to TNWML's Vehicle.
3. Whereas TNWML offer to provide the services required to M/s. ADHIPARASAKTHI DENTAL COLLEGE AND HOSPITAL be complied with the above said rules, on a `user-pay-principle at Rs. 10000 (Ten Thousand only) per month be paid on monthly basis plus taxes/duties if applicable. This services charge will be increase annually at rates which is mutually agreed upon each year of this agreement and thereafter subject to mutually agreed terms and conditions
4. M/s ADHIPARASAKTHI DENTAL COLLEGE AND HOSPITAL shall pay Rs.590/- (Rupees Five Hundred ninety only yearly as Membership fees while renewal.(Nonrefundable)
5. TNWML and TNPCB will make periodical inspection M/s ADHIPARASAKTHI DENTAL COLLEGE AND HOSPITAL regarding collection and segregation of Bio-Medical wastes etc.
6. TNWML shall provide the initial training, free of cost, about segregation of waste, collection of waste in color coded bags as well as occupational safety in management and handling of Bio-Medical Waste.
7. TNWML shall distribute puncture proof container (PPC) Rs. 85/- each (one time purchase) and Non-chlorinated color coded bags with Bar code strikers as per your requirement of Bags sizes with extra cost – color (Yellow & red) TNWML not collect the other bags (i.e. chlorinated bags) – Bags Rs.4.50/- each plus GST as applicable.

Cont...3



S. Karthiga Kannan
PRINCIPAL
Prof. Dr. S. Karthiga Kannan, MDS.
ADHIPARASAKTHI
DENTAL COLLEGE & HOSPITAL
Hospital Road, Mehmuravathur
Cheyyur Taluk, Chengalpattu District
Tamil Nadu - 603 319



தமிழ்நாடு தமிழ்நாடு TAMIL NADU

05/01/2022

R.M. Computers.
R. Mohanlal

98AB 969251

சு.விநாயகன், பிர
முத்திரைத்தாள விநியோகம் - 19
உரிமம் எண். 255 ஆ7 2003
திருவாவற்றியூர், சென்னை-19.



ELECTRONIC WASTE DISMANTLER AND SERVICE AGREEMENT

This Agreement (hereinafter called the "Agreement") is made on the 1st day of Jan of 2021.

ADHIPARASAKTHI DENTAL COLLEGE AND HOSPITAL, No.1, GST Road, Melmaruvathur, Kanchipuram, Tamilnadu 603 319 (hereinafter referred to as "Client") which expression unless repugnant to the context or meaning thereof shall include its successors assigns and administrators of the ONE PART.

R.M. COMPUTERS, a Company incorporated under the provisions of the companies Act, 1956 whose Corporate office is situated at S.F.No.136, Plot No.229, 9th Street, SIDCO Industrial Estate, Pattavakkam, Ambattur, Chennai-600 098. (hereinafter referred to "R.M.Computers") which expression unless repugnant to the next or meaning thereof shall include its successors assigns and administrators of the OTHER PART.

"Parties" mean Client and the "R.M. Computers" shall be construed accordingly

For R.M. COMPUTERS

R. Mohanlal

Proprietor



S. Karthiga Kannan
PRINCIPAL
Prof. Dr. S. Karthiga Kannan, M.B.S.,
ADHIPARASAKTHI
DENTAL COLLEGE & HOSPITAL
Hospital Road, Melmaruvathur
Chennai Tamil Nadu - 603 319

WHEREAS:

R.M. Computers is a registered environment friendly Disposal of E- Waste with Tamil Nadu State pollution Control Board wide CCA (Consolidated Consent Authorization) No. EWM/AMB/029/2019 Dated 04.12.19 and it valid up to 31.12.2024.

The Client is desirous of obtaining E-Waste Management services R.M. Computers subject to the terms & Conditions stated herein:

NOW THEREFORE THE PARTIES HERETO HEREBY AGREE AND THIS AGREEMENT WITNESS-AS FOLLOWS:

ARTICLE 1 – DEFINITIONS

In this agreement the following Expressions shall have the meanings hereunder respectively assigned to them.

- 1.1 "Agreement" shall mean this agreement, declaration and indemnity and any and all schedules, appendices, annexures and exhibits attached to it or incorporated in it by reference.
- 1.2 "Applicable Laws" means the laws and any other instruments having the force of law in India as they may be issued and in force from time to time.
- 1.3 "E-Waste" shall mean waste electrical and electronic equipment, whole or in part or scraps/rejects from electronic equipment of their in-house uses, or from their manufacturing process or repair process, which are discarded or intended to be discarded
- 1.4 "Effective Date" means the date on which this Agreement comes into force.
- 1.5 "Scope of Work" shall have meaning ascribed to it in article 3

ARTICLE 2 – AGREEMENTS

The principle contract as defined herein above including the contract into between the Owner and for the executions of complete said work together with all its enclosures and Annexure shall be deemed to be an integral part of this Agreement

Not with standing anything to the contrary contained herein the technical specifications and the drawings and the related provisions of the principal contract shall over-ride and prevail over all the provisions to the contrary contained herein or in other documents(s) forming part of Agreement

ARTICLE 3 – SCOPE OF WORK

R.M. COMPUTERS hereby agree provide services of collection, transportation and processing of the E-Waste & Electric Scraps provided by the client across the country as specified in and would maintain he terms and conditions contained herein.


The Client shall have to provide necessary documents and information for timely collecting of E-Waste of Disposal material R.M. Computers have to inspect and examine the E- waste at before collecting. R.M. Computers shall arrange logistic for lifting of materials at client's locations.

R.M. Computers shall provide certificate of destruction to client after environment friendly Disposal of E- waste.

The Client shall not engage the services with any third party in any manner to recycling of E- waste during the term of this agreement.


CORRESPONDENT
**ADHIPARASAKTHI**
DENTAL COLLEGE & HOSPITAL
Meyyuruthur - 605 317
Chengambur Dist., Tamil Nadu

For R.M. COMPUTERS


Proprietor




PRINCIPAL
Prof. Dr. S. Karthiga Kannan, MDS.,
ADHIPARASAKTHI
DENTAL COLLEGE & HOSPITAL
Hospital No. of, Meimaranvittur
Chengambur Taluk, Chengambur District
Tamil Nadu - 605 319

ARTICLE 4 – PAYMENT TERMS

Client will provide detailed list of inventory for collection to R.M. Computers. R.M Computers shall make the payment as per mutually agreed prices for the lifted materials

Prices are excluding of all applicable taxes. Logistic will be scope of R.M Computers

The material wise rate for adjustable variation at the time of rate basis

ARTICLE 5 – Term and Termination

This Agreement is valid up to Three Year from the date of Agreement and may also continue as per mutual understanding

Both parties have right to terminate the agreement by providing notice period of one month in written

ARTICLE 6 – Jurisdiction

Parties agree that in the event any disputes arising out of this Agreement shall be subject to the exclusive jurisdiction of the courts at Chennai Tamil Nadu India only

IN WITNESS WHEREOF the parties herein have signed this Agreement on the date, month and year first above written.

Signed and delivered for and on behalf of

M/s. ADHIPARASAKTHI DENTAL COLLEGE AND HOSPITAL



WITNESS:

1. M. *[Signature]* 9710449110
2. *[Signature]*

Signed and delivered for and on behalf of

M/s. R.M.COMPUTERS

For R.M. COMPUTERS
[Signature]
Proprietor

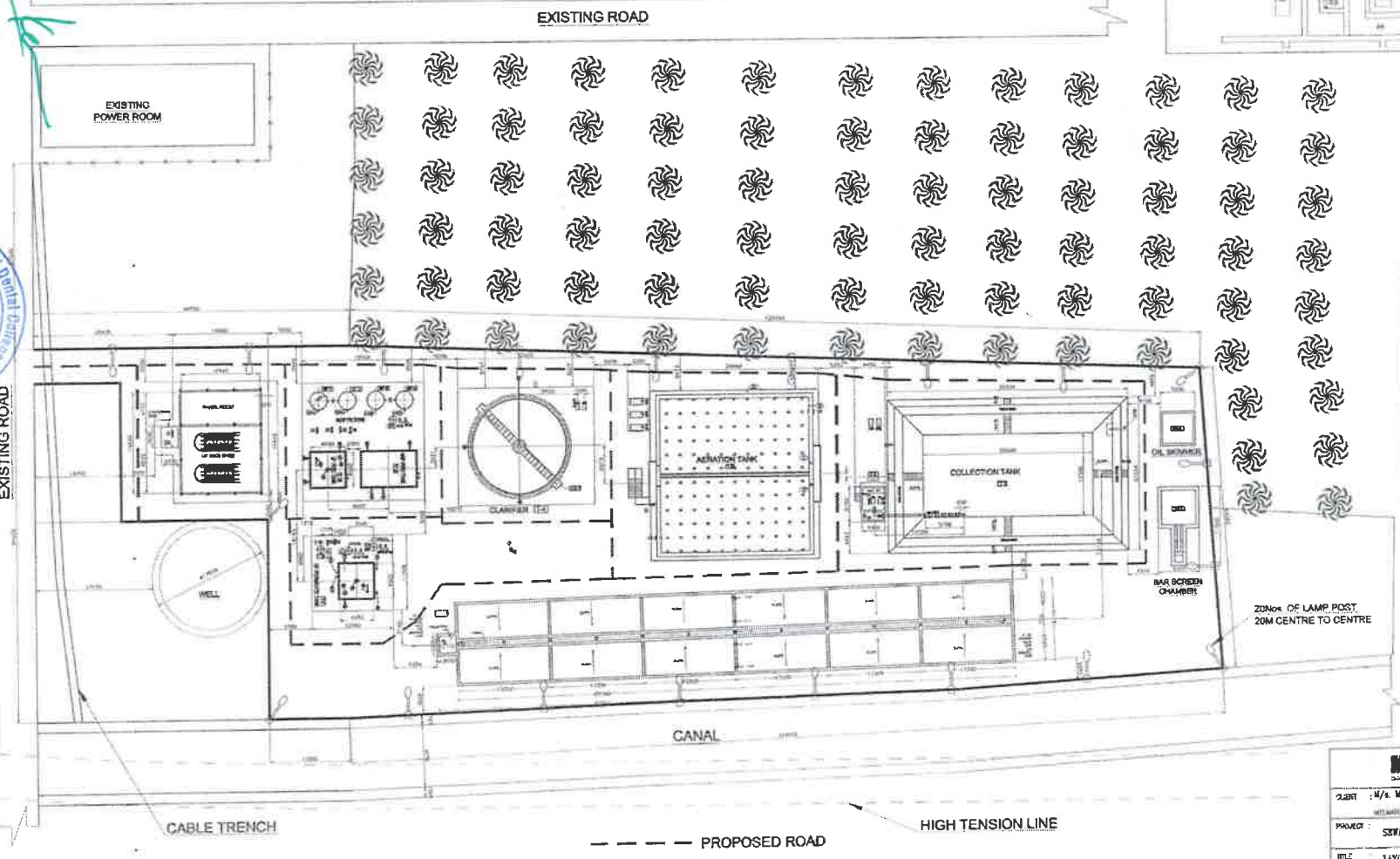
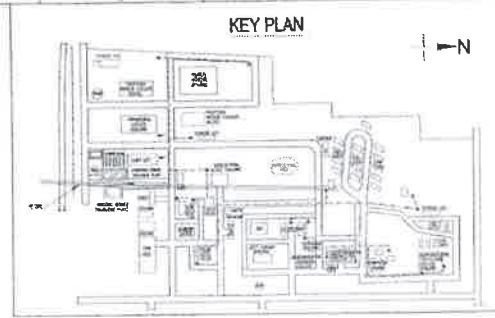
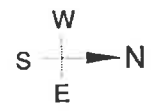
[Signature]
PRINCIPAL
Prof.Dr.S.Karthiga Kannan, MDS.,
ADHIPARASAKTHI
DENTAL COLLEGE & HOSPITAL
Hospital Road, Melmaruvathur
Cheyvu Taluk, Chengalpattu District,
Tamil Nadu - 605 319



Prof. Dr. S. Kirthiga Kannan, MDS,
ADHIPARASAKTHI
 DENTAL COLLEGE & HOSPITAL
 Hospital Road, Melmaruthur
 Cheyyar Taluk, Chengalpattu District
 Tamil Nadu - 603 319



Sheela
PRINCIPAL



LEGEND	
1	EXISTING ROAD
2	PROPOSED ROAD
3	EXISTING POWER ROOM
4	WELL
5	CABLE TRENCH
6	EXISTING AERATION TANK
7	PROPOSED AERATION TANK
8	EXISTING COLLECTION TANK
9	PROPOSED COLLECTION TANK
10	EXISTING BAR SCREEN CHAMBER
11	PROPOSED BAR SCREEN CHAMBER
12	EXISTING OIL SKIMMER
13	PROPOSED OIL SKIMMER
14	EXISTING ZONOR OF LAMP POST
15	PROPOSED ZONOR OF LAMP POST

- LIST OF TANKS**
- 1. Aeration tank (10 rows x 15 columns)
- 2. Collection tank
- 3. Bar screen chamber
- 4. Oil skimmer
- 5. Well
- 6. Cable trench
- 7. Power room
- 8. High tension line
- 9. Proposed road
- 10. Existing road
- 11. Zone of lamp post
- 12. Clarifier tank
- 13. Sludge tank
- 14. Effluent tank
- 15. Bypass tank
- 16. Return activated sludge tank
- 17. Final clarifier tank
- 18. Sludge thickener tank
- 19. Sludge dewatering tank
- 20. Sludge storage tank
- 21. Sludge disposal tank
- 22. Sludge incineration tank
- 23. Sludge landfill tank
- 24. Sludge composting tank
- 25. Sludge gasification tank
- 26. Sludge pyrolysis tank
- 27. Sludge incineration gasification tank
- 28. Sludge incineration gasification pyrolysis tank
- 29. Sludge incineration gasification pyrolysis gasification tank
- 30. Sludge incineration gasification pyrolysis gasification pyrolysis tank

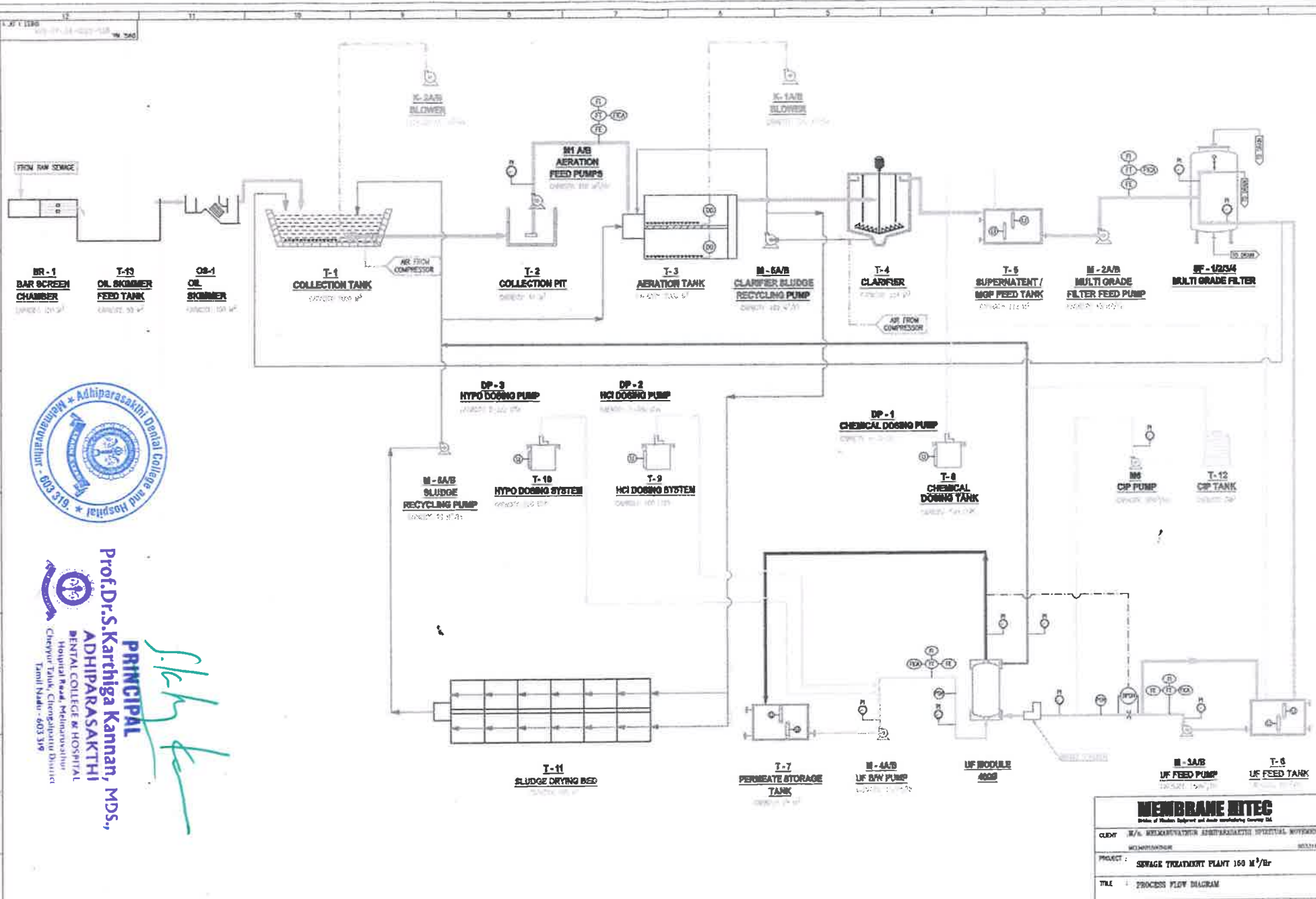
MEMBRANE NITEC
 Subsidiary of Membrane Technology & Research, Hyderabad

CLIENT : M/A. MELMARUTHUR ADHIPARASAKTHI DENTAL COLLEGE & HOSPITAL
 PROJECT : SEWAGE TREATMENT PLANT 150 M³/D
 TITLE : LAYOUT

DATE : 10.05.2019
 SCALE : 1:1000
 FILE NO. : 1035
 SHEET NO. : 1 OF 1

REV. NO.	DATE	REVISIONS	BY	CHKD.	APPD.	DATE	REVISIONS	BY	CHKD.	APPD.	DATE
1	10.05.2019	COLLECTION TANK AND SLUDGE TANK DESIGN AND REVISED LAYOUT PLAN AND FOUNDATION THE LAYOUT CHANGED.	KSP	EV	G&R						

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MEMBRANE INTEC
 Division of Membrane Equipment and Waste Water Treatment Company Ltd.

CLIENT: M/s. MEMBRANETECH ADHIPARASAKTHI HOSPITAL HOSPITAL
 PROJECT: SEWAGE TREATMENT PLANT 160 M³/hr
 TITLE: PROCESS FLOW DIAGRAM

DATE	REVISIONS	BY	CHKD	APPR	REV. NO.	DATE	REVISIONS	BY	CHKD	APPR	REV. NO.	DATE	REVISIONS	BY	CHKD	APPR	REV. NO.	DATE	

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Sewage Recycling Plant of Capacity 150 m³/hr.

1. DESIGN PHILOSOPHY :

1.1. Raw Sewage Characteristics :

The Plant is designed for a capacity of 150 m³/hr (feed) with the following characteristics,

➤ PH	<	6.72
➤ Turbidity	<	96 NTU
➤ TSS	<	153 ppm
➤ BOD	<	180 ppm
➤ COD	<	325 ppm
➤ Ammonia	<	30 ppm

- The Raw Sewage characteristics should not exceed the values indicated above.
- Any Change in raw sewage characteristics will have technical and commercial implications.

1.2. Treated water Quality [Considering the above Feed quality]

The treated sewage will be fit for irrigation purpose, recycling and also confirm to PCB norms.

2.0 Technical Specifications:

A. Pumps – Pre-treatment (150 m³/hr)

A.1. Oil Skimmer Feed Pump:

Quantity	2 Nos. (2 Working)
Capacity	120 m ³ /hr
Head	7 mtrs.
Type	Submersible
MOC	Cast Iron
Motor HP	7 hp
Make	KSB

A.2. Aeration Feed Pump:

Quantity	2 Nos. (1 Working + 1 Stand-By)
Capacity	150 m ³ /hr
Head	15 mtrs.
Type	Submersible
MOC	Cast Iron
Motor HP	12 hp
Make	Kirloskar / Equivalent



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A.3. Air Blower :[For Aeration Tank for Peak time] :	
Quantity	2 Nos. (1W +1S)
Capacity	2000m ³ /hr @ Head 6.5 mtr
Type	Twin Lobe
Make	Kay International
Motor	100 HP

A.4. Air Blower :[For Aeration Tank] :	
Quantity	3 Nos. (2W +1S)
Capacity	2000m ³ /hr @ Head 5 mtr
Type	Twin Lobe
Make	Kay International
Motor	40 HP

A.5. Clarifier Sludge Recycling Pump :	
Quantity	2 Nos. (1 Working + 1 Stand-By)
Capacity	100 m ³ /hr @ 10 mtrs Head
Type	Centrifugal
MOC	Cast Iron
Motor	10 HP
Make	KSB

A.6. Multi Grade Filter Feed Pump:	
Quantity	2 Nos. (1 Working + 1 Stand-By)
Capacity	150 m ³ /hr
Head	30 mtrs.
Type	Centrifugal Pump
MOC	Cast Iron
Motor	30 HP
Make	Kirloskar / Equivalent

B. Pumps – Ultrafiltration

B.1. UF Feed Pump:	
Quantity	2 Nos. (1 Working + 1 Stand-By)
Capacity	150 m ³ /hr
Head	30 mtrs.
Type	Centrifugal
MOC	Cast Iron
Motor	25 HP
Make	KSB

B.2. UF Backwash Pump :	
Quantity	2 Nos. (1 Working + 1 Stand-By)
Capacity	120 m ³ /hr
Head	30 mtrs
Type	Centrifugal
MOC	Cast Iron + SS Impeller
Make	KSB



B.3. UF CIP Pump:	
Quantity	1 No.
Capacity	50 m ³ /hr
Head	25 mtrs.
Type	Centrifugal
MOC	SS316
Motor	5 HP
Make	KSB

C. Dosing Pumps :

C.1. Hypo Dosing Pump : [For UF Feed Tank]	
Quantity	2 Nos. (1 Working + 1 Stand-By)
Capacity	0 – 20 LPH
Head	30 Meters
MOC	PP
Type	Motorized Metering Pump
Make	Prominent

C.2. Hypo/Caustic Dosing Pump : [UF CEB Cleaning]	
Quantity	2 Nos. (1 Working + 1 Stand-By)
Capacity	0 – 200 LPH
Head	40 mtrs
MOC	PP
Type	Motorized Metering Pump
Make	Prominent

C.3. HCL Dosing Pump : [UF CEB Cleaning]	
Quantity	2 Nos. (1 Working + 1 Stand-By)
Capacity	0 – 200 LPH
Head	40 mtrs
MOC	PP
Type	Motorized Metering Pump
Make	Prominent

D. Dosing Tanks :

D.1. Hypo Dosing Tank : [For UF Feed Tank]	
Quantity	1 No.
Capacity	500 litres
MOC	HDPE

D.2. Hypo/Caustic/HCL Dosing Tank : [For UF CEB]	
Quantity	2 Nos.
Capacity	500 Ltrs.



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MOC	HDPE
-----	------

D.3. CIP Tank : [For UF CIP]	
Quantity	1 No.
Capacity	3000 Ltrs.
MOC	HDPE

E. Civil Tanks – Pre-treatment

E.1. Collection Tank :	
Quantity	1 No.
Capacity – 25mt x 12mt x 3mt +0.5 FB	900m ³
MOC	Lined Pond

E.2. Collection Pit :	
Quantity	1 No.
Capacity – 3.2mt x 3.2mt x 3mt + 0.3mtFB	30m ³
MOC	RCC

E.3. Aeration Tank :	
Quantity	1 No.
Capacity – 22mt x 22mt x 4.25swd +0.5FB	2057 m ³
MOC	RCC – Epoxy Coat

E.4. Clarifier Tank :	
Quantity	1 No.
Capacity 14.5 dia x 3m HT	544 m ³
MOC	RCC – Epoxy Coat

E.5. Sludge Pit :	
Quantity	1 No.
Capacity – 2mt x 2mt x 3mt + 0.3mt FB	15 m ³
MOC	RCC

E.6. Supernatant Tank [MGF Feed Tank] :	
Quantity	1 No.
Capacity – 5mt x 5mt x 3mt +0.3 mt FB	75 m ³
MOC	RCC

F. Civil Tanks – Ultra filtration

F.1. UF Feed Tank :	
Quantity	1 No.
Capacity – 5mt x 5mt x 3mt + 0.3mt FB	75 m ³
MOC	RCC

F.2. UF Permeate Tank :	
Quantity	1 No.




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Capacity – 5mt x 5mt x 3mt + 0.3mt FB	75 m ³
MOC	RCC

G. Multi Grade Filter Vessel :

G.1. Multi Grade Filter :	
Quantity	4 Nos. (3 Working + 1 Stand-By)
Dia	2.5 mtrs.
Height	3 mtrs.
Internals	Sand , Pebbles
MOC	MSEP
Make	Team

H. Ultrafiltration Membrane :

H.1. UF Membranes :	
No. Of Membrane	28 Nos.
No. of Skid	2 Nos.
Skid Type	MS – Epoxy Coated
Membrane Area	100 m ²
Flux	60 LMH
Mode of Operation	Dead End
MOC	Modified Polyether Sulphone
Dimension	Dia - 400 mm Height - 1530 mm
Make	Team Waters

I. Mechanism :

I.1. Grit Chamber :	
Quantity	1 No.
Low level Switch	1 No.
MOC	RCC + Grid

I.2. Clarifier :	
Quantity	1 No.
Clarifier - Dia	14.5 Mtrs
- Height	3.3 Mtrs + 0.5 FB
MOC	RCC (Client Scope – Outer shell & other civil work)
Mechanism Clarifier Bridge, Clarifier Shaft , Bridge Gasket Joining Plate, Tie Rod, Cone Scraper, Racker Arm, Rubber with Flat, Shear Pin, Fasteners, Frame	1 Lot

I.4. Fine Bubble Diffuser :	
Quantity	356 Nos.
Airflow	3 – 7 m ³ /hr
Type	Fine Bubble Diffuser



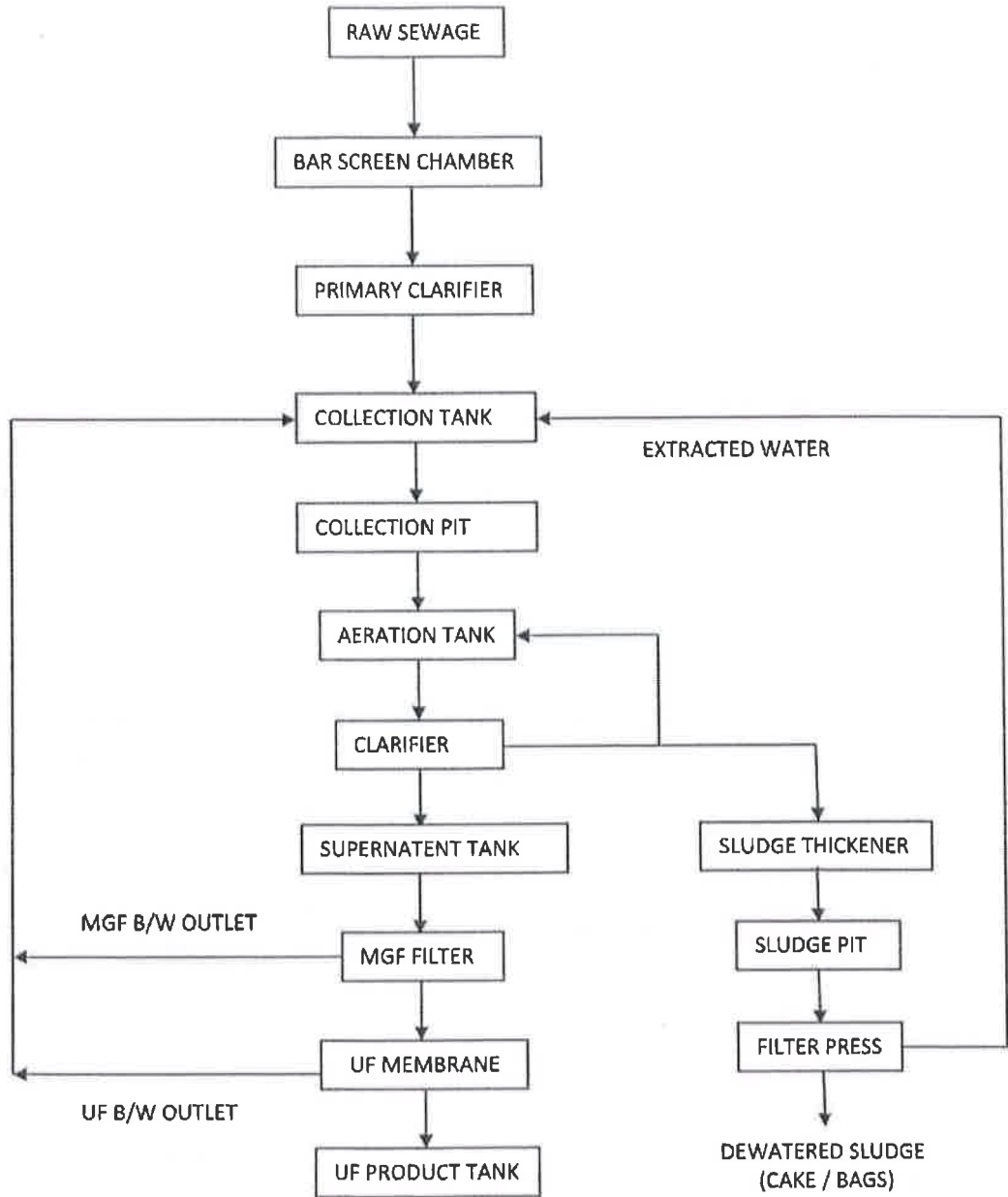
3. Motor Load List :

S.No	Description	Qty.	Rating KW	Total Load KW
1.	Oil skimmer feed pump	2 Nos.	5.5 KW	11 KW
2.	Aeration Feed Pump	2 Nos.	9.5 KW	19 KW
3.	Clarifier Sludge Recycle Pump	2 Nos.	7.5 KW	15 KW
4.	MGF Feed Pump	2 Nos.	25 KW	50 KW
5.	UF Feed Pump	2 Nos.	18 KW	36 KW
6.	UF Backwash Pump	2 Nos.	10 KW	20 KW
7.	CIP Pump	1 No.	5 KW	5 KW
8.	Hypo Dosing Pump-UF Feed	2 Nos.	0.05 KW	0.1 KW
9.	Hypo Dosing Pump- UF CEB	2 Nos.	0.18 KW	0.36 KW
10.	HCL Dosing Pump-UF CEB	2 Nos.	0.18 KW	0.36 KW
11.	Air Blower 1	3 Nos.	30 KW	90 KW
12.	Air Blower 2	2 Nos.	75 KW	150 KW
13.	Air Blower 3	2 Nos.	7.5 KW	15 KW
14.	Air Compressor	1 No.	15 KW	15 KW
13.	Spare module, General Utilities (Welding , Lighting etc.,)		10 KW	10 KW
Total			218.4	



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4.0 STP PLANT – FLOW CHART



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5.0 Instrumentation & Automation:

5.1 Sewage Treatment Plant:

A. Pre-treatment :

- Low Level Switch for Grid Chamber
- Flow meter for MGF feed line
- Butterfly valves with actuators for Sludge Recycling system
- Level Transmitter at Collection Tank to control the flow
- Pressure Gauges at Aeration Feed pump & MGF Feed pump

B. Ultra filtration System :

- Flow meter at UF Feed line
- Flow meter at UF Backwash line
- Flow meter at UF Product line
- Flow meter at Raw Sewage line
- Pressure Gauge at Discharge of UF Feed Pump discharge & UF Backwash Pump discharge
- Pressure Gauge at Feed Inlet line
- Pressure gauge at Permeate line
- Pressure gauge at Backwash pump discharge
- Pressure gauge at Backwash Outlet line
- Pressure Switch at feed Inlet
- Pressure Switch at Backwash Inlet
- Pressure Switch for Instrument Air Pressure
- Differential Pressure Switch across the skid
- Pneumatically Actuated Butterfly Valves

C. Automation will be provided as follows :

1. Filtration
2. Forward Flush A
3. Backwash
4. Forward Flush B

D. Piping :

- Pre-Treatment: The Material of Construction of Pipes & Fittings will be UPVC & CI & MS.
- Ultra Filtration System: All Piping for the UF Skid will be SS.

Instrumentation Items		
1	pH Meter	1 No.
2	ORP Meter	1 No.
3	Dissolved Oxygen Meter [Transmitter]	2 Nos..
4	Flow meters	4 Nos.
5	Pressure gauges	As Reqd.
6	Pneumatic actuator	20 Nos.
6	Panel Board	1 No.
7	PLC Control System – UF Plant	1 No.
2	UF Skid	5 Nos.



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Equipments		
1	Hypo/Caustic/HCL dosing Tanks [UF CEB Cleaning]	2 Nos.
2	Chemical Dosing Tank [Chlorine dosing for Supernatant tank & UF Feed Tank]	1 No.
3	CIP Tank	1 No.
4	Valves – Butterfly Valves / Ball Valve / Needle / Gate Valve	As Reqd.

7.2 Civil Tanks:

a)	Collection Tank	- 20mt x 15mt x 3mt, 2:1 Slope +0.5mtFB-	1000 m ³
b)	Aeration Tank	- 22mt x 20mt x 3.8mt +0.5mt FB	- 1672 m ³
c)	Secondary Clarifier	- 14.5mt x 3.3mt +0.5mt FB	- 694 m ³
d)	Drying Bed	- 13.3mt x 5mt +0.5mt FB-12 nos	- 798m ³
g)	Sludge Pit	- 3mt x 3mt x 3mt +0.3mt FB	- 25 m ³
c)	MGF Feed Tank	- 5mt x 5mt x 3mt +0.3mt FB	- 75 m ³
d)	UF Feed Tank	- 5mt x 5mt x 3mt +0.3mt FB	- 75m ³
e)	UF product Tank	- 5mt x 5mt x 3mt +0.3mt FB	- 75m ³




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MEMBRANE HITEC

INTRODUCTION

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PROCESS WRITE-UP

Preamble

Membrane Hitec is basically a water and waste water equipment supplier and is mainly deals with the Ultra Filtration systems and the membrane. MASM has given the consent to Membrane Hitec to provide raw sewage treatment facility to treat the waste water generated from their Kitchen and various colleges and hostels in their campus at Melmaruvattur. The treated water shall meet the discharge conditions and is used for their internal landscape and develop greenery.

Process Description

The capacity of the plant is 3000 m³ / day and the facilities are designed for 150m³ /hour with additional capacity to treat 250m³ /hour during the peak loads. The system engineering takes care of oil removal system and the biological treatment to bring down the BOD/COD to discharge conditions. Then the treated effluent undergoes the biological stabilization in the aeration tank where the sewage is aerated and produce bio-solids called as Mixed Liquor Suspended Solids (MLSS) which are settled in the secondary clarifier and the clear treated sewage overflows in to the secondary treated sewage tank.

The treated sewage is filtered through a battery of Pressure Sand Filters (PSF) to remove suspended solids from the treated sewage over-flowing from the clarifier. The filtered water is collected in to the UF plant feed tank.

The filtered water is passed through an Ultrafiltration membranes to get rid of residual suspended bio-solids and colloidal particles and is collected in to an UF permeate storage tank. The ultra filtered water from the tank is used for the landscape and to develop green belt. The Ultrafiltration produces clear water by completely removing the suspended solids and reducing the BOD further due to the bio-solids elimination.




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SUMMARY OF EQUIPMENTS

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1. Bar Screen Chamber :

Function of Bar Screen:

The function of the screen is to prevent entry of large solid particles, such as plastics, paper dishes, polythene bags, napkins into the STP (If these items are allowed to enter the STP, they clog and damage the STP pumps and cause stoppage of the plant).

The Screening is achieved by placing a screen made out of vertical bars, placed in the inlet chamber with an inclination.

1. The gaps between the bars may vary between 10 to 20 mm.
2. Bar Screen have two stages.
 - A. Coarse bar screen
 - B. Fine bar screen

A coarse screen has a wider space between the bar screen rods, followed by a fine bar screen with smaller space between the screen rods. These two screens remove all the particles of the respective sizes and the raw sewage flows in to the K-Pack oil removal system. The screenings are removed from the Bar Screen regularly.

If this unit is left unattended for long period of time, it will generate a significant amount of odour, it will also result in head loss and the sewage level in the channel builds up.

2. Oil Skimmers :

Oil skimmers are used to recover free floating Oil & Grease finding its way from the oily wastes discharged from the kitchen waste water. These are installed in Waste water treatment plants to remove oil and grease from the effluent. The oil is separated by difference in the density and the free oil is collected via slotted pipe and is collected in to a drum. There is no chemical treatment involved in the process.

Slotted Pipe oil skimmer:

Slotted pipe oil skimmer is the simplest and most economical of oil skimmer. This is manually operated oil skimmer with half cut pipes which is provided for better removal efficiency of the oil. MOC of the slotted pipe oil skimmer shall be MS, SS304, or SS316 as per the effluent characteristics.

3. Collection Tank :

The collection tank has been provided to accommodate the variation of sewage flow rate. The flow is expected to be at its peak in the morning hours and recede as the time passes by. This facilitates in controlling the flow rate to the Aeration tank around 150m³ / hour and contributes to maintain steady process. The sewage gets uniformly mixed due to the mixing provided coarse air bubbles. The compressed air is passed through a set of coarse air diffusers. There will be some BOD reduction apart from preventing septic conditions.

4. Collection Pit :



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The Collection pit receives sewage from collection pond through a pipe by gravity. From this pit the sewage is pumped to the Aeration tanks. Two submersible pumps have been provided in the collection pit.

5. Aeration Tank :

Function:-

The complete mixed activated sludge process has been the choice due to effective mixing which aids in steady growth of microorganisms and uniform air supply ensuring the proper supply of oxygen for the biological stabilization. The organisms produced by the interaction of air and the organics in the sewage flocculates as they grow due to the effective mixing, and form an activated sludge. This is called as *Mixed Liqueur Suspended Solids*. (*MLSS*). The design criteria takes care of suitable food to microorganisms ratio and ensure solids retention sufficiently achieve the BOD reduction as desired.

The raw sewage is pumped in to the Aeration tank via pumps from the pump collection pit. The sewage is aerated by fine array fine air bubbles generated through the air diffusers provided inside the aeration tanks. The diffusers provided takes care of the oxygen demand as well as the mixing as required in the aeration basin. Two air blowers of adequate capacity pumps air in to the basin via air diffusers. All these biological development takes place in the aeration tanks provided with fine bubble air diffusers and a set of air blowers. The sewage is received in the aeration tanks from the collection pump pit through two centrifugal pumps provided in the system.

6. Secondary Clarifier

The secondary clarifier is circular tank provided with clarifier mechanism and scrapper assembly to separate mlss and the treated sewage. The clarified sludge collects at the bottom of the clarifier and is drawn off from the sludge re-circulation pumps. The clarifier bottom is having a slope towards center so that the sludge can flow smoothly. The MLSS is passed on to the clarifier tank, where the microbes are made to settle at the bottom. The settled microbes are recycled back to the aeration tank.

The sludge is recycled in to the aeration tank so that a suitable F/M ratio is maintained in the aeration tanks. The flow rate can be accordingly adjusted to establish proper conditions in the aeration tanks. The excess sludge is periodically bled off in to the Sludge Drying Beds for further separation of sludge and the water associated with it.

The indivisible combination of the aeration tank, clarifier tank and sludge recirculation constitutes an “activated sludge biological treatment system”. All three must be fine-tuned to act in unison to produce the desired high level of treatment.

7. Sludge Drying Beds

The sludge drying bed has 12 bays and is provided with suitable media and supernatant drain and collection system. The supernatant drains down the bed with different layers of the media and flows in to the collection tank. The sludge remaining on the top of the bed undergoes natural drying and is removed regularly from the beds. The local rainfall and average evaporation rate apart from the excess sludge quantity, has been considered in the flux required for the sizing of the sludge drying bed.



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8. Multi Grade Filter:

The multi-grade filter is a pressure vessel fitted with a manifold to separate feed / filtered water and backwash water. The MGF has three media inside consisting of pebbles / coarse sand and fine sand. The description of media depth and other dimensions of the vessel can be referred in the Table provided in this document. MGF is mainly to reduce the turbidity and suspended solid and generally particle above 30 microns are removed from this type of filters. This makes the water suitable for UF operation. There will be also reduction of BOD to the extent of organic particulates removed.

There are four filters and the feed water from the Feed tank is pumped through the filters and the filtered water is collected in to the UF feed tank. Three filters will be in service and one filter will be on standby. When the filter reaches a pressure drop of 80%, the backwash operation is done to remove the accumulated material and the filtered is rinsed and kept as stand by. The filtered water is used for the backwash. The backwashed water is sent to the sludge drying bed.

9. Ultrafiltration Plant

Ultrafiltration (UF) involves pressure-driven separation of materials from a feed water. The technology achieves separation through sieving and is used to remove particulate and microbial contaminants, but does not remove ions or molecules of low molecular weight. UF plants are automated and have low operational labor requirements. Depending on the feed water quality, these system can require cleaning. UF membranes reject solutes ranging in size from 0.01 microns and larger. The UF membrane process separates molecules in solution on the basis of size. The pore size and molecular weight cut-off (MWCO) are often used to characterize a membrane. The pore size is the nominal diameter of the openings or micro pores in the membrane expressed in micron (micron meters μm). The MWCO is the molecular mass or weight of a solute that rejects greater than 90 percent. The unit of measurement for MWCO is the Dalton (D).

OPERATION PHILOSOPHY OF THE UF SYSTEM

The UF Plant operation consists of following operating steps :

- Filtration
- Flush A
- Backwash
- Forward Flush B

Forward

After the completion of the above four steps, the cycle repeats itself starting with Filtration step again. Membranes are subjected to chemical cleaning as and when required.

❖ FILTRATION



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The UF feed pump will pump the feed water at velocity of approximately 2 meters / second from the fibre side to the shell side of the membrane. It is operated in the Dead End Mode when all turbid particles of suspended solids, colloids and bacteria are trapped across the membrane. Pure water termed permeate comes out of the hollow tube. The process is normally run at a constant pressure across the membrane (Between feed & permeate sides) called Trans Membrane Pressure.

TMP will increase with the operation of the plant with repeated Filtration Cycles. The duration of each cycle is about 30 - 60 Minutes.

It is essential to remove all accumulated particles both on the inside walls of the hollow fibre and also those clogging the pores in the walls of the membrane tubes. This is done as follows.

❖ FORWARD FLUSH A :

The feed water is flushed through the inside of hollow fibre at the end of the Filtration Operation. This will remove all loose particles adhering to the membrane surface. The duration of forward flush is dependent on the feed water quality. Normally, this duration is about 15 - 45 seconds.

❖ BACKWASH :

Permeate water is used for backwash. The backwash pumps the water at a velocity of 2.5 to 3.0 meters / second. The flow rate will vary between 1.5 to 2.0 times the feed flow rate. The operation has a duration of about 30 - 60 seconds.

❖ FORWARD FLUSH B :

Backwash is followed once again by forward flush. Particles driven across the membrane wall during backwash and sticking to the inner walls will be removed during this operation. The duration varies between 15 - 45 seconds.

❖ CHEMICAL CLEANING OPERATION :

Chemical cleaning is required, when the differential pressure across the membrane system increases beyond 0.7 Kg / Cm² and does not drop even after backwashing cycle. UF Permeate is used for the chemical cleaning.

The chemical cleaning operation consists of the following stages :

- ◆ Backwash.
- ◆ Soaking
- ◆ Backwash
- Forward flush

❖ GENERAL :





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- The duration of the various steps in the UF operation is controlled automatically. The timing of each step is preset through the timer.
- The elapsed time of the on going operational step can also seen on the screen.
- The Ultrafiltration Plant is to be operated in “Automatic Mode” from the Local Panel mounted within the UF skid. The operating sequences as well as the duration of each step of the operation can be set and monitored from the operator Interface located on the panel. Various alarms and trips will be provided to monitor the plant operation. These alarms & trips are automatically initiated when there is deviation from the set process conditions.

The operational control of the plant & its monitoring is carried out through a number of graphic screens provided on the operator station. The screens include time settings, Elapsed time of each step of operation, shut down valve status etc.




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EQUIPMENT LIST

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EQUIPMENT LIST				
S.No	Description	Capacity	Qty.	MOC
1	PUMPS			
1A	Aeration Feed Pump	150m ³ /hr @ 14 mt	2	Body - CI, Impeller - CI
1B	Sludge Recycle Pump	100m ³ /hr @ 15 mt	2	Body - CI, Impeller - CF8M
1C	MGF Feed Pump	150m ³ /hr @ 34 mt	2	Body - CI, Impeller - CI
1D	UF Feed Pump	150m ³ /hr @ 34 mt	2	Body - CI, Impeller - SS316
1E	UF Backwash Pump	120m ³ /hr @ 25 mt	2	Body - CI, Impeller - SS316
1F	UF CIP Pump	50m ³ /hr @ 25 mt	1	Body - CI, Impeller - SS316
1G	Oil Skimmer feed Pump	120 m ³ /hr @7mt	2	Body - CI, Impeller - CI
2	DIFFUSSER			
2A	Fine Bubble Diffusser	90mm Dia x 1000mm Long	336	EPDM
2B	Coarse Bubble Diffusser	90mm Dia x 800 mm long	120	PVC
3	OIL SKIMMER			
3A	Oil Skimmer	4.9 x 4.4 x3.9 meter	1	MSEP
4	FLOW METER			
4A	Flow meter	0 - 200 m ³ /hr	2	Teflon
4B	Flow meter	0 - 150 m ³ /hr	1	Teflon
5	AIR BLOWER			
5A	Aeration Air Blower	1250 m ³ /hr@ 0.5 kg/cm ²	3	
5B	Collection Tank Air Blower	500 m ³ /hr @ 0.3 kg/cm ²	2	
6	MGF FILTER			
6A	MGF Filter	2.5mt Dia x 2.7 mt HOS	4	MSEP




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LIST OF CIVIL TANKS

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LIST OF CIVIL TANKS - CLIENT SCOPE				
S.No	Item Description	Dimension	Capacity	Qty
1	Collection Tank	25 x 12 x 3mt Ht, 1:1.5 Slope +0.5mt FB	1000 m ³	1
2	Collection Pit	3.2 x 3.2 x 4.25mt Ht, + 0.3 mt FB	43 m ³	1
3	Aeration Tank	22mt x 22mt x 4.25mt Ht, +0.5mt FB	2060 m ³	1
4	Clarifier	14.5mt Dia x 3.3mt Ht, + 0.5mt FB	545 m ³	1
5	Drying Bed	13.3mt x 5mt + 0.5mt FB	798 m ³	12
6	MGF Feed Tank	8mt x 5mt x 3mt Ht, + 0.3mt FB	120m ³	1
7	UF Feed Tank	5mt x 5mt x 3mt Ht, + 0.3mt FB	75 m ³	1
8	UF Product Tank	5mt x 5mt x 3mt Ht, + 0.3mt FB	75 m ³	1
9	Oil Skimmer Feed Tank	5mt x 5mt x 2mt Ht, + 0.5mt FB	50 m ³	1



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