रा.इ.सू.प्रौ.सं
NIELIT
राष्ट्रीय इलेक्ट्रॉनिकी एवं सूचना प्रौद्योगिकी संस्थान
NATIONAL INSTITUTE OF ELECTRONICS AND INFORMATION TECHNOLOGY
(आई एस ओ 9001:2008 प्रमाणित) (ISO 9001:2008 CERTIFIED)
(इलेक्ट्रॉनिकी और सूचना प्रौद्योगिकी मंत्रालय, भारत सरकार की एक स्वायत्त वैज्ञानिक संस्था)
(Autonomous Scientific Society of Ministry of Electronics and Information Technology, Government of India)
पी.बी. नं. 5, एन.आई.टी. कैम्पस पोस्ट, कालिकट - 673601, केरल, भारत P.B. No. 5, NIT Campus Post, CALICUT - 673 601, KERALA, INDIA
Phone : (0495) 2287266, Fax : (0495) 2287168, Web : http://nielit.gov.in/calicut

5(137) / 2019 / MPW /

Date: 24-02-2020

NOTICE INVITING TENDER

Sealed item rate quotations are invited for **SEWAGE TREATMENT PLANT PHASE-1 IN CAMPUS-1 NIELIT CALICUT**. The tender document is available in our web site www.nielit.gov.in/calicut. Interested Contractors having adequate experience in the relevant field are required to submit their sealed tenders to the undersigned with tender fee of **Rs 500/-** and EMD of **Rs. 16,500/- (Rupees sixteen thousand five hundred only)** both by Online deposit slip / Net banking / CDM deposit to NIELIT account (***Account No 10401158037, SBI NITC branch, IFSC SBIN0002207***) or demand draft drawn in favour of the Director, National Institute of Electronics and Information Technology, Calicut (payable at State Bank of India, NITC Branch). The sealed quotations to be submitted with reference No. and due date subscribed on the envelope. The quotations should reach to the office of the Executive Director, National Institute of Electronics and Information Technology, NIT Campus Post, Calicut-673601, **on or before 01.00 PM of 11-03-2020** and will be opened at **2.00 PM** on the same day in the presence of the tenderers who wish to be present. The Quotation not accompanied with EMD and Quotation Fee shall be rejected.

For DIRECTOR

Encl: 1. Schedule of work
2. Scope of work
3. Drawings for the work
4. Terms and conditions

SCOPE OF WORK

- ✓ Site clearing & earth excavation work to construct the mentioned underground tanks
- ✓ On site delivery of Construction materials such as Steel, Cement, Sand, Metal and accessories required for shuttering work.
- ✓ Plain Cement Concrete – PCC work at the bottom layer as a base for RCC work
- ✓ Steel reinforcement work & shuttering work for Tanks & Covering Slabs
- ✓ Concreting work/ RCC work of Tanks & Covering Slabs
- ✓ Supply of pipes & fittings and plumbing work including earth excavation required for connecting plumbing line from existing wastewater outlet line outside the building to new tanks, core cutting the RCC walls with precision and inter connecting the new tanks
- ✓ Plastering work of interior surface walls and bottom surface of all tanks and smoothening the surface.
- ✓ Filling the gap around the tanks with excavated excess earth.
- ✓ Supply & Fixing on Man-hole and SS make screen.
- ✓ All travelling, Freight, Loading & Unloading expenditures.
- ✓ Defect Liability Period of 1year limited to workmanship of RCC tank work.

NIELIT CALICUT
GSTIN : 32AAATD0315M1Z6
Post Box No. 5, P. O. NIT Campus
CALICUT – 673601, Kerala
Tel.: 0495-2287266, 2287166

SCHEDULE OF WORK- SEWAGE TREATMENT PLANT PHASE - 1

Sl No.	Description	qty	unit	rate	Amount
	SCREENING, OIL AND GREASE TRAP CHAMBER.				
	Earth work in excavation by mechanical means (Hydraulic excavator)/manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including getting out and disposal of excavated earth lead upto 50 m and lift upto 1.5 m, as directed by Engineer-incharge				
	Hard rock (blasting prohibited)	35.12	cum		
	Filling available excavated earth (excluding rock) in trenches, plinth,sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	32.64	cum		
	FORM WORK				
	Centering and shuttering including strutting, propping etc. and removal of form for all heights :				
	Foundations, footings, bases of columns, etc. for mass concrete	0.96	Sqm		
	Walls (any thickness) including attached pilasters, butteresses, plinth and string courses etc.	3.6	Sqm		
	Suspended floors, roofs, landings, balconies and access platform	0.36	Sqm		
	Concrete work				
	Providing and laying in position cement concrete of specified grade excludingthe cost of centering and shuttering - All work up to plinth level :				
	"1:2:4 (1 cement : 2 coarse sand (zone-III) : 4 graded stone aggregate 20 mm nominal size).	0.656	cum		
	PCC- 1:5:10 (1 cement : 5 coarse sand (zone-III): 10 graded stone Aggregate 40 mm nominal size).	0.24	cum		
	STEEL REINFORCEMENT				
	Steel reinforcement for R.C.C. work including straightening, cutting,bending, placing in position and binding all complete upto plinth level.				
	Thermo-Mechanically Treated bars of grade Fe-500D or more.	50	kg		
	FINISHING				
	12 mm cement plaster of mix :				
	1:6 (1 cement: 6 coarse sand)	4.68	Sqm		
	12 mm cement plaster finished with a floating coat of neat cementof mix :				
	1:4 (1 cement: 4 fine sand)	4.68	Sqm		

NIELIT CALICUT
GSTIN : 32AAATD0315M1Z6
Post Box No. 5, P. O. NIT Campus
CALICUT – 673601, Kerala
Tel.: 0495-2287266, 2287166

	DRAINAGE				
	Supplying and fixing C.I. cover without frame for manholes :				
	455x610 mm rectangular C.I. cover (light duty) the weight of the cover to be not less than 23 kg	1	no		
	Supply of poly vinyl chloride (pvc) pipes (10 guage) & fittings and plumbing work including earth excavation required for connecting plumbing line from existing wastewater outlet line outside the building to new tanks.	20	mtr		
	Bar screen (same size, specification, and placed in the same position as mentioned in the drawing)	1	nos		
	Total				

Sl No	Description	qty	unit	rate	amount
	COLLECTION TANK				
	Earth work in excavation by mechanical means (Hydraulic excavator)/manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including getting out and disposal of excavated earth lead upto 50 m and lift upto 1.5 m, as directed by Engineer-incharge				
	Hard rock (blasting prohibited)	156.75	cum		
	Filling available excavated earth (excluding rock) in trenches, plinth,sides of foundations etc. in layers not exceeding 20cm in depth,consolidating each deposited layer by ramming and watering, lead upto 50 m and lift upto 1.5 m.	97.29	cum		
	Concrete work				
	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level :				
	"1:2:4 (1 cement : 2 coarse sand (zone-III) : 4 graded stone aggregate 20 mm nominal size).	9.276	cum		
	PCC - 1:5:10 (1 cement : 5 coarse sand (zone-III): 10 graded stone Aggregate 40 mm nominal size).	3.264	cum		

NIELIT CALICUT
GSTIN : 32AAATD0315M1Z6
Post Box No. 5, P. O. NIT Campus
CALICUT – 673601, Kerala
Tel.: 0495-2287266, 2287166

	FORM WORK				
	Centering and shuttering including strutting, propping etc. and removalof form for all heights :				
	Foundations, footings, bases of columns, etc. for mass concrete	11.25	Sqm		
	Walls (any thickness) including attached pilasters, butteresses, plinth and string courses etc.	32.2	Sqm		
	Suspended floors, roofs, landings, balconies and access platform	11.25	Sqm		
	STEEL REINFORCEMENT				
	Steel reinforcement for R.C.C. work including straightening, cutting,bending, placing in position and binding all complete upto plinth level.				
	Thermo-Mechanically Treated bars of grade Fe-500D or more.	1500	kg		
	FINISHING				
	12 mm cement plaster of mix :				
	1:6 (1 cement: 6 coarse sand)	54.7	Sqm		
	12 mm cement plaster finished with a floating coat of neat cementof mix :				
	1:4 (1 cement: 4 fine sand)	54.7	Sqm		
	DRAINAGE				
	Supplying and fixing C.I. cover without frame for manholes :				
	455x610 mm rectangular C.I. cover (light duty) the weight of the cover to be not less than 23 kg	1	no		
	Total amount in Rs.				
Discount , if any					
GST @_____%					
Any other levies/charges					
Total amount (including all charges) in Rs.					
Payment Terms					
Time required to complete the work					
Quotation Validity					
Warranty					
Others, if any					
GST Registration No.					
Email ID					
Mobile No.					

- NB: Contractor may visit the site and inspect before quoting to know the actual site condition.
- NB: The work will be carried out on measurement basis, Actual measurement may vary.
- NB: The work inclusive of all materials and labour.

NIELIT CALICUT

TERMS & CONDITIONS FOR WORKS

CDS/CA/6.3.0/F 07/R2

1. The quotation shall be in the prescribed form and shall be valid for a minimum period of three months from date of its opening. Should the tenderer modify or withdraw his quotations within the said period of 3 months, from the date of its opening, the earnest money deposited by the tenderer shall be forfeited.
2. The Director shall be the Accepting officer, hereinafter referred to as such, for the purpose of the contract.
3. All rates shall be quoted in the prescribed form.
4. All the rates must be filled-in, in both words and figures.
5. The quotations shall be accompanied by the Earnest Money **Rs. 16,500/- (Rupees sixteen thousand five hundred only)** in the form of Online deposit slip / Net banking or demand draft drawn in favor of the Director, National Institute of Electronics and Information Technology, Calicut, payable at State Bank of India, NITC Branch.
6. On acceptance of the quotation, earnest money will be treated as part of the Security Deposit. Failure of the successful tenderer to carry out the quoted work shall entail in forfeiture of the total earnest money/security deposit.
7. The amount of security deposit including the amount of earnest money shall be 5% of the tendered cost of the work. Upon acceptance of the quotation, the successful tenderer shall within 10 days of the written acceptance of his quotation, deposit with NIELIT, Calicut an amount equivalent to 5% of the value of the works at the accepted rates.
8. NIELIT Calicut will return the earnest money without any interest to unsuccessful tenderers.
9. The time of completion of the work shall be by **60 Days**
10. In case the Contractor fails to complete the work on or before the stipulated completion time, he shall be liable to pay 1% of the total order value as liquidated damages for each day of default.
11. If the work cannot be completed within the stipulated completion time due to any unforeseen or unavoidable reasons beyond the control of the Contractor, he shall seek prior permission from the Competent Authority, well before the stipulated completion time itself, for delayed execution of the work, clearly stating the reasons for delay as well as fresh date of completion.
12. There will be 15 days' time from the date of issue of the acceptance letter for commencement of work.
13. The defect liability period will be of **one year** duration, upon satisfactory completion of which, the security deposit will be refunded to the tenderer.
14. The tenderer is required to comply with the provision of all the Acts/legislations of the Govt. relating to the Labor laws, and the rules and regulations made there under from time to time and to submit at the proper time, all particulars and statements required to be furnished to the Labor authorities concerned.
15. The tenderer shall give all necessary personal superintendence during the execution of the works.
16. No materials shall be supplied by NIELIT Calicut except those mentioned.
17. The contractor shall make his own arrangements for water required for the work and nothing extra will be paid to him for the same. If the contractor is unable to make his own arrangements, on written request, the Centre may consider water supply for the work and 1% of the value of the total work done towards water charge shall be deducted from the bill.
18. Payment shall be released after satisfactory completion of the work. The work is to be carried out in accordance with the CPWD specifications, rules and regulations.
19. The successful tenderer, within one week of award of the work to him shall submit to the Director an illustrative and suitable colored work-time chart.
20. The materials to be used in electrical installations shall be of approved make and quality as specified in the schedule of quantities and shall conform strictly to the relevant Indian Standard Specifications.

21. (1) During the execution of work, unless otherwise specified, the contractor shall at his own cost provide the materials and execute all shoring, timbering and structures, excavations and works and shall ensure that no damage, injury or loss is caused or is likely to be caused to any person or property.
    (2) The Contractor shall be responsible to take all precautions to ensure the safety of the public employee/property and shall post watch and guard as may be required by the Engineer-in-charge.
    (3). The Contractor shall employ adequate number of technically qualified personnel as per Central Government/CPWD Rules for proper supervision of the work.
    (4) The technical staff should be available at the site, whenever required by NIELIT Calicut to take instructions.
    (5) In case the contractor fails to employ these technical staff as aforesaid he shall be liable to pay a reasonable amount not exceeding Rs.750/- for each month of default.
22. Sales tax or any other tax on materials in respect of his contract shall be payable by the contractor and NIELIT Calicut shall not entertain any claim whatsoever in this respect.
23. The work shall be carried out as per the drawing showing the layout of internal electrical installation. The NIELIT Calicut reserves the right to make any changes or modifications in the layout. No claim from the contractor on account of any change in layout shall be entertained by NIELIT Calicut.
24. The Contractor shall prepare necessary drawings for approval from Electrical Inspectorate.
25. NIELIT Calicut is not bound to accept the lowest quotation and the accepting officer may reject in part or in full or all the quotations without assigning any reasons.
26. In the event of any dispute, the decision of the accepting officer shall be final and binding on all concerned.
27. Statutory taxes/levies, viz., Income Tax, GST etc. shall be deducted at source as per the prevailing rules.
28. The contractor shall comply with the requirements of all the prevailing tax laws in force such as Income tax act, GST etc.

24/2/2020

For NIELIT CALICUT

The above terms and conditions accepted
Date:

(Signature, Name and Address of the Contractor)

INTRODUCTION

The proposed sewage treatment facility is for the effluent generated from their Canteen working in NIELIT main campus, which they identify as Campus-I. The Canteen Usage capacity is 600. Though, the campus currently has a population of about 350, considering the expansion plans, the clients have requested for the design of the treatment facility considering 600 occupants. The National Building Code, 2016 specifies a water requirement of 45 l/head/day for educational institutions without boarding facility and 135 l/head/day with boarding facility. Though NIELIT is a residential institution, it has another campus (identified as Campus-II) where student hostels located. But, the students use the canteen in Campus-I as their sole dining facility. Also, the ladies' hostel near the canteen may also use the treatment facility. Thus, a higher water use rate of 70 l/head/day (approximately, 1.5 times that for institutions without boarding facility) was adopted for the design. Thus, the design flow considered is 42000 l/day (600 persons × 70 litres/person/day).

THE PROPOSED TREATMENT TRAIN

The treatment system proposed for the case is shown in figure 1.

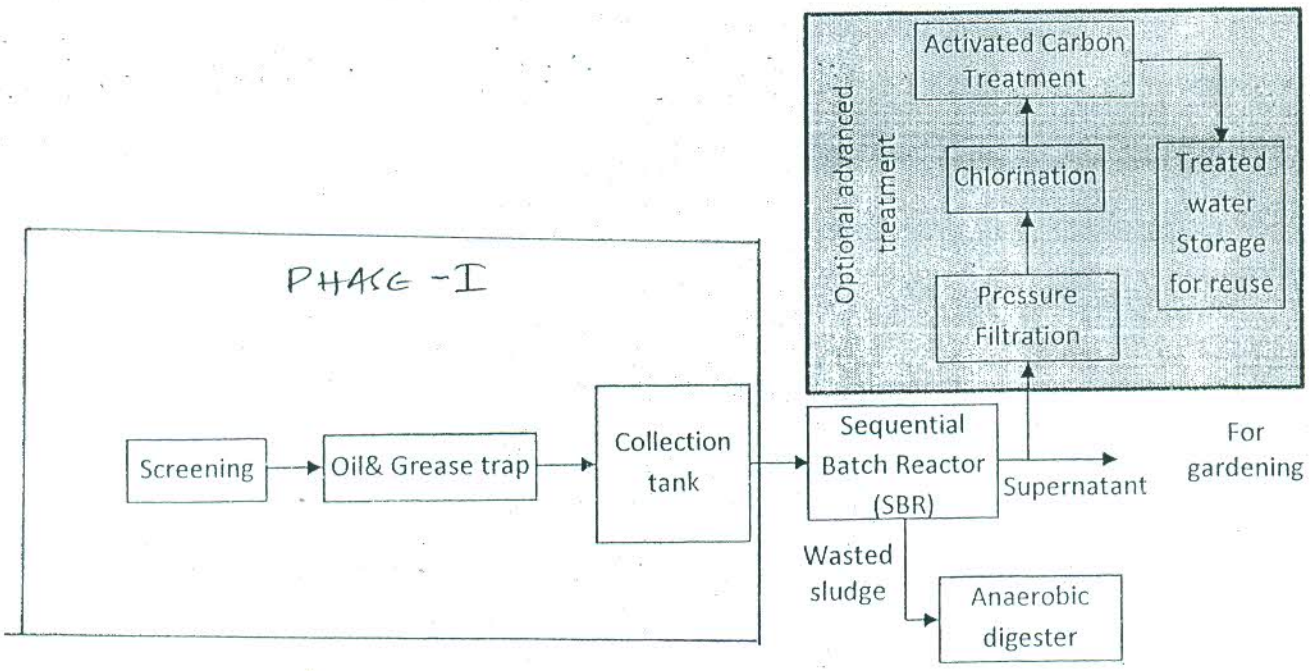


Figure 1: Proposed wastewater treatment system for NIELIT

Collection tank PHASE - I

A collection tank is suggested as the SBR is loaded intermittently and because the sewage generation rate is not constant. The collection tank that has capacity to store 50% of the sewage generated after expansion is made was provided. The details are given in table 2 and Sheet 1.

Table 2: Design details of Collection Tank

Sl No:	Details	Magnitude	Unit	Remarks
1	Detention time	12	h	
2	Volume of Tank	21	m^3	
3	Assuming Water depth	1.9	m	
4	Assuming Freeboard	0.4	m	
5	Total Tank Depth	2.3	m	
	Dimensions of tank			
6	Length of tank	4.5	m	provided
7	Width of the tank	2.5	m	provided

SBR

The campus currently has only 350 occupants. The hostel for male students is in campus 2. Initially, the wastewater from the canteen alone is expected to reach the treatment unit. Assuming 45lpcd and 350 users, the volume of sewage is 15.75 m^3. To handle this sewage, only one SBR tank was suggested. When expansion happens, another similar tank can be installed that would operate in cycles. The design calculations are shown in table 3. No separate mechanical mixer is suggested. The aeration rate is increased to provide mixing also. Details are given in Sheet 2.

Decant

During this phase, a decanter is used to remove the clear supernatant effluent. Once the settle phase is complete, a signal is sent to the decanter to initiate the opening of an effluent-discharge valve. There are floating and fixed-arm decanters. Floating decanters maintain the inlet orifice slightly below the water surface to minimize the removal of solids in the effluent removed during the decant phase. Floating decanters offer the operator flexibility to vary fill and draw volumes. Fixed-arm decanters are less expensive and can be designed to allow the operator to lower or raise the level of the decanter. It is optimal that the decanted volume is the same as the volume that enters the basin during the fill phase. It is also important that no surface foam or scum is decanted. The vertical distance from the decanter to the bottom of the tank should be maximized to avoid disturbing the settled biomass.

Idle

This step occurs between the decant and the fill phases. The time varies, based on the influent flow rate and the operating strategy. During this phase, a small amount of activated sludge at the bottom of the SBR basin is pumped out—a process called wasting

DESIGN OF INDIVIDUAL UNITS

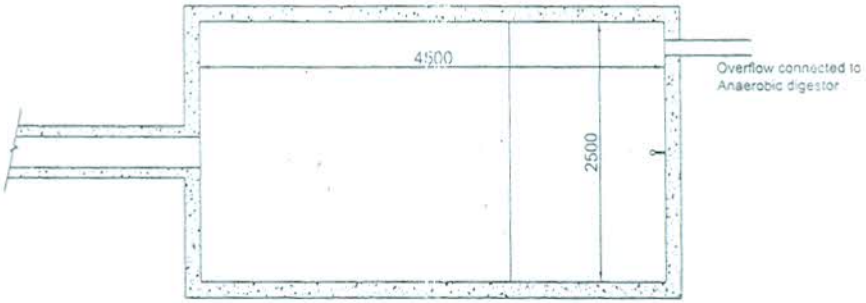
Screen, Oil& Grease Tank, Grit Chamber PHASE-I

A single unit was provided having provisions for screening, grit removal and Oil& Grease removal. Details are given in table 1 and Sheet 3.

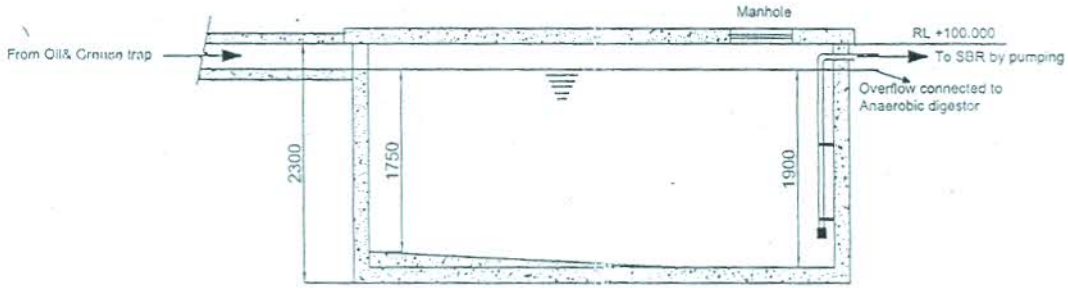
Table 1: Design details of Screen/Grit Chamber/Oil & Grease tank

Sl No:	Details	Magnitude	Unit	Remarks
1	Detention Time	22	min	
2	Volume	0.64	m^3	
3	Assuming Water depth	0.6	m	
4	Freeboard	0.3	m	
5	Total Depth	0.9	m	
6	Surface Area of Screen Chamber	0.71	m^2	
7	Assume width of the Chamber	0.6	m	
8	Length of the chamber	1.2	m	provided
	Providing 10 mm dia bars at 20 mm spacing			Provide a spacing of 25 mm at both the ends
9	No of bars to be provided	19	Nos	
10	Clear width of opening	0.41	m	

Phase - I



PLAN



SECTIONAL ELEVATION

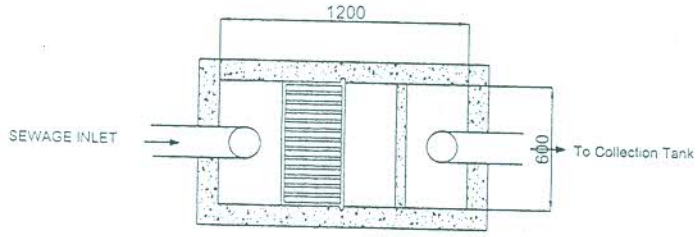
FUNCTIONAL DESIGN OF COLLECTION TANK

FUNCTIONAL DESIGN OF SEWAGE TREATMENT SYSTEM FOR NATIONAL INSTITUTE OF ELECTRONICS AND INFORMATION TECHNOLOGY (NIELIT), KOZHIKODE

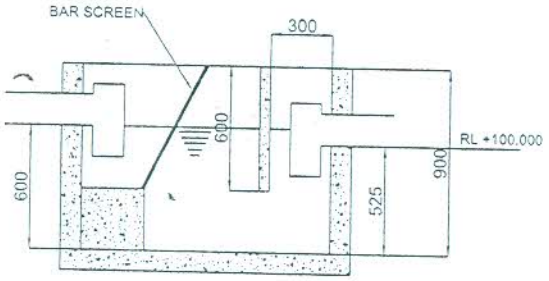
Note:	CLIENT	CONSULTANT	FUNCTIONAL DESIGN OF COLLECTION TANK
1. The tank shall be below ground 2. The outflow from Oil and Grease trap shall be conveyed through covered channel to collection tank 3. The tank bottom shall have a slope of 1:20 towards the outlet end 4. The overflow from the tank shall be connected to the inlet of anerobic digester using 1500mm ϕ pipe	EXECUTIVE DIRECTOR NATIONAL INSTITUTE OF ELECTRONICS AND INFORMATION TECHNOLOGY (NIELIT) NIT CALICUT CAMPUS P. O., KOZHIKODE	DEPARTMENT OF CIVIL ENGINEERING NIT CALICUT, KOZHIKODE- 673 601	Job. No: CED/CON/GKV/AEV/2019415 dt 22/10/2019 Sheet No: 1 Date: 20/01/2020 Design by: George K. Varghese Verified by: Aswathy E. V.

PHASE - I

SCREEN CUM OIL AND GREASE TRAP

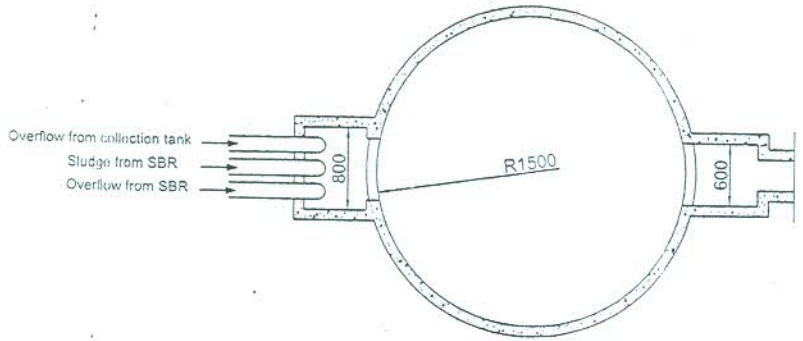


PLAN

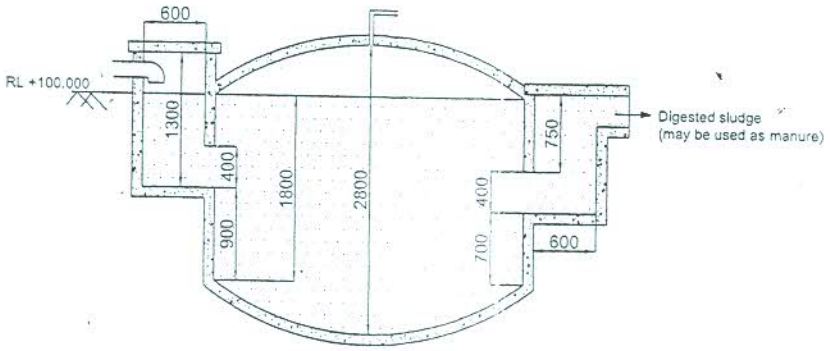


SECTIONAL ELEVATION

ANAEROBIC DIGESTER



PLAN

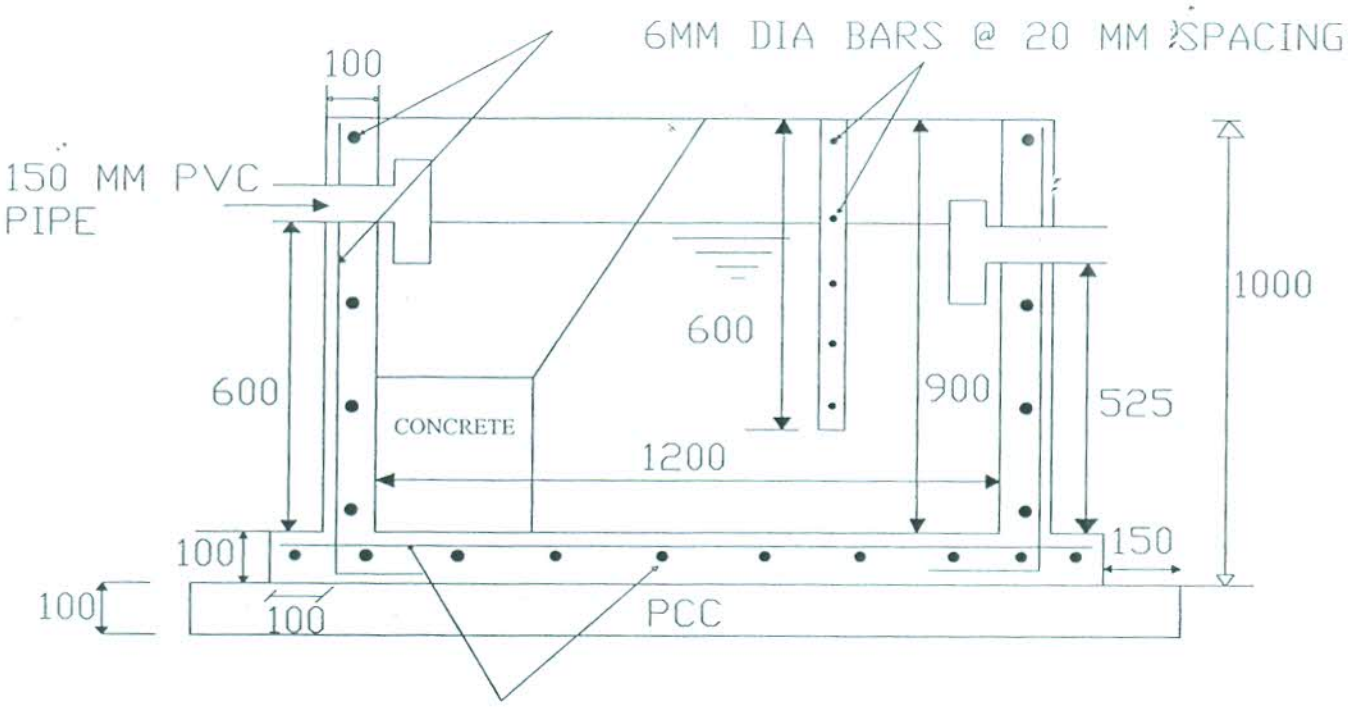


SECTIONAL ELEVATION

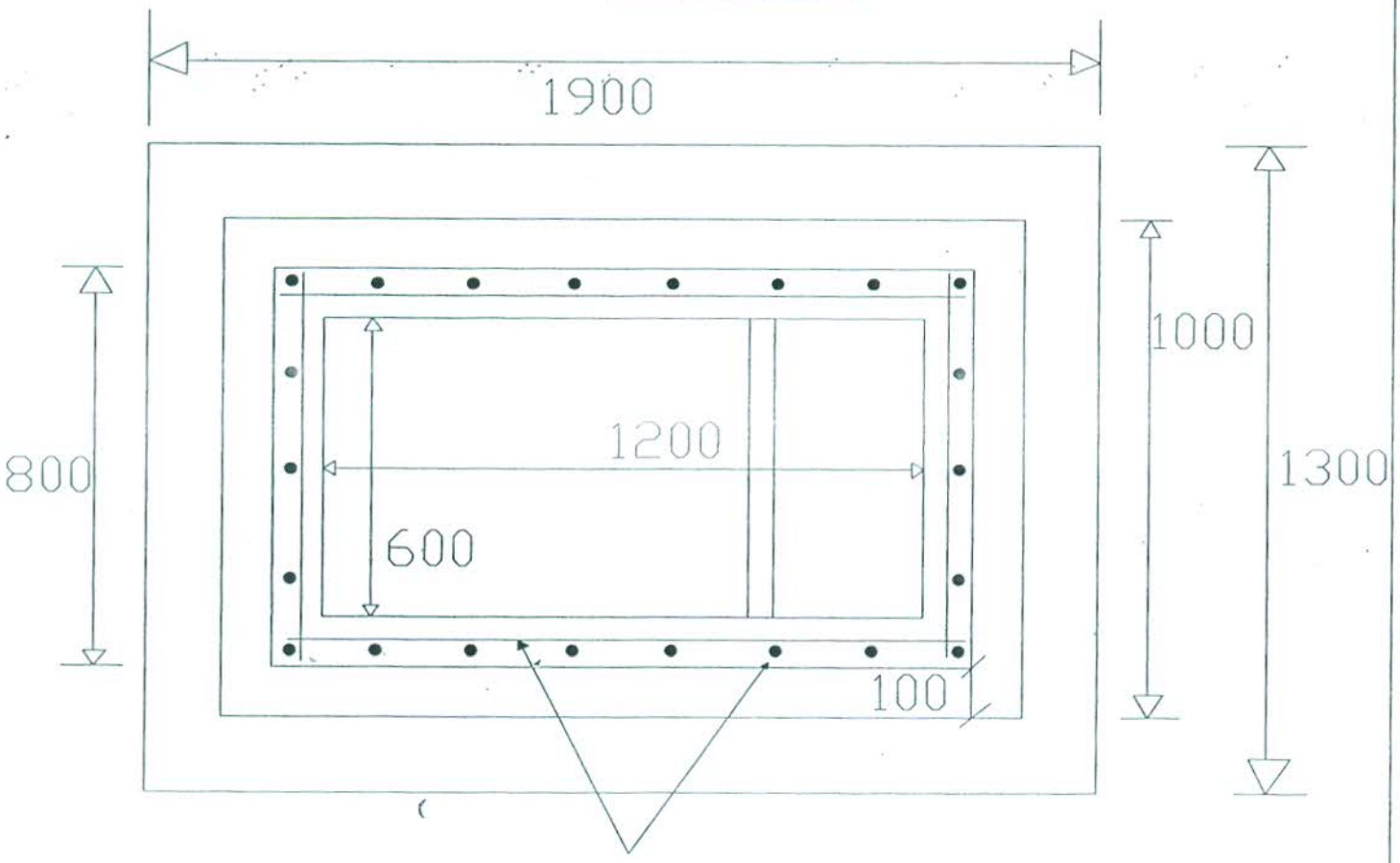
FUNCTIONAL DESIGN OF SEWAGE TREATMENT SYSTEM FOR NATIONAL INSTITUTE OF ELECTRONICS AND INFORMATION TECHNOLOGY (NIELIT), KOZHIKODE

Note:	CLIENT	CONSULTANT	FUNCTIONAL DESIGN OF OIL& GREASE TRAP, ANAEROBIC DIGESTER
1. The scale adopted for Oil and Grease Trap is twice that for Anaerobic digestor 2. All sewage pipes shall be connected to Oil and Grease Trap	EXECUTIVE DIRECTOR NATIONAL INSTITUTE OF ELECTRONICS AND INFORMATION TECHNOLOGY (NIELIT) NIT CALICUT CAMPUS P. O., KOZHIKODE	DEPARTMENT OF CIVIL ENGINEERING NIT CALICUT, KOZHIKODE- 673 601	Job. No: CED/CON/GKV/AEV/2019415 dt 22/10/2019 Sheet No: 3 Date: 20/01/2020 Design by: George K. Varghese Verified by: Aswathy E. V.

SCREEN CUM OIL AND GREASE TRAP



SECTION

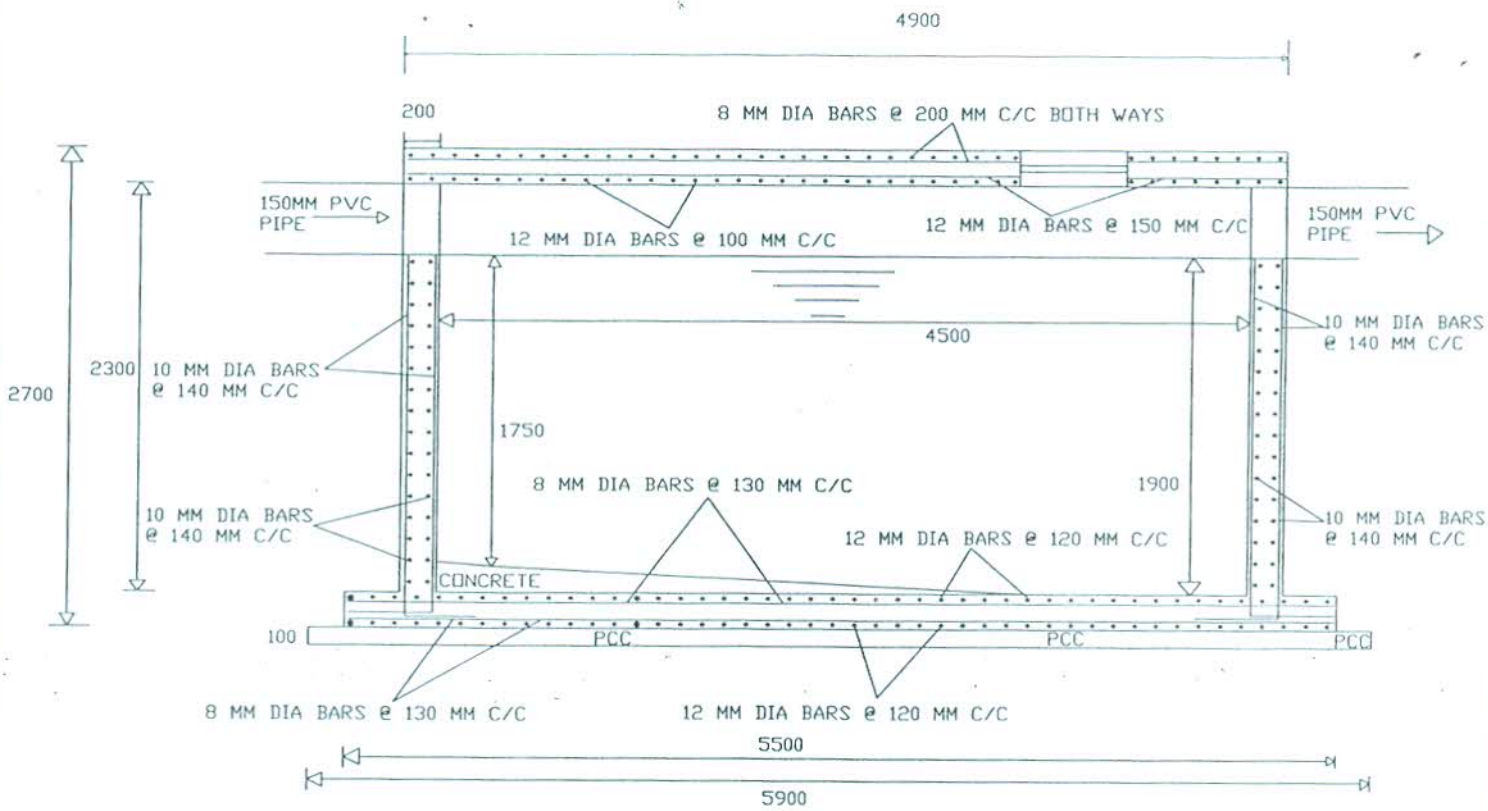


10MM DIA BARS @ 20MM SPACING

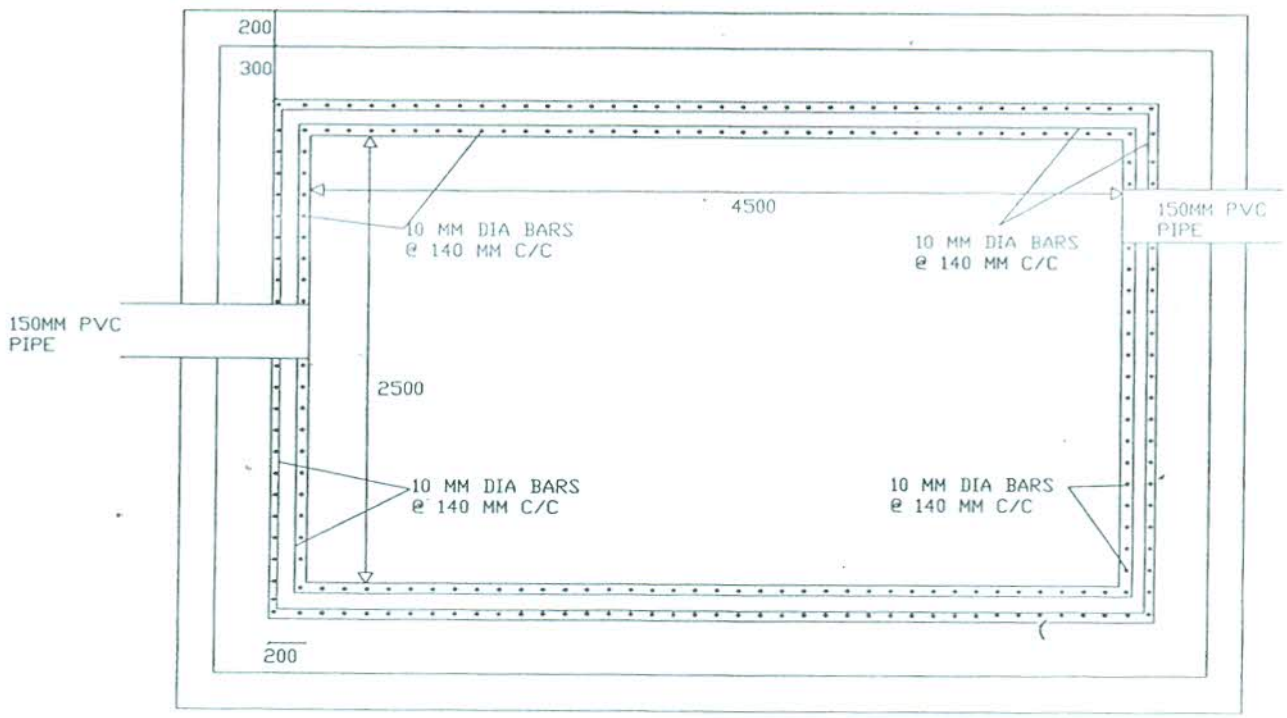
PLAN

All dimenssions are in MM

COLLECTION TANK



SECTION



PLAN

All dimenssions are in MM