

INDORE SAHAKARI DUGDH SANGH MARYADIT

CHANDA TALAWALI, MANGLIA-INDORE(M.P)-453771

AN ISO 22000: 2005 & 9001:2008 CERTIFIED ORGANIZATION

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Ref No: ISDSM/PUR/025

Date: 05/10/2019

E-TENDER NOTICE (1st call)

Online e-tenders (Two Bid System) are invited from the Manufacturers/Suppliers/contractors who completed Installation, Commissioning of different capacities ETPs (Dairy affiliated) on turnkey basis to other Co-operative Dairies/G.O.I/State Govt. Department & its undertaking Dairies for the **Design,Supply, Installation, Civil construction work and Commissioning of ETP Plant for dairy plant Jhabua(50 KLPD) & Burhanpur(15 KLPD) and for milk chilling centre Kannod (Khategaon) (20 KLPD), Chapada(15 KLPD), Dudhi(15 KLPD), Badwah(15 KLPD), , Phoolgawadi (Dhar) (30 KLPD) and Petalawad(20 KLPD) situated in different cities of M.P (Indore Division) working under Indore Sahakari Dugdha Sangh Maryadit, Indore M.P.** The tender notice, tender documents, containing the terms and conditions can be purchased online & downloaded through following website <http://www.mptenders.gov.in> from 05/10/2019, 11:00AM onwards upto 25/10/2019 at 02.00PM. The tender will be submitted from 05/10/2019, 12:00Noon onwards upto 25/10/2019 at 02.00PM. The tender will be opened on 26/10/2019 at 03.00PM.The detailed Tender Form can be seen (only for reference) at our H.O website:www.mpcdf.gov.in. For digital Signature please contact M.P. State Electronic Development Corporation Ltd., Area Hills, Bhopal on toll free no. 18002588684. Corrigendum/Amendment if any to this publication would appear only on the above mentioned websites and will not be published else where.

CHIEF EXECUTIVE OFFICER

INDORE SAHAKARI DUGDH SANGH MARYADIT

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Indore Sahakari Dugdh Sangh Maryadit, Chanda Talawali, Indore Invites E-Tender (Two Bid System) for Design, Supply, Installation, Civil construction work and Commissioning of Dairy Affiliated ETP Plant different capacities for dairy plant Jhabua & Burhanpur and for milk chilling centre Kannod (Khategaon), Chapada, Dudhi, Phoolgawadi (Dhar), Badwah and Petalawad working under Indore Sahakari Dugdha Sangh Maryadit, Indore M.P

The tender notice, tender documents, containing the terms and conditions can be purchased online & downloaded through following website <http://www.mptenders.gov.in>

TENDER DOCUMENT

Schedule I	:	General Terms & Conditions.
Schedule-II	:	Specifications
Schedule III	:	SPECIAL CONDITIONS OF CONTRACT
Schedule IV	:	Price Schedule
Schedule V	:	ANNEXURE-I to VIII
Tender Cost	:	Rs.5000/- (Rupees five thousand only)
EMD	:	Rs.400000/- (Rupees Four Lakh only)
Tender Document Download/Sale Start Date	:	05/10/2019 Time 11:00 AM Onwards
Tender Document Download/Sale End Date	:	25/10/2019 Time 02:00 PM
Bid Submission Start Date	:	05/10/2019 Time 12:00 Noon Onwards
Bid Submission End Date	:	25/10/2019 Time 02:00 PM
Bid Opening Date	:	26/10/2019 Time 03:00 PM
Place of opening of Tender	:	Office of the Indore Sahakari Dugdha Sangh Maryadit, Indore.
Period of completion	:	9 months from the date of confirm order.
Address for Communication	:	The CEO, Indore Sahakari Dugdha Sangh Maryadit , Chanda Talawali, Manglia, Indore 453771.

CHIEF EXECUTIVE OFFICER

-:INTRODUCTION:-

Indore Sahakari Dudh Sangh Maryadit is having their Milk processing Plant at Jhabua & Burhanpur and milk chilling centre at Phoolgawadi (Dhar), Chapada (Bagli), Petlawad (Jhabua), Kannod (Khatagaon). Doodhi (Dhamnod) and Badwah (Khargone) having milk processing/ chilling capacities as under:-

Name of dairy plant	Capacity
Dairy Plant Jhabua and Milk Chilling Centers-Petlawad, Phoolgawadi (Dhar) and Kannod (Khatagaon).	20 KLPD
Dairy Plant Burhanpur and Milk Chilling Centere-Chapada (Bagali), Badwah and Dudhi (Dhamnod)	10 KLPD

The dairy plant involves processing of raw milk and manufacturing of products such as consumer milk, Ghee, Butter etc using processes such as chilling, pasteurization, and homogenization. The major process activities are as under:-

1. Raw Milk receiving from various formers/ villagers
2. Grading, Weighing & Sampling
3. Segregation & Separation of Sour
4. Milk Pasteurization
5. Milk Standardization/ Homogenization
6. Milk Storage
7. Milk Chilling
8. Milk Packaging & distribution

Milk Chilling Centre involves only milk chilling and washing of utensils and tanks.

. The effluents are generated from milk processing through milk spillage, drippings, washing of cans, tankers bottles, utensil, equipments and floors.

Indore Sahakari Dugdh Sangha Maryadit intends to develop the Effluent Treatment Plant to treat the effluent generated from various milk processing activities of above Dairy Plant and Milk Chilling Centreat for following capacities to treat the effluent.

Name of dairy plant	Capacity of ETP to be installed
Dairy Plant Jhabua	50 KLPD
Milk Chilling Centers-Phoolgawadi (Dhar)	30 KLPD
Milk Chilling Centers- Petlawad and Kannod (Khatagaon).	20 KLPD
Dairy Plant Burhanpur and Milk Chilling Centers-Chapada (Bagali), Badwah and Dudhi (Dhamnod)	15 KLPD

**SCHEDULE-(I) -
GENERAL TERMS AND CONDITIONS**

1.0 E-Tenders are invited from the reputed Manufacturers/Suppliers/contractors having experience in design , construction, fabrication , supply, erection , testing, commission and operation on contract for the following effluent treatment plant on Turnkey basis:-

Name of dairy plant	Capacity of ETP to be installed
Dairy Plant Jhabua	50 KLPD
Milk Chilling Centers-Phoolgawadi (Dhar)	30 KLPD
Milk Chilling Centers- Petlawad and Kannod (Khatagaon).	20 KLPD
Dairy Plant Burhanpur and Milk Chilling Centers-Chapada (Bagali), Badwah and Dudhi (Dhamnod)	15 KLPD

2.0. SCOPE OF WORK:

Design, construction, fabrication, supply, erection, testing, commission and operation of following effluent Treatment plant:-

Name of dairy plant	Capacity of ETP to be installed
Dairy Plant Jhabua	50 KLPD
Milk Chilling Centers-Phoolgawadi (Dhar)	30 KLPD
Milk Chilling Centers- Petlawad and Kannod (Khatagaon).	20 KLPD
Dairy Plant Burhanpur and Milk Chilling Centers-Chapada (Bagali), Badwah and Dudhi (Dhamnod)	15 KLPD

.On Turnkey basis **with one year operation & maintenance of the plant.**

.To provide training to operate ETP to Dairy personnel.

.To get approval required Consent To Establishment (CTE) and Consent To Operate (CTO) from MPPCB.

.Official renewal of water consent issued to industry by MPPCB, Contractor will have to submit two consecutive quarterly treated Sewage sample report from MPPCB /MOEF Laboratory with respect to standard laid down by MPPCB under IS:2490. Official fees for consent renewal will be paid by Indore Sahkari Dugdh Sangh Maryadit on submission of proper receipt.

2.1 The Bidders are requested to go through the tender document's instructions and various terms and conditions, it may be noted that no conditions or stipulations to the contrary or which are inconsistent will be not be accepted. **Bidders are required to ensure that all such parts of the tender document like schedules etc. (duly filled-in & signed) except the Price Bid, are submitted with the "Technical Bid".**

3.0 TENDER SUBMISSION

3.1 The tender document can be purchased by downloading from the website www.mptenders.gov.in by payment of the cost of the tender document Rs. 5000/- **till date 25/10/2019 upto 2:00P.M...** The tender document is also available on the website www.mpcdf.gov.in of M.P.Co-Operative Dairy Federation only to read the terms & conditions,scope of works etc. as a reference only.

3.2 The **Technical Bid Physical** will comprised of supporting documents as per **Clause 5.0 & 5.6** should be submitted personally or send by Registered post, so as to reach the office of the Chief Executive Officer Indore Sahakari Dugdha Sangh , Dairy Plant, Manglia, Indore (M.P.) not later than 25/10/2019 up to **2:00 p.m.** Indore Sahakari Dugdha Sangh will not be responsible for any postal delay. Envelop to be superscribed with "**TECHNICAL BID- Physical** "& tender for E.T.P- **Dairy plant and Chilling Centre of ISDS..**

3.3 All the tenderers are required to deposit Earnest Money on line. As the tender will be finalized the tenderers will get back the EMD from MP TENDERS (as per their norms) on line. . Submissions of earnest money by any other mode than specified above shall not be acceptable and the related tender shall not be eligible for consideration.

3.4 The "Technical Bid Online" will comprised of supporting documents as per Clause 5.0& 5.6 should be submitted on line on website www.mptenders.gov.in in Envelop-(B)-alongwith scanned copies of the Annexures (I) to (VII) & the documents required for fulfilling eligibility criteria for "Technical Bid" .

3.5 The Bidders should submit "Price Bid" online on website www.mptenders.gov.in in the specified "schedule-(IV) of Price Bid Format" in Envelop-(C).The date and for opening Price Bid will be informed seperately to the eligible bidders whose EMD and technical bid documents are found as per the eligibility criteria of tender conditions..Physical submission of Price Bid will be rejected outrightly & tenderer submission will also be rejected.****

3.6 Technical Bids (Physical) should be submitted in properly sealed conditions.

3.7 Technical Bids (Physical) received by E-mail /Telegram/Fax will not be considered.

3.8 Technical Bids (Physical) received after the scheduled date/ time will not be considered..

3.9 Individual signing the tender or other related documents must specify whether he has signed as -

- a) The sale proprietor of the unit or legally constituted attorney of such proprietor. .
- b) A partner of the firm if it is a partnership firm, in which case he must have valid power of attorney.
- c) Authorized signatory in case of Registered/Limited company/organization.

3.10 The Bidders should clearly state in their offers the address for communication together with theirTelegraphic / e-mail / Telephone and Fax No. Any change in the address should immediately be notified to the Chief Executive Officer,Indore Sahakari Dugdha Sangh (M.P.), so that the correspondence thereafter may be made at the new address.

3.11 Chief Executive Officer,Indore Sahakari Dugdha Sangh will have discretion to place full, partial or split orders for any part/parts of the work /works of the tender in case rates of more than one party are lowest & similar etc.

3.12 Joint ventures are not permitted to participate in Tenders.

3.13 Scanned copy of E.M.D. deposit transaction receipt to be uploaded online and original to be submitted with the "Technical Bid" (Physical) of the tender otherwise the Bid shall be liable for rejection.

3.14 Bidders downloading the tender document from the website will have to Sign the declaration as described at "Annexure-(VI).The Bidder is bound to accept the conditions of the declaration .

3.15 The "Technical bids" will be opened initially for evaluation as per tender specifications and other requirements as specified in the clause-(5) , Bidder's Technical Qualifications criteria.

3.16 The Price Bid of the bidders whose Technical Bid shall be accepted / qualified shall only be opened.

3.17 The term like successful bidder/contractor used in various clauses means the agency to whom purchase / work order have been awarded by the I.S.D.S. for execution of E.T.P.works

4.0 BID SECURITY (E.M.D.)

4.1 Technical bid must be accompanied by bid security (Earnest Money Deposit - EMD) of Rs.4.00 Lakh .The bids which are not accompanied with EMD shall be rejected. The bid security shall be deposited online. Submission of earnest money by any other mode than specified above shall not be acceptable and the related tender shall not be eligible for consideration.

4.2 Unsuccessful Tender's E.M.D. shall be returned by mptenders.gov.in, as per their norms to the Bidders, as soon as possible, after the tender is decided. No interest shall be paid on E.M.D. deposits.

4.3 EMD may be forfeited if successful Bidder fails / denies to perform work OR If any Bidder withdraw its bid during the bid validity period.

5.0 BIDDER'S TECHNICAL QUALIFICATION CRITERIA :-

(a) The Bidders who completed Installation, Commissioning of different capacities ETPs of Dairy affiliated on turnkey basis to other Co-operative Dairies/G.O./State Govt. Department & its undertaking Dairies could be participated in this tender. The selection of bidder for turnkey project of 15,20,30 & 50 KLPD ETP for the purpose of bidding, the Bidder shall meet the following minimum criteria & Technical Bid must accompanied the followings to qualify for opening of the Price Bid. If Bidder may not be able to fulfil the listed requirements then bidders Price Bid will not be opened :-

5.1 The Bidder, in the same name and style, should be in business for least for 3 financial Years i.e. 2018-19, 2017-18 and 2016-17. In case of change of name of Bidder by merger / acquisition / change in status, the bidder may be eligible based on the documentary evidence.

5.2 The Bidder should have valid registration under various Acts that may be applicable for the contract proposed. The Bidder must submit the details of PAN & GST with the documentary supports (However this is not limited, as Income Tax, Companies, Works Contract Tax, Service Tax, Employee State Insurance, Contract Labour, Provident fund etc can be whenever needed then the contractor has to furnish.)

5.3 The Bidder in the same name & style shall have **successfully executed /completed contracts of similar nature and of same capacity plant for the respective bid during last 3 years i.e. 2016-17, 2017-18 and 2018-19. In** the following {Details to be provided in enclosed Annexure-(III)} :-

5.4 The Bidder's should have **financial turnover of Rs. 4.00 Cr. (Rs. Four crores) in the same name and style during any of the 3 financial years (i.e. 2016-17, 2017-18 and 2018-19) ending 31st March in business of supply of effluent treatment plant on turnkey basis as per enclosed Annexure- (IV) Similar nature of works means Effluent treatment plants based on aerobic treatment (Extended Aeration), for similar bio-degradable organic waste, preferably for successfully project executed for Dairy /Food Industry in India.**

5.5 The Technical Bid(Physical) must be accompanied by the online transaction receipt of Earnest Money Deposit(E.M.D.).

5.6 DOCUMENT COMPRISING THE TCEHNICAL BID

-Documentary proof to qualify the eligibility criteria.

-Technical Data related to the system offered-All technical data, drawing and details required as per tender document.

-Tender document each page sealed and signed as token of acceptance to each and every terms and conditions.

-All documents (Work order copy, completion certificates and performance report) related to the previous executed projects for dairy Plant .

-All documents pertaining to the experience similar work execution .

-Copies of original documents defining registration, Type of firm (firm / partnership etc.), legal status, location of registration etc.

-Reports on financial position of bidder / supplier such as profit and loss statements, balance sheets, and auditor's report of 3 financial years i.e.2016-17 , 2017-18 , 2018-19, banker's official document certifying bidder.

-Information concerning any present litigation in which bidder / supplier is involved

6.0 PRICE BID:-

Bidders are requested to fill price format as per prescribed format only given at Schedule(IV).

7.0 BID VALIDITY :-

Bid shall be valid for a period of 120 days from the date of opening of Price Bid.

8.0 COST OF BIDDING :-

The Bidder shall incur all costs associated with the preparation and submission of its bid, and I S.D.S. in no case shall be responsible for any cost incurred by bidder.

9.0 BID PRICE :-

9.1 Price indicated on the price schedule shall be inclusive of all taxes and other expenses . Any kind of taxes and duties or charges in addition to applicable taxes such as GST , no other charges like PACKING AND FORWARDING, FRIEGHT, INSURANCE, LOADING AND UNLOADING shall not be paid extra by the I.S.D.S.

9.2 Wherever applicable Tenderers outside the State of M.P. should also quote the prevailing rate of Taxes if applicable under new GST in case of any benefit to ISDS.

10.0 BID CURRENCY:-

All prices shall be quoted in Indian rupees ONLY

11.0 SECURITY DEPOSIT

Security deposit @ 5% of each payments to the Bidder shall be kept towards security deposit and this amount will be refunded after completion of defect liability period. No interest will be paid by the I.S.D.S. on security deposit.

12.0 AGREEMENT:-

Successful Bidder has to submit the non-judicial stamp paper of Rs.1000/-& sign the agreement within 10 days from the date of issue of rate acceptance letter by I.S.D.S. If Bidder failed to execute the agreement within the specified time the E.M.D. shall be forfeited with termination of tender.

13.0 GENERAL (Important) NOTE FOR INTENDING BIDDER

13.1 The Bidders are expected to have visited the site before filling in the rates, to assess the nature of the soil, the depth and variation of the sub-soil water and the problems that are likely to be encountered in construction or are likely to affect the design before filling in the rates.

13.2 After acceptance of the tender, the successful bidder shall submit 5 copies of design & drawings(Approved & Checked by ISDS approved Structural Engg. Or from faculty of Government Engineering College) of the following sets of drawings normally within 15 days from the date of receipt of acceptance letter.

(a) All detailed working drawings showing dimensions of the various components of the structure should be submitted by the successful bidder.

(b) All detailed technical drawings of the foundations, superstructures etc. showing all the details of the reinforcement, the details of the foundations, columns, vertical walls, plasters, pathways, plinth protections, railings etc. should also be given on a large scale, for each unit of the E.T.P.

(c) As per P.W.D. norms & design the mix of concrete in each sections or components of RCC structure, plaster, flooring etc. shall be specified & checked by the Structural Engg. Faculty of the Govt.

Engg. College. The successful bidder should carefully note that no drawing or drawings with incomplete details will be accepted and the successful bidder will be responsible for any delay or loss of quality. In such circumstances the successful bidder shall be bound for the rectifications or reconstruction of the identified structures as per the decision of the I.S.D.S. If such identified rectifications or reconstructions within the intimated time will not be carried out by the successful bidder then the contract may be terminated at any stage of the progress of works and penalty shall be imposed to complete the balance works as per the manner decided by the I.S.D.S.

13.3 Due weightage shall be given to the past experience, effectiveness, efficiency of the system with benefits and advantages etc.

13.4 The contractor shall arrange for insurance etc. of his people employed for erection and installation work as per ESIC act workman compensation and any other provision to meet statutory requirement of various labour Act / Rules. In case of accident to any of the workers during the period of installation, ISDS shall not bear any liability what so ever the entire responsibility primary and final in this respect will be that of the successful bidder and may ask end customer's view about implementation and overall effectiveness of complete system

13.5 The Chief Executive Officer of I.S.D.S. reserves the right to accept or reject any / or all the tenders without assigning any reason, whatsoever. No correspondence in this regard shall be entertained by Indore Sahakari Dugdh Sangh Maryadit, Indore

13.6 For any technical clarification / interpretation decision of C.E.O., I.S.D.S. shall be final. Also it should be clearly understood that in the event of successful Bidder failing to accept and execute the work order, decision of the Chief Executive Officer, Indore Sahakari Dugdha Sangh, in this respect will be final and binding on the Bidder.

14.0 COMPLETENESS

14.1 It is not the intent to specify completely herein all details of the work. Nevertheless, work shall be complete and operative in all aspects.

14.2 Any material or accessories which may not have been specifically mentioned but which are necessary for usual, satisfactory and trouble free operation of the system, shall be furnished by the contractor without any extra charge to I.S.D.S..

15.0 PROJECT COMPLETION SCHEDULE

(11) Time of completion of all the ETP work shall be **9 Months**, including rainy season from the date of signing of the agreement.

16.0 PENALTY ON LATE COMPLETION /LIQUIDATED DAMAGES

The time period to complete the work should be strictly adhered. In case they are not followed or in case of delay in execution or non-execution of the order, the I.S.D.S. reserves the right either to cancel the order and make alternative arrangement from other sources at the risk and cost and expenses of the contractor. In case the contractor delay in completion of the work as per schedules, the following liquidated damages will be charged as per ISDS directives :-

S.NO	DURATION OF DELAY	LIQUIDATED DAMAGE
1.	1 Month	1%
2.	1 to 2 months	2%
3.	Beyond 2 months	5%

17.0 CO-ORDINATION OF PROJECT

The contractor shall co-ordinate with I.S.D.S. officers/ Engineers and/or Consultant at site for execution of project to monitor quality of work & fulfil the design criteria & specification of E.T.P. provided in bid.

18.0 PROTECTION TO EQUIPMENTS

The contractor shall effectively protect supplied equipments/ material at his own expense, such work, equipment or material as may be liable to damage, theft or tampering during erection. Insurance charges etc. for the above shall be borne by the contractor till handing over of complete installation of E.T.P. to the ISDS as per terms and conditions of contract

19.0 GUARANTEE / DEFECT LIABILITY PERIOD :-

19.1 The defect liability period shall be 18 months from the date of the successful commissioning of all the component of the E.T.P.

19.2 Successful commissioning date of E.T.P. will be comprises of not only the satisfactorily completion & working of all components of E.T.P. but also includes the 1st treated Sewage sample report from MPPCB /MOEF Laboratory with respect to standards laid down by MPPCB under IS:2490.

19.3 Any defect / defects found during the defect liability period shall be rectified / replaced by the contractor within time period specified as may be necessary for the proper running of plant at his own cost on providing intimation by the I.S.D.S..

19.4 On non-compliance of clause 19.3 as mentioned above the I.S.D.S. will do the rectification/replacement needed to run the plant departmentally / through engaging some other agency / agencies and the cost of it will be recovered from the security deposit or by encashment of amount from the Bank Gurantee.

20.0 FORCE MAJEURE

20.1 The terms and conditions mutually agreed upon shall be subject to the I.S.D.S. shall be considered in default in performance of its obligations here under, if such performance is prevented or delayed because of war, hostilities, revolution, civil commotion, strike, epidemic, accident, fire, wind, flood, earthquake or because of any law, order proclamation, regulation or ordinance of any government or any nature, beyond the reasonable control of the party affected. Should one or both of the parties be prevented from fulfilling his/their contractual obligations by state of force majeure lasting continuously for a period of six months, the two parties should consult with each other regarding the future implementation of the contract of the purchase /work order.

21.0 ARBITRATION

21.1 For all the matters of dispute between the successful Bidder and Indore Sahakari Dugdha Sangh, CHAIRMAN ,I.S.D.S. shall be sole arbitrator as per the provisions of the Indian Arbitration Act-1996, and his decision shall be final and binding on both the parties(Contractor & I.S.D.S.) Or Arbitrator may be appointed with the mutual consent of the two parties in case of chairman being out of position.

21.2 For all judicial issues the venue of jurisdiction shall be Indore (M.P.)

22.0 PAYMENT CONDITIONS:-

The payment for various items under the schedule will be made based on the work completed satisfactory. For payment under schedule the payment conditions will be as under:-

Stage No. (1):- Submission of PERT chart for project planning, schedules of proposed work and executional drawings of ETP Approved by structural Engg Faculty of Govt Engg College & accepted by ISDS & also on submission of Bank Guarantee of equal amount in favour of C.E.O., I.S.D.S. for a period of 12 months. = 20% of accepted price will be released.

Stage No. (2):- On arrival of all the plant equipments and related components at site including Satisfactory completion of all civil constructions = 30% of the accepted price of contract value will be released.

Stage No. (3):- After satisfactory commissioning of the plant and it's approval by I.S.D.S. and submission of approved treated water sample report from MPPCB = 40% of the accepted price will be released.

Stage No. (4) :- After successful completion of the defect liability period /submission of Bank Guarantee Of 10% of the accepted price of the contract in favour of the C.E.O., I.S.D.S for a period of 18 months from the date of successful completion of E.T.P = 10% of the accepted price will be released.

SCHEDULE-(II)

TECHNICAL SPECIFICATIONS OF 50,30,20 AND 15 KLPD CAPACITY PLANT

50 KLPD CAPACITY EFFLUENT TREATMENT PLANT AT DAIRY PLANT JHABUA

LIST OF CONTENTS FOR 50 KLPD EFFLUENT TREATMENT PLANT:

S. NO.	DESCRIPTION
I)	Technical Specifications
	I) A) Technical Specifications
	I) B) Technical Specifications – Electro – Mechanical Equipment
	I) C) Technical Specifications – Civil
II)	List of Approved Makes

1. TECHNICAL SPECIFICATIONS (50 klpd cap. ETP)

A. OPERATING PRINCIPLE:

In order to conserve water and to abate pollution, Waste Water Treatment Plant has been proposed to ensure that treated effluent (water) characteristics are well below the permissible limits of local/national pollution control norms even under varying flow conditions which are typical for such systems. This implies that the selected process shall be able to withstand the shock load situation.

We propose to use compact waste water treatment system working on the principle of extended aeration process after required pretreatment operation followed by post tertiary treatment and disinfection.

The waste water treatment plant will be designed with a suitable capacity of liquid effluent waste. Waste water treatment plant will consist of screen chamber, oil and grease traps, equalization / collection sump with two numbers pumps, flash mixer, flocculator, primary tube settler, aeration reactors, Secondary settling tank with tube deck media, sludge holding tank, filter feed pump sump, treated effluent storage tank, filter feed pumps, multi-grade / pressure sand filter, activated carbon filter, micron filter, chlorination, MS / GI pipe and fitting, valves and associate electrical work with control panel per plant.

2.0 PROCESS DESCRIPTION:

Considerations:

Raw effluents include waste water from can washing, equipment cleaning, floor washing, container washings, etc of the chilling center and processing unit.

Inlet characteristic considered for designing the proposed waste water treatment plant:

S.No.	Description / Parameter	UOM	Value	MPPCB limit
1	Flow	Cu.mt./day	50	
2.	pH		6 – 8	6.5 – 9
3.	Total Solids	Ppm	3000	Less than 2200
4.	Suspended Solids	Ppm	1000	Less than 100
5.	Total Dissolved Solids	Ppm	2000	Less than 2100
6.	Biological Oxygen Demand	Ppm	1200- 1500	Less than 30
7.	Chemical Oxygen Demand	Ppm	2000 – 2500	Less than 250
8.	Oil, Grease and Fat	Ppm	350	Less than 10

c. Output Quality Considered:

S.No.	Description / Parameter	UOM	Value	Limit
1	Flow	Cu.mt./day	45	
2.	pH		6.5 – 8	6.5 – 9
3.	Total Solids	Ppm	Less than 2200	Less than 2200
4.	Suspended Solids	Ppm	Less than 100	Less than 100
5.	Total Dissolved Solids	Ppm	Less than 2100	Less than 2100
6.	Biological Oxygen Demand	Ppm	Less than 30	Less than 30
7.	Chemical Oxygen Demand	Ppm	Less than 250	Less than 250
8.	Oil, Grease and Fat	Ppm	Less than 10	Less than 10

Treatment Scheme:

Waste water treatment plant should be designed to ensure that treated effluent (water) characteristics are well below the permissible limits, even under varying flow conditions. This implies that the selected process shall be able to withstand the shock load situation.

The treatment plant shall be designed with a capacity to handle 50 KLD of liquid waste water.

Primary Treatment:

Here, the raw effluent from different sources will be allowed to pass through the screen chamber (Stage – 1) and grease trap (Stage – 2) into the equalization tank (Stage – 3) for homogenization of effluent. Here, effluent will be homogenized thoroughly by purging air through coarse diffusers.

Screens with basket shall be provided in screen chamber and it shall be manually cleaned. Two pumps will be provided in each of the collection cum equalization tank to pump the collected waste water to the next unit.

Automatic level controller will be provided in the tank to turn the pump off at the low water level in the tank and to start the pump when water level is high automatically. Air will be introduced in this tank to prevent any potential foul smell problem and to provide the mixing of wastewater to avoid the sedimentation of solids in this tank. Diffusers used for aeration purpose shall be non-clog, coarse bubble membrane type.

From equalization tank, effluent will be pumped into the flash mixer and flocculator (Stage – 4) where caustic and PAC/alum and poly-electrolytes will be dosed as per the requirement. From here, effluent will flow by gravity into the primary tube settler tank (Stage - 5) for settling of sludge. It shall have tube dac media. The settled sludge will be taken in the filter press (Stage - 12) for drying of sludge. The sludge cake obtained will be packed in the HDPE bags and will be disposed through the Common Biomedical Waste Treatment Facility.

Secondary Treatment:

Effluent from primary settling tank flows by gravity into the aeration reactor (Stage – 6) for aeration using nitrifying and denitrifying bacteria. Aeration reactor shall be fitted with tubular diffusers for supplying air (oxygen) to mix the content of reactor and to transfer atmospheric oxygen through twin lobe roots air blower. The aeration system will be designed in a way so as to achieve complete mixing of organisms with raw waste water. The dissolved organic matter will be subject to biological degradation by bacterial action in presence of oxygen and nutrients. This will convert dissolved organic matter into stable settleable matter. (MLSS in aeration tank shall be maintained 3500-4000 Mg/L).

From aeration reactor, the mixed liquor passes into the secondary tube settler tank(Stage – 7). Secondary tube settler tank will be a hopper bottom sedimentation tank provided with tube deak media. The suspended solids will settle at the bottom of the tank and clear supernatant will overflow to filter feed pump sump through outlet launder. Excess sludge will be removed by sludge pump into the filter press (Stage – 12). Provision for sludge recirculation will also be provided. The dewatered sludge will be disposed off with municipal solid waste.

Tertiary Treatment:

The clear supernatant after secondary tube settler tank will be collected in to the filter feed pump sump. The clarified effluent will be then fed to filtration unit.

Filtration unit consisting of multi-grade filter (Stage – 8), activated carbon filter (Stage – 9) and micron filter (Stage – 10) will remove the residual impurities such as odor/color, suspended solids, BOD/COD.

On line chlorination (Stage – 11) will be done to ensure proper disinfection.

DETAILS OF EQUIPMENT DESCRIPTION, CIVIL WORK SPECIFICATIONS AND LIST OF APPROVED MAKES- 50 KLPD EFFLUENT TREATMENT PLANT .

S.No.	Description	UOM	Qty
1	COARSE AND FINE BAR SCREEN	No.	2
	Providing, fixing, testing & commissioning of coarse bar screen with basket with suitable frame work arrangement for lifting of basket and complete in all required accessories such as system for lifting solids.		
	Application	For removing large size floating and suspended particles from sewage	
	Location	Screen chamber	
	Dimensions of Screen Chambers channel	500 mm x 500 mm with water depth of 750 mm	
	Type	Fine bar screen	
	Bar spacing	25 mm and 10 mm	
	Mounting of screen	At 40 degree in screen chamber	
	MOC	SS – 304	
2	WASTE WATER TRANSFER PUMP	No.	2
	Providing, fixing, testing & commissioning of waste water transfer pumps with suitable arrangement for lifting of pump, complete in all required accessories such as piping, required header, flow control valves, cabling, electrical connections, etc.	1 operational and 1 standby	
	Application	To transfer raw waste water from equalization tank to flocculator	
	Location	Equalization Tank	
	Operating Capacity	3 m ³ /hr at 10 m head	
	Type	Submersible, cutter pump	
	MOC	CI and MS	
3	COARSE DIFFUSERS	No.	12
	Providing, fixing, testing & commissioning of coarse diffusers		
	Application	To supply air in the form of coarse air bubble for homogenization and mixing of effluent	
	Location	Equalization Tank, Flocculator, Filter Feed Pump Sump and Treated Effluent Storage Tank	
	MOC	Diffuser: EPDM Membrane, Supporting structure: PVC	
	Air Discharge Capacity	2 cu.mt./hr per diffuser	

4	TUBULAR AIR DIFFUSERS	No.	16					
	Providing, fixing, testing & commissioning of tubular diffusers							
	Application							To supply air in the form of coarse air bubble for aeration
	Location							Fluidized aerobic bio-reactor
	MOC							Diffuser: EPDM Membrane, Supporting structure: PVC Other wetted part such as Clips and Nipple: SS – 304
	Air Discharge Capacity							6 cu.mt./hr per diffuser
5	TWIN LOBE ROOTS AIR BLOWER	No.	2					
	Providing, fixing, testing & commissioning of twin lobe roots air blower with acoustic enclosure and header with control valves	1 operational and 1 standby						
	Application	To supply air to diffusers						
	Location	Equipment room						
	Operating Capacity	125 cu.mt./hr of air discharge at 0.45 kg/sq.cm.						
	MOC	CI and MS						
	Feature	Acoustic Enclosure to meet the noise norms						
6	TUBE SETTLERS	cu.mt	10					
	Providing, fixing, testing & commissioning of PP UV Stabilized Tube Dac Media							
	Application							To settle the sludge
	Location							Primary and Secondary Tube Settling Tanks
	Vertical Height							750 mm
	Slant Height							866 mm
	Angle of inclination							60 degree
	Shape							Hexagonal Chevron
	Material							PVC
7	CHEMICAL DOSING TANK	No.	3					
	Providing, fixing, testing & commissioning of dosing tank							
	Application							For storing Caustic and Alum /PAC/PE solution
	Location							Flash Mixer and Flocculator
	Capacity							200 liters
	MOC							HDPE.
	Fittings							a. Coarse diffusers for mixing b. Alum Dosing Pump
8	CHEMICAL DOSING PUMP	No.	3					
	Providing, fixing, testing & commissioning of dosing pump	1 Operational and 1 Standby						
	Application	To dose polyelectrolyte solution at desired rate						

	Location	Polyelectrolyte Solution Tank					
	Operating Capacity	6 lph					
	MOC	PP					
	Supporting Structure	MS Epoxy Coated					
9	FILTER FEED PUMPS		No.	2			
	Providing, fixing, testing & commissioning of filter feed transfer pumps complete in all required accessories such as piping, required header, flow control valves, cabeling, electrical connections, etc.		1 operational and 1 standby				
	Application	To transfer clarified from filter feed pump sump to the multi-grade filter					
	Location	Filter feed pump sump					
	Operating Capacity	3 m3/hr at 30 m head					
	Type	Self-priming, non-clogg					
	MOC	CI and MS					
10	MULTI-GRADE FILTER		No.	1			
	Providing, fixing, testing & commissioning of multi-grade filtercomplete in all required accessories such as piping, valves, etc.						
	Application	To remove suspended particles from settled water in filter feed pump sump					
	Location	Outlet of filter fed pump sump					
	MOC	FRP					
	Type	Vertical pressure vessels					
	Pressure	Max. 3.5 kg/sq.cm. Min. 1.0 kg/sq.cm.					
	Flow	3 cu.mt./hr					
	Features	Dished ends, bell mouth type					
	Piping	1 INCH					
	Valve	1 INCH					
	Fittings	Pressure gauge of 4 inch dia dial ranging from 0 to 7 kg at inlet and outlet of pressure vessels Sampling ports at inlet and outlet of pressure vessels Backwash arrangements					
	Media	Graded quartz sand media confirming to CPHEEO and BIS specifications					
11	ACTIVATED CARBON FILTER		No.	1			
	Providing, fixing, testing & commissioning of activated carbon filtercomplete in all required accessories such as piping, valves, etc.						

	Application	To remove odour and colour producing substance from water in the filter feed pump sump					
	Location	Outlet of filter fed pump sump					
	MOC	FRP					
	Type	Vertical pressure vessels					
	Pressure	Max. 3.5 kg/sq.cm. Min. 1.0 kg/sq.cm.					
	Flow	3 cu.mt./hr					
	Features	Dished ends, bell mouth type					
	Piping	1 INCH					
	Valve	1 INCH					
	Media	Graded Quartz Sand and Granular Activated Carbon of 850 - 900 Iodine Value confirming to CPHEEO and BIS specifications					
12	MICRON FILTRATION SYSTEM		No.	1			
	Providing, fixing, testing & commissioning of micron bag filter complete in all required accessories such as piping, valves, etc.						
	Application	To remove solids, odour and colour producing substance upto the size of 5 micron from treated effluent water					
	Location	Outlet of filter feed pump sump after activated carbon filter					
	MOC	PP					
	Type	Vertical pressure vessels					
	Pressure	Max. 3.5 kg/sq.cm. Min. 1.0 kg/sq.cm.					
	Flow	5 kl/hour					
	Features	Dished ends, bell mouth type					
	Connections	40 mm					
	Fittings	Pressure gauge of 4 inch dia dial ranging from 0 to 7 kg at inlet and outlet of pressure vessels Sampling ports at inlet and outlet of vessels					
	Filtering Media	PP ultrasonically welded micron bag filter of rating 5 micron					
13	FILTER PRESS SYSTEM WITH FILTER PRESS FEED PUMP		No.	1			
	Providing, fixing, testing & commissioning of filter press complete in all required accessories such as piping, valves with sludge transfer pumps, etc.						
	Application	To separate solid and liquid and to act as dewatering device					
	Location	Waste water treatment plant					
	Press Structure	PP					
	Closing	Hydraulic					
	Design Pressure	6 kg/sq.cm.					

	Working Pressure	5 kg/sq.cm.					
	Filter element	PP Chamber type recessed plates					
	Discharge	Individual cock / spigots					
	Drainage surface	Pipes					
	No. of chambers	12					
	No. of plates	10					
	Filter Cloth	12					
	Filter press feed pump		No.	2			
	Type	Self priming, non-clogg sludge pump					
	Operating capacity	1 cu.mt./hr at 3 kg/cm ²					
	MOC	CI					
14	LEVEL CONTROL SWITCH		No.	4			
	Providing, fixing, testing & commissioning of level control switch to each pump with required cables and accessories						
	Application	To keep pumps in auto positions so that pump will start at a particular level and will switch off at a particular level of liquid					
	Location	Receiving / holding sump and filter feed pump sump					
	MOC	SS – 316 / TEFLON					
15	INTERCONNECTING PIPES AND VALVES		No.	1			
	Providing, fixing, testing & commissioning of interconnecting pipe and fittings to convey waste water from one unit to other						
	Application	To carry waste effluent from one unit of waste water treatment plant to other unit					
	Location	Battery limit of waste water treatment plant					
	Size	As per requirement					
	MOC	GI, MS and UPVC					
16	ELECTRIFICATION WORK		No.	1			
	Providing, fixing, testing & commissioning of electrical control panel with required cabling work to operate different electro-mechanical equipment						
	Application	Electric supply to different motors and drives for efficient and trouble free operation and maintenance of waste water treatment plant					
	Location	Within battery limit of waste water treatment plant					
	Features						

	Auto switching over of mechanical equipments between operational and standby					
	Electric Panel shall have voltmeter and ammeter					
	Electric Panel shall have starters, switches and MCB of L&T, Simens					
	Wiring shall be of copper minimum 4 core					
	Wiring shall be through PVC conduit pipe					
	Connections to each motor and drive shall be through suitable copper gland					
	Suitable earthing will be provided between motors and panel					
17	WATER METER	No.	1			
	Providing, fixing, testing & commissioning of water meter at the outlet of micron bag filter to measure treated effluent quantity					
	Application	To measure quantity of treated effluent				
	Location	At the outlet of micron filtration system before discharging the treated effluent for land application / gardening and plantation purpose				
18	SLUDGE RECYCLE PUMP	No.	2			
	Providing, fixing, testing & commissioning of air pump for recirculation of sludge from secondary tube settler tank to FAB reactor	1 Operational and 1 standby				
	Application	To transfer sludge from secondary tube settler tank to aeration reactor				
	Location	Secondary Tube Settler Tank				
	Type	Self – priming, non-clogg				
	Capacity	1 cu.mt../hr				
19	CHLORINATION SYSTEM	No.	2			
	Providing, fixing, testing & commissioning of chlorination system with all required accessories	1 Operational and 1 standby				
	Application	For disinfection of treated effluent				
	Location	After Micron Filter				
	Capacity	6 liters per hour				
	Pump type	Electronic dosing pump				
	MOC	PP				
	Dosing tank	200 liters				

20	TREATED EFFLUENT TRANSFER PUMP	No.	2				
Providing, fixing, testing & commissioning of treated effluent transfer pumps complete in all required accessories such as piping, required header, flow control valves, cabling, electrical connections, etc.		1 operational and 1 standby					
Application	To transfer treated effluent from treated effluent storage tank for reuse.						
Location	Treated effluent storage tank						
Operating Capacity	5 m ³ /hr at 35 m head						
Type	Self-priming, non-clogg, mono-block						

Equipment description

Civil work specifications.

SPECIFICATIONS FOR VARIOUS CIVIL AND MS EPOXY COATED FABRICATED STRUCTURE INCLUDING SITE DEVELOPMENT WORK FOR WASTE WATER TREATMENT PLANT-50 KLPD

Waste Water Treatment Plant of 50 cu.mt./day capacity

Site preparation, excavation, RCC water proof structure (as per M – 25 standard), back filling and water testing of different units as per the description in Table 1.

S.No.	Unit Description	Capacity (in cu.mt.)	Liquid Depth (in Meter)	Free Board (in meter)
1.	Screen Chamber	1	1.0	0.75
2.	Oil and Grease Chamber	2.5	1.5	0.75
3.	Grit Chamber	5	2.0	0.75
4.	Equalization Tank	25	2.5	1.0
5.	Flash Mixer	2	1.5	0.75
6.	Floculator	1.5	1.5	0.75
7.	Primary Tube Settler Tank	10	2.5 + Hopper	1.0
8.	Aeration Reactor – 1	50	4.0	1.0
9.	Secondary Tube Settler Tank	10	2.5 + Hopper	1.0
10.	Filter Feed Pump Sump	15	3.0	1.0
11.	Treated Effluent Storage Tank	15	3.0	1.0
12.	Sludge Holding Sump	2	1.5	0.75
13.	Equipment Room	6 m x 5 m x 3.5 m (Height)		
14.	Foundations for Different Equipment as per requirement			

Note-

a. The tentative invert level is about 1.5 meter below the ground level, it may vary as per the actual site conditions. As per the actual level of the inlet line the levels of all other units will be modified accordingly. Nothing extra shall be paid for such modifications.

b. All units shall be provided plinth protection of 0.60 m wide and shall be joined by 1.25 m wide pathway and steps as per the site conditions.

c. All units shall be provided with support hand rail of 1 meter height all around outer walls in MS "B" Class pipe painted by synthetic enamel as per requirement. For bends in railing, regular bends shall be used and no elbows shall be used for this purpose. For supports of railings, MS pipe of class 'B' 32 mm dia shall be used. The joints shall be well ground, smoothed. Then the pipe surfaces and supports shall be applied with one coat of anti corrosive red oxide primer followed by one coat of synthetic enamel paint of approved make & shade, for corrosion resistance immediately after fabrication. One coat of synthetic enamel paint shall be again applied on all railings and their supports after testing and commissioning.

- d. Necessary cut-outs, insert plates etc. shall be provided.
- e. CI steps of at 300 mm c/c spacing in staggered manner along the inner wall of the tank at a suitable location shall be provided.
- f. 100 mm thick PCC 1:3:6 shall be provided below base raft extending 100 mm on all the sides.
- g. All internal surfaces will be provided with smooth cement plaster with waterproofing compound.
- h. All external surfaces upto 300 mm below ground level shall be plastered with cement paint of approved make and shade.
- i. The MCC, Operator shed shall have proper flooring with shed.

a. **Internal Electrification of MCP cum operator shed:** Lighting of MCP room shall consist of following: (i) Supply, fixing, wiring and commissioning of approved make of distribution board with suitable DP incomer and enough number of SP outgoing MCB's. MCC room: 2 Nos. Light points suitable for LED Lamps.

b. Piping work: The piping work covered under this contract is the complete interconnecting piping with necessary pipe fittings, specials, flanges, etc for the waste water treatment plant between various units.

The piping work shall include all necessary pipe inserts required to be provided at various places and all the inserts shall be of suitable construction with puddle flange in the centre and properly grouted so as to prevent leakage.

The piping work shall also include all necessary excavation of pipe trenches for underground pipe with bedding of sand and shall also include all necessary pipe supports, plate inserts, etc.

Pipe anchoring works, brick masonry pillars, RCC pedestals etc. as required to support the pipe due to site conditions etc. or as may be required for supporting the various pipes above the ground level within the treatment plant area and for the piping work to convey waste water from different points to treatment unit are included in the scope of work.

All the necessary valves for the entire treatment plant piping as required shall be provided. The valves shall conform to the relevant BIS standards.

c. All the structural details shall be designed, checked & verified by a chartered registered structural engineer and stability certificate shall be issued by him for the same. The structure designed shall be earthquake proof for the project area zone. A certificate to this extent shall be furnished from the registered Structural consultant. If asked for the design calculation shall be made available to the Owner.

d. All the units of the plant shall be joined with a pathway 1.25 m width with a nominal slope on both the sides. Pathway shall be made with minimum 60 mm thick PCC 1:1.5:3, self finished over 100mm thick CC 1:4:8. Where the site may be in contours necessary steps, side walls etc. as required may be provided in brick work, Concrete and IPS etc. Bidder shall assess this at site and the prices shall be inclusive of such requirements.

e. The bidder must, along with the bid, furnish the List of Spares required for normal operation of the plant for two years after commissioning and quote optionally for the spares.

f. The bidder must quote optionally for operation & maintenance of the entire plant for a period of one year after successful commissioning. The bidder must furnish full details along with the terms and conditions etc.

BATTERY LIMITS FOR THE WASTE WATER TREATMENT PLANT WORK

The scope of work described in the Schedule of Requirements shall be governed by the following battery limits:

- a.** Raw effluent line from different sources (piping length will not be more than 100 meters) including chambers / manhole (maximum 6 numbers) to the waste water treatment plant site, entire turnkey project for waste water treatment plant.
- b.** Treated effluent line from the outlet of water meter / flow meter, line length not exceeding 10 m. This treated effluent could be used for irrigation purposes within the campus. Supply and installation of further piping shall be arranged by Owner at their own cost and shall not be in the scope of the bidder.
- c.** Supply, erection and charging of the Motor Control Centre shall be in the Contractor's scope. The supply, laying, connection and charging of 3½ x 35 sq.mm. armoured Aluminium conductor, PVC insulated and sheathed power cable for main incomer of MCC is included in contractor's scope of work. This cable shall be laid underground from the existing Panel at ETP site and its length shall not exceed 10 m. Termination of this cable at both ends with suitable glands and lugs is included in the contractor's scope. Supplying and providing necessary earthing system including two number GI plate type earthing pits, GI strip/wires from MCC to all electrical equipment/ controls is included in contractor's scope.
- d.** Unit lighting and yard lighting in the ETP area including conduits, wiring, cables, light fittings, poles/brackets of approved design is included in Contractors scope.

TESTING, TRIAL RUNS, COMMISSIONING & HANDING OVER

a. Testing and Trial Runs

The contractor shall have to test each equipment used for the plant for at least 72 hrs continuous running with designed load and to the full satisfaction of the Engineer-in-Charge. After testing the individual equipment and stabilization of the plant, the contractor shall run the whole plant at no extra cost to the at least for one month as directed by the Engineer-in-Charge. Any defects found in design, workmanship or in any of the equipment shall be rectified by the contractor at his own cost within a reasonable time to be decided by the Engineer-in-charge, and beyond this period suitable penalty shall be levied and the plant shall be tested again for faultless running for one month to the entire satisfaction of Engineer-in-Charge.

Necessary instruments, gauges, supervisory personnel etc. shall be furnished / provided by the contractor free of cost for conducting the tests. The recording of tests result shall be as per formats to be approved by the Engineer-in-Charge and will form part of the completion documents.

b. Commissioning and handing over

During trial runs as described above, the contractor shall satisfy the Engineer-in-Charge in all respects regarding the satisfactory quality of effluent, quality of materials, equipment and workmanship used in the plant. Only after satisfying himself, regarding the above points, the Engineer-in-charge will take over the plant and such date of taking over shall be deemed as date of commissioning. The guarantee period described above will start from this date. The contractor shall have to obtain necessary statutory approval for setting up of Waste Water Treatment Plant to its commissioning/handling over. The charges for this shall be all included in bid prices.

PLANT GUARANTEES

The under mentioned clauses shall be read in conjunction with Warranty / Guarantee provisions given elsewhere in this document.

a. Manufacturer's Guarantees

The manufacturer's guarantee for design, workmanship and performance for all bought out items shall be made available to the purchaser/owner and shall be valid at least for the entire defects liability period.

In the event of failure of any particular equipment which fails more than three times during the guarantee period as mentioned in clause below, the contractor shall replace at his own cost that equipment. Manufacturer's/Contractor's guarantee, as mentioned in clause above, for such replaced equipment shall also be made available to the purchaser/owner and should be kept at least for one year from the date of last replacement.

b. Performance Guarantee

The contractor shall give guarantee for a period of one year from the date of successful commissioning for the treatment plant against design, defective materials, workmanship, performance and guaranteed effluent quality. In the event the commissioning of the plant is not possible due to non-availability of effluent, contractor shall be issued mechanical completion certificate by Engineer-in-Charge provided each equipment is tested satisfactorily as directed by Engineer-in-Charge. However, the contractor shall have to maintain the plant at his own cost, in such a case for a period of three months beyond which period, if he is required to maintain further, he will be paid extra at mutually agreeable rate. However, testing and commissioning of the plant shall be carried out by the Contractor during the Defects Liability period. Any defects found in the workmanship materials or performance of the plant shall be made good by the contractor at his own expense within the time specified by Engineer-in-Charge.

For this purpose the performance guarantee furnished by successful bidder, as per general conditions of contract shall be retained till the completion of the guarantee period as stated above. The contractor, at his own expense shall start and commission the plant and prove that it is giving satisfactory service and desired characteristics of the treated effluent, for one month before handing over the plant to the Owner. During this start up and commissioning period the contractor shall train the Owner's operational staff without any extra cost to the Owner. The contractor shall also have to guarantee the quality of the treated final effluent to meet the specification. For given design quantity and quality of untreated effluent, if the Contractor fails to achieve the treated effluent criteria, the Contractor shall rectify the plant at no extra cost, so as to achieve the requisite performance guarantee and satisfy commissioning of the plant to the Engineer-in- Charge.

All the above guarantees will be based on collection and analysis of samples as mentioned in clause below.

c. Collection and analysis of samples

The guaranteed effluent shall be based on complete analysis of treated effluent collected after stabilization of the plant as per Special Conditions of Contract.

List of approved make

LIST OF APPROVED MAKES OF MATERIAL

S. No.	MATERIAL	APPROVED MAKES
1.	SS Screen with basket	PACE / ARVI / Equivalent
2.	Raw effluent transfer submersible cutter pump	CNP / CRI /equivalent
3.	Filter feed pumps / Sludge recirculation pumps and treated water transfer pumps	Kirloskar / CRI / CNP
4.	Filter press feed pump	Weltech / Kirloskar / Johnson
5.	Dosing pump	Grundfos / Asia LMI / Edose / Pentair
6.	Electric motors	Kirloskar / Crompton / ABB / Siemens / Bharat Bijlee
7.	Twin lobe roots air blower	ACME Air Equipment / Kay / Everest Transmission / Air Vak
8.	Chemical dosing tank	Sintex / Frontier / Water well / Equivalent
9.	Tubular and coarse air diffusers	Jay Engineering / Membrane India / Equivalent
10.	UPVC pipe Class 10kg/cm2	Supreme / Astral / Ashirwad
11.	GI & MS pipeline	Tata / Jindal (Hissar) / Prakash Surya
12.	GI fittings	Unik / 'R' brand / Jain sons
13.	FRP vessel	Pentair / Aventura / Hydrocell
14.	Multiport valves	Pentair / Astral / Aster / Pharer / Flack / Equivalent
15.	Butterfly valves	Nova / C&R / Inter Valve / Castle / Deep / Zolta / Equivalent
16.	Non return valve	Karan / C&R / Inter Valve / Castle / Deep / Zolta / Equivalent
17.	Ball valve	Nova / C&R / Inter Valve / Castle / Deep / Zolta / Equivalent
18.	Expansion / vibration eliminator	Resistoflex / Kanwal
19.	Pressure gauge	Fiebig / H Guru
20.	Level controller	Femac / Nand Shyam / Mimic
21.	Strainer	Zoloto / Emerald /Maharaja Casting.
22.	Foot valve	C&R / Inter Valve / Castle / Deep / Zolta / Equivalent
23.	Float valve	CIM / Leader / C&R / Inter Valve / Castle / Deep / Zolta / Equivalent
24.	Multiport valve	Pentair / Astral / Initiative / UKL / Midas
25.	Flanges	Class 150 / Table 'H'
26.	Filter press	Pharmtech / Sachin / Vasu / Bhagylakshmi / Equivalent
27.	Tube dac media	MM Aqua / Cooldac / Energy / Vasu
28.	Gear box	Radicon / Elicon / Priemer
29.	Electrical control panel	Fabricated

S. No.	MATERIAL	APPROVED MAKES
1.	SS Screen with basket	PACE / ARVI / Equivalent
30.	Power cables & control cables	Havells / Finolex / Polycab
31.	PVC insulated copper wires	Finolex / Skyline / National / Batra Henley / Polycab
32.	Single phase preventer	L&T / Siemens / ABB
33.	Thermal relays	L&T / Alstom / Easun Reyrolle
34.	Indicating lamps	Siemens / L&T (Esbee) / BCH
35.	Cable lugs	Dowell / Jainson
36.	Relays	L&T / Alsthom / C&S
37.	Push buttons	L&T / Siemens / BCH
38.	Current transformer	Kappa / Precision / C&S
39.	Ammeter/ Voltmeter	Automatic Electric / Rishab / Enercon Neptune
40.	Time delay relay/limit switch	L&T / Siemens / BCH
41.	Controls	Honeywell /Danfoss / Steafa /Penn
42.	Starters / Switches	L&T / Siemens / ABB
43.	Contractors	L & T / Merlin Gerin / Siemens / ABB Schneider
44.	Annunciator	Minilac
45.	ACB/MCCB	L&T / Merlin Gerin / Siemens / ABB
46.	Miniature circuit breakers	L&T (Hager) / Siemens / ABB / Legrand
47.	M.S conduits (ISI Mark)	BEC / AKG
48.	Earth leakage relay	PIC Make / Alstom / L&T / Easun Reyrolle
49.	Conduit accessories	AKG / BEC
50.	Cable trays / Race ways	Slotco / Steel ways / Profab / Pilco
51.	Metal clad socket	MDS / BCH / Neptune / Crompton
52.	Metal clad socket weather proof	MDS / BCH/ Neptune / Crompton
53.	Switch fuse & fuse switch unit	L&T / HH-Elcon / Siemens
54.	ELCB	L&T / Neptune / MDS
55.	Terminals	Elmex / Wago

**30 KLPD CAPACITY EFFLUENT TREATMENT PLANT FOR MILK CHILLING CENTRE
PHOOLGAWADI**

LIST OF CONTENTS FOR WASTE WATER TREATMENT PLANT:

S. NO.	DESCRIPTION
I)	Technical Specifications
	I) A) Technical Specifications
	I) B) Technical Specifications – Electro – Mechanical Equipment description
	I) C) Technical Specifications – Civil
II)	List of Approved Makes

TECHNICAL SPECIFICATIONS

1.0 OPERATING PRINCIPLE:

In order to conserve water and to abate pollution, Waste Water Treatment Plant has been proposed to ensure that treated effluent (water) characteristics are well below the permissible limits of local / national pollution control norms even under varying flow conditions which are typical for such systems. This implies that the selected process shall be able to withstand the shock load situation.

We propose to use compact waste water treatment system working on the principle of extended aeration process after required pretreatment operation followed by post tertiary treatment and disinfection.

The waste water treatment plant will be designed with a suitable capacity of liquid effluent waste. Waste water treatment plant will consists of screen chamber, oil and grease traps, equalization / collection sump with two numbers pumps, flash mixer, flocculator, primary tube settler, aeration reactors, Secondary settling tank with tube dac media, sludge holding tank, filter feed pump sump, treated effluent storage tank, filter feed pumps, multi-grade / pressure sand filter, activated carbon filter, micron filter, chlorination, MS / GI pipe and fitting, valves and associate electrical works with control panel per plant.

2.0 PROCESS DESCRIPTION:

Considerations:

- a. Raw effluents include waste water from can washing, equipment cleaning, floor washing, container washings, etc of the chilling center and processing unit.
- b.
- c. Inlet characteristic considered for designing the proposed waste water treatment plant:
- d.

S.No.	Description / Parameter	UOM	Value	MPPCB limit
1	Flow	Cu.mt./day	30	
2.	pH		6 – 8	6.5 – 9
3.	Total Solids	ppm	3000	Less than 2200
4.	Suspended Solids	ppm	1000	Less than 100
5.	Total Dissolved Solids	ppm	2000	Less than 2100
6.	Biological Oxygen Demand	ppm	1200- 1500	Less than 30
7.	Chemical Oxygen Demand	ppm	2000 – 2500	Less than 250
8.	Oil, Grease and Fat	ppm	350	Less than 10

c. Output Quality Considered:

S.No.	Description / Parameter	UOM	Value	Limit
1	Flow	Cu.mt./day	25	
2.	pH		6.5 – 8	6.5 – 9
3.	Total Solids	ppm	Less than 2200	Less than 2200
4.	Suspended Solids	ppm	Less than 100	Less than 100
5.	Total Dissolved Solids	ppm	Less than 2100	Less than 2100
6.	Biological Oxygen Demand	ppm	Less than 30	Less than 30
7.	Chemical Oxygen Demand	ppm	Less than 250	Less than 250
8.	Oil, Grease and Fat	ppm	Less than 10	Less than 10

Treatment Scheme:

Waste water treatment plant should be designed to ensure that treated effluent (water) characteristics are well below the permissible limits, even under varying flow conditions. This implies that the selected process shall be able to withstand the shock load situation.

The treatment plant shall be designed with a capacity to handle 30 KLD of liquid waste water.

Primary Treatment:

Here, the raw effluent from different sources will be allowed to pass through the **screen chamber (Stage – 1)** and **grease trap (Stage – 2)** into the **equalization tank (Stage – 3)** for homogenization of effluent. Here, effluent will be homogenized thoroughly by purging air through coarse diffusers.

Screens with basket shall be provided in screen chamber and it shall be manually cleaned. Two pumps will be provided in each of the collection cum equalization tank to pump the collected waste water to the next unit. Automatic level controller will be provided in the tank to turn the pump off at the low water level in the tank and to start the pump when water level is high automatically. Air will be introduced in this tank to prevent any potential foul smell problem and to provide the mixing of wastewater to avoid the sedimentation of solids in this tank. Diffusers used for aeration purpose shall be non-clog, coarse bubble membrane type.

From equalization tank, effluent will be pumped into the **flash mixer and flocculator (Stage – 4)** where caustic and PAC/alum and poly-electrolytes will be dosed as per the requirement. From here, effluent will flow by gravity into the **primary tube settler tank (Stage - 5)** for settling of sludge. It shall have tube dac media. The settled sludge will be taken in the **filter press (Stage - 12)** for drying of sludge. The sludge cake obtained will be packed in the HDPE bags and will be disposed through the Common Biomedical Waste Treatment Facility.

Secondary Treatment:

Effluent from primary settling tank flows by gravity into the **aeration reactor (Stage – 6)** for aeration using nitrifying and denitrifying bacteria. FAB reactor shall be fitted with tubular diffusers for supplying air (oxygen) to mix the content of reactor and to transfer atmospheric oxygen through twin lobe roots air blower. The aeration system will be designed in a way so as to achieve complete mixing of organisms with raw wastewater. The dissolved organic matter will be subject to biological degradation by bacterial action in presence of oxygen and nutrients. This will convert dissolved organic matter into stable settleable matter. (MLSS in aeration tank shall be maintained 3500-4000 Mg/L).

From aeration reactor, the mixed liquor passes into the **secondary tube settler tank (Stage – 7)**. Secondary tube settler tank will be a hopper bottom sedimentation tank provided with tube dac media. The suspended solids will settle at the bottom of the tank and clear supernatant will overflow to filter feed pump sump through outlet launder. Excess sludge will be removed by sludge pump into the **filter press (Stage – 12)**. Provision for sludge recirculation will also be provided. The dewatered sludge will be disposed off with municipal solid waste.

Tertiary Treatment:

The clear supernatant after secondary tube settler tank will be collected in to the filter feed pump sump. The clarified effluent will be then fed to filtration unit.

Filtration unit consisting of **multi-grade filter (Stage – 8)**, **activated carbon filter (Stage – 9)** and **micron filter (Stage – 10)** will remove the residual impurities such as odor/color, suspended solids, BOD/COD. On line chlorination (**Stage – 11**) will be done to ensure proper disinfection.

EQUIPMENT DESCRIPTION				
30 KLPD WASTE WATER TREATMENT PLANT				
S.No.	Description	UOM	Qty	
1	COARSE AND FINE BAR SCREEN	No.	2	
	Providing, fixing, testing & commissioning of coarse bar screen with basket with suitable frame work arrangement for lifting of basket and complete in all required accessories such as system for lifting solids.			
	Application	For removing large size floating and suspended particles from effluent		
	Location	Screen chamber		
	Dimensions of Screen Chambers channel	500 mm x 500 mm with water depth of 750 mm		
	Type	Fine bar screen		
	Bar spacing	25 mm and 10 mm		
	Mounting of screen	At 40 degree in screen chamber		
	MOC	SS - 304		

2	WASTE WATER TRANSFER PUMP		No.	2				
	<p>Providing, fixing, testing & commissioning of waste water transfer pumps with suitable arrangement for lifting of pump, complete in all required accessories such as piping, required header, flow control valves, cabling, electrical connections, etc.</p>		1 operational and 1 standby					
	Application	To transfer raw waste water from equalization tank to flocculator						
	Location	Equalization Tank						
	Operating Capacity	2 m ³ /hr at 10 m head						
	Type	Submersible, cutter pump						
	MOC	CI and MS						
3	COARSE DIFFUSERS		No.	8				
	<p>Providing, fixing, testing & commissioning of coarse diffusers</p>							
	Application	To supply air in the form of coarse air bubble for homogenization and mixing of effluent						
	Location	Equalization Tank, Flocculator, Filter Feed Pump Sump and Treated Effluent Storage Tank						
	MOC	Diffuser: EPDM Membrane, Supporting structure: PVC						
	Air Discharge Capacity	2 cu.mt./hr per diffuser						
4	TUBULAR AIR DIFFUSERS		No.	8				
	<p>Providing, fixing, testing & commissioning of tubular diffusers</p>							
	Application	To supply air in the form of coarse air bubble for aeration						
	Location	Fluidized aerobic bio-reactor						
	MOC	Diffuser: EPDM Membrane, Supporting structure: PVC Other wetted part such as Clips and Nipple: SS – 304						
	Air Discharge Capacity	6 cu.mt./hr per diffuser						
5	TWIN LOBE ROOTS AIR BLOWER		No.	2				
	<p>Providing, fixing, testing & commissioning of twin lobe roots air blower with acoustic enclosure and header with control valves</p>		1 operational and 1 standby					
	Application	To supply air to diffusers						
	Location	Equipment room						

	Operating Capacity	70 cu.mt./hr of air discharge at 0.45 kg/sq.cm.					
	MOC	Cl and MS					
	Feature	Acoustic Enclosure to meet the noise norms					
6	TUBE SETTLERS		cu.mt	5			
	Providing, fixing, testing & commissioning of PP UV Stabilized Tube Dac Media						
	Application	To settle the sludge					
	Location	Primary and Secondary Tueb Settling Tanks					
	Vertical Height	750 mm					
	Slant Height	866 mm					
	Angle of inclination	60 degree					
	Shape	Hexagnal Chevron					
	Material	PVC					
7	CHEMICAL DOSING TANK		No.	3			
	Providing, fixing, testing & commissioning of dosing tank						
	Application	For storing Caustic and Alum /PAC/PE solution					
	Location	Flash Mixer and Flocculator					
	Capacity	100 liters					
	MOC	HDPE.					
	Fittings	a. Coarse diffusers for mixing					
		b. Alum Dosing Pump					
8	CHEMICAL DOSING PUMP		No.	3			
	Providing, fixing, testing & commissioning of dosing pump		1 Operational and 1 Standby				
	Application	To dose polyelectrolyte solution at desired rate					
	Location	Polyelectrolyte Solution Tank					
	Operating Capacity	4 lph					
	MOC	PP					
	Supporting Structure	MS Epoxy Coated					
9	FILTER FEED PUMPS		No.	2			
	Providing, fixing, testing & commissioning of filter feed transfer pumps complete in all required accessories such as piping, required header, flow control valves, cabling, electrical connections, etc.		1 operational and 1 standby				
	Application	To transfer clarified from filter feed pump sump to the multi-grade filter					
	Location	Filter feed pump sump					

	Operating Capacity	3 m3/hr at 30 m head					
	Type	Self-priming, non-clogg					
	MOC	CI and MS					
10	MULTI-GRADE FILTER		No.	1			
	Providing, fixing, testing & commissioning of multi-grade filtercomplete in all required accessories such as piping, valves, etc.						
	Application	To remove suspended particles from settled water in filter feed pump sump					
	Location	Outlet of filter fed pump sump					
	MOC	FRP					
	Type	Vertical pressure vessels					
	Pressure	Max. 3.5 kg/sq.cm. Min. 1.0 kg/sq.cm.					
	Flow	3 cu.mt./hr					
	Features	Dished ends, bell mouth type					
	Piping	1 INCH					
	Valve	1 INCH					
	Fittings	Pressure gauge of 4 inch dia dial ranging from 0 to 7 kg at inlet and outlet of pressure vessels Sampling ports at inlet and outlet of pressure vessels Backwash arrangements					
	Media	Graded quartz sand media confirming to CPHEEO and BIS specifications					
11	ACTIVATED CARBON FILTER		No.	1			
	Providing, fixing, testing & commissioning of activated carbon filtercomplete in all required accessories such as piping, valves, etc.						
	Application	To remove odour and colour producing substance from water in the filter feed pump sump					
	Location	Outlet of filter fed pump sump					
	MOC	FRP					
	Type	Vertical pressure vessels					
	Pressure	Max. 3.5 kg/sq.cm. Min. 1.0 kg/sq.cm.					
	Flow	2 cu.mt./hr					
	Features	Dished ends, bell mouth type					
	Piping	1 INCH					
	Valve	1 INCH					

	Media	Graded Quartz Sand and Granular Activated Carbon of 850 - 900 Iodine Value confirming to CPHEEO and BIS specifications						
12	MICRON FILTRATION SYSTEM		No.	1				
	Providing, fixing, testing & commissioning of micron bag filter complete in all required accessories such as piping, valves, etc.							
	Application	To remove solids, odour and colour producing substance upto the size of 5 micron from treated effluent water						
	Location	Outlet of filter fed pump sump after activated carbon filter						
	MOC	PP						
	Type	Vertical pressure vessels						
	Pressure	Max. 3.5 kg/sq.cm.						
		Min. 1.0 kg/sq.cm.						
	Flow	5 kl/hour						
	Features	Dished ends, bell mouth type						
	Connections	40 mm						
	Fittings	Pressure gauge of 4 inch dia dial ranging from 0 to 7 kg at inlet and outlet of pressure vessels						
		Sampling ports at inlet and outlet of vessels						
	Filtering Media	PP ultrasonically welded micron bag filter of rating 5 micron						
13	FILTER PRESS SYSTEM WITH FILTER PRESS FEED PUMP		No.	1				
	Providing, fixing, testing & commissioning of filter press complete in all required accessories such as piping, valves with sludge transfer pumps, etc.							
	Application	To separate solid and liquid and to act as dewatering device						
	Location	Waste water treatment plant						
	Press Structure	PP						
	Closing	Hydraulic						
	Design Pressure	6 kg/sq.cm.						
	Working Pressure	5 kg/sq.cm.						
	Filter element	PP Chamber type recessed plates						

	Discharge	Individual cock / spigots						
	Drainage surface	Pipes						
	No. of chambers	12						
	No. of plates	10						
	Filter Cloth	12						
	Filter press feed pump		No.	2				
	Type	Self priming, non-clogg sludge pump						
	Operating capacity	1 cu.mt./hr at 3 kg/cm ²						
	MOC	CI						
14	LEVEL CONTROL SWITCH		No.	4				
	Providing, fixing, testing & commissioning of level control switch to each pump with required cables and accessories							
	Application	To keep pumps in auto positions so that pump will start at a particular level and will switch off at a particular level of liquid						
	Location	Receiving / holding sump and filter feed pump sump						
	MOC	SS – 316 / TEFLON						
15	INTERCONNECTING PIPES AND VALVES		No.	1				
	Providing, fixing, testing & commissioning of interconnecting pipe and fittings to convey waste water from one unit to other							
	Application	To carry waste effluent from one unit of waste water treatment plant to other unit						
	Location	Battery limit of waste water treatment plant						
	Size	As per requirement						
	MOC	GI, MS and UPVC						
16	ELECTRIFICATION WORK		No.	1				
	Providing, fixing, testing & commissioning of electrical control panel with required cabling work to operate different electro-mechanical equipment							
	Application	Electric supply to different motors and drives for efficient and trouble free operation and maintenance of waste water treatment plant						

	Location	Within battery limit of waste water treatment plant					
	Features	Auto switching over of mechanical equipments between operational and standby					
		Electric Panel shall have voltmeter and ammeter					
		Electric Panel shall have starters, switches and MCB of L&T, Simens					
		Wiring shall be of copper minimum 4 core					
		Wiring shall be through PVC conduit pipe					
		Connections to each motor and drive shall be through suitable copper gland					
		Suitable earthing will be provided between motors and panel					
17	WATER METER		No.	1			
	Providing, fixing, testing & commissioning of water meter at the outlet of micron bag filter to measure treated effluent quantity						
	Application	To measure flow and quantity of treated effluent					
	Location	At the outlet of micron filtration system before discharging the treated effluent for land application / gardening and plantation purpose					
18	SLUDGE RECYCLE PUMP		No.	2			
	Providing, fixing, testing & commissioning of air pump for recirculation of sludge from secondary tube settler tank to aeration reactor		1 Operational and 1 standby				
	Application	To transfer sludge from secondary tube settler tank to aeration reactor					
	Location	Secondary Tube Settler Tank					
	Type	Self – priming, non-clogg					
	Capacity	1 cu.mt../hr					
19	CHLORINATION SYSTEM		No.	2			
	Providing, fixing, testing & commissioning of chlorination system with all required accessories		1 Operational and 1 standby				
	Application	For disinfection of treated effluent					
	Location	After Micron Filter					

	Capacity	6 liters per hour				
	Pump type	Electronic dosing pump				
	MOC	PP				
	Dosing tank	100 liters				
20	TREATED EFFLUENT TRANSFER PUMP		No.	2		
	Providing, fixing, testing & commissioning of treated effluent transfer pumps complete in all required accessories such as piping, required header, flow control valves, cabling, electrical connections, etc.		1 operational and 1 standby			
	Application	To transfer treated effluent from treated effluent storage tank for reuse.				
	Location	Treated effluent storage tank				
	Operating Capacity	3 m ³ /hr at 35 m head				
	Type	Self-priming, non-clogg, mono-block				

SPECIFICATIONS FOR VARIOUS *CIVIL* AND MS EPOXY COATED FABRICATED STRUCTURE INCLUDING SITE DEVELOPMENT WORK FOR 30 KLPD CAPACITY EFFLUENT TREATMENT PLANT

Site preparation, excavation, RCC water proof structure (as per M – 25 standard), back filling and water testing of different units as per the description in Table 1.

S.No.	Unit Description	Capacity (in cu.mt.)	Liquid Depth (in Meter)	Free Board (in meter)
1.	Screen Chamber	1	1.0	0.75
2.	Oil and Grease Chamber	2.5	1.5	0.75
3.	Grit Chamber	3	2.0	0.75
4.	Equalization Tank	15	2.5	1.0
5.	Flash Mixer	1	1.5	0.75
6.	Floculator	1	1.5	0.75
7.	Primary Tube Settler Tank	7	2.5 + Hopper	1.0
8.	Aeration Reactor – 1	30	4.0	1.0
9.	Secondary Tube Settler Tank	7	2.5 + Hopper	1.0
10.	Filter Feed Pump Sump	7	3.0	1.0
11.	Treated Effluent Storage Tank	7	3.0	1.0
12.	Sludge Holding Sump	2	1.5	0.75
13.	Equipment Room	6 m x 5 m x 3.5 m (Height)		
14.	Foundations for Different Equipment as per requirement			

NOTE:

a. The tentative invert level is about 1.5 meter below the ground level, it may vary as per the actual site conditions. As per the actual level of the inlet line the levels of all other units will be modified accordingly. Nothing extra shall be paid for such modifications.

a. All units shall be provided plinth protection of 0.60 m wide and shall be joined by 1.25 m wide pathway and steps as per the site conditions.

b. All units shall be provided with support hand rail of 1 meter height all around outer walls in MS "B" Class pipe painted by synthetic enamel as per requirement. For bends in railing, regular bends shall be used and no elbows shall be used for this purpose. For supports of railings, MS pipe of class 'B' 32 mm dia shall be used. The joints shall be well ground, smoothed. Then the pipe surfaces and supports shall be applied with one coat of anti corrosive red oxide primer followed by one coat of synthetic enamel paint of approved make & shade, for corrosion resistance immediately after fabrication. One coat of synthetic enamel paint shall be again applied on all railings and their supports after testing and commissioning.

c. Necessary cut-outs, insert plates etc. shall be provided.

d. CI steps of at 300 mm c/c spacing in staggered manner along the inner wall of the tank at a suitable location shall be provided.

e. 100 mm thick PCC 1:3:6 shall be provided below base raft extending 100 mm on all the sides.

f. All internal surfaces will be provided with smooth cement plaster with waterproofing compound.

g. All external surfaces upto 300 mm below ground level shall be plastered with cement paint of approved make and shade.

h. The MCC, Operator shed shall have proper flooring with shed.

i. **Internal Electrification of MCP cum operator shed:** Lighting of MCP room shall consist of following: (i) Supply, fixing, wiring and commissioning of approved make of distribution board with suitable DP incomer and enough number of SP outgoing MCB's. MCC room: 2 Nos. Light points suitable for LED Lamps.

j. Piping work: The piping work covered under this contract is the complete interconnecting piping with necessary pipe fittings, specials, flanges, etc for the waste water treatment plant between various units.

The piping work shall include all necessary pipe inserts required to be provided at various places and all the inserts shall be of suitable construction with puddle flange in the centre and properly grouted so as to prevent leakage.

The piping work shall also include all necessary excavation of pipe trenches for underground pipe with bedding of sand and shall also include all necessary pipe supports, plate inserts, etc.

Pipe anchoring works, brick masonry pillars, RCC pedestals etc. as required to support the pipe due to site conditions etc. or as may be required for supporting the various pipes above the ground level within the treatment plant area and for the piping work to convey waste water from different points to treatment unit are included in the scope of work.

All the necessary valves for the entire treatment plant piping as required shall be provided. The valves shall conform to the relevant BIS standards.

k. All the structural details shall be designed, checked & verified by a chartered registered structural engineer and stability certificate shall be issued by him for the same. The structure designed shall be earthquake proof for the project area zone. A certificate to this extent shall be furnished from the registered Structural consultant. If asked for the design calculation shall be made available to the Owner.

l. All the units of the plant shall be joined with a pathway 1.25 m width with a nominal slope on both the sides. Pathway shall be made with minimum 60 mm thick PCC 1:1.5:3, self finished over 100mm thick CC 1:4:8. Where the site may be in contours necessary steps, side walls etc. as required may be provided in brick work, Concrete and IPS etc. Bidder shall assess this at site and the prices shall be inclusive of such requirements.

m. The bidder must, along with the bid, furnish the List of Spares required for normal operation of the plant for two years after commissioning and quote optionally for the spares.

n. The bidder must quote optionally for operation & maintenance of the entire plant for a period of one year after successful commissioning. The bidder must furnish full details along with the terms and conditions etc.

BATTERY LIMITS FOR THE WASTE WATER TREATMENT PLANT WORK

The scope of work described in the Schedule of Requirements shall be governed by the following battery limits:

a. Raw effluent line from different sources (piping length will not be more than 100 meters) including chambers / manhole (maximum 6 numbers) to the waste water treatment plant site, entire turnkey project for waste water treatment plant.

b. Treated effluent line from the outlet of water meter / flow meter, line length not exceeding 10 m. This treated effluent could be used for irrigation purposes within the campus. Supply and installation of further piping shall be arranged by Owner at their own cost and shall not be in the scope of the bidder.

c. Supply, erection and charging of the Motor Control Centre shall be in the Contractor's scope. The supply, laying, connection and charging of 3½ x 35 sq.mm. armoured Aluminium conductor, PVC insulated and sheathed power cable for main incomer of MCC is included in contractor's scope of work. This cable shall be laid underground from the existing Panel at ETP site and its length shall not exceed 10 m. Termination of this cable at both ends with suitable glands and lugs is included in the contractor's scope. Supplying and providing necessary earthing system including two number GI plate type earthing pits, GI strip/wires from MCC to all electrical equipment/ controls is included in contractor's scope.

d. Unit lighting and yard lighting in the ETP area including conduits, wiring, cables, light fittings, poles/brackets of approved design is included in Contractors scope.

TESTING, TRIAL RUNS, COMMISSIONING & HANDING OVER

a. Testing and Trial Runs

The contractor shall have to test each equipment used for the plant for at least 72 hrs continuous running with designed load and to the full satisfaction of the Engineer-in-Charge. After testing the individual equipment and stabilization of the plant, the contractor shall run the whole plant at no extra cost to the at least for one month as directed by the Engineer-in-Charge. Any defects found in design, workmanship or in any of the equipment shall be rectified by the

contractor at his own cost within a reasonable time to be decided by the Engineer-in-charge, and beyond this period suitable penalty shall be levied and the plant shall be tested again for faultless running for one month to the entire satisfaction of Engineer-in-Charge.

Necessary instruments, gauges, supervisory personnel etc. shall be furnished / provided by the contractor free of cost for conducting the tests. The recording of tests result shall be as per formats to be approved by the Engineer-in-Charge and will form part of the completion documents.

b. Commissioning and handing over

During trial runs as described above, the contractor shall satisfy the Engineer-in-Charge in all respects regarding the satisfactory quality of effluent, quality of materials, equipment and workmanship used in the plant. Only after satisfying himself, regarding the above points, the Engineer-in-charge will take over the plant and such date of taking over shall be deemed as date of commissioning. The guarantee period described above will start from this date. The contractor shall have to obtain necessary statutory approval for setting up of Waste Water Treatment Plant to its commissioning/handling over. The charges for this shall be all included in bid prices.

PLANT GUARANTEES

The under mentioned clauses shall be read in conjunction with Warranty / Guarantee provisions given elsewhere in this document.

a. Manufacturer's Guarantees

The manufacturer's guarantee for design, workmanship and performance for all bought out items shall be made available to the purchaser/owner and shall be valid at least for the entire defects liability period.

In the event of failure of any particular equipment which fails more than three times during the guarantee period as mentioned in clause below, the contractor shall replace at his own cost that equipment. Manufacturer's/Contractor's guarantee, as mentioned in clause above, for such replaced equipment shall also be made available to the purchaser/owner and should be kept at least for one year from the date of last replacement.

b. Performance Guarantee

The contractor shall give guarantee for a period of one year from the date of successful commissioning for the treatment plant against design, defective materials, workmanship, performance and guaranteed effluent quality. In the event the commissioning of the plant is not possible due to non-availability of effluent, contractor shall be issued mechanical completion certificate by Engineer-in-Charge provided each equipment is tested satisfactorily as directed by Engineer-in-Charge. However, the contractor shall have to maintain the plant at his own cost, in such a case for a period of three months beyond which period, if he is required to maintain further, he will be paid extra at mutually agreeable rate. However, testing and commissioning of the plant shall be carried out by the Contractor during the Defects Liability period. Any defects found in the workmanship materials or performance of the plant shall be made good by the contractor at his own expense within the time specified by Engineer-in-Charge.

For this purpose the performance guarantee furnished by successful bidder, as per general conditions of contract shall be retained till the completion of the guarantee period as stated above. The contractor, at his own expense shall start and commission the plant and prove that it is giving satisfactory service and desired characteristics of the treated effluent, for one month

before handing over the plant to the Owner. During this start up and commissioning period the contractor shall train the Owner's operational staff without any extra cost to the Owner. The contractor shall also have to guarantee the quality of the treated final effluent to meet the specification. For given design quantity and quality of untreated effluent, if the Contractor fails to achieve the treated effluent criteria, the Contractor shall rectify the plant at no extra cost, so as to achieve the requisite performance guarantee and satisfy commissioning of the plant to the Engineer-in-Charge.

All the above guarantees will be based on collection and analysis of samples as mentioned in clause below.

c. Collection and analysis of samples

The guaranteed effluent shall be based on complete analysis of treated effluent collected after stabilization of the plant as per Special Conditions of Contract.

LIST OF APPROVED MAKES OF MATERIAL

S. No.	MATERIAL	APPROVED MAKES
1.	SS Screen with basket	PACE / ARVI / Equivalent
2.	Raw effluent transfer submersible cutter pup	CNP / CRI / Lubi
3.	Filter feed pumps / Sludge recirculation pumps and treated water transfer pumps	Kirloskar / CRI / CNP / Lubi
4.	Filter press feed pump	Weltech / Kirloskar / Johnson / CRI / Lubi
5.	Dosing pump	Asia LMI / Edose / Pentair / Nortom / Milton Roy
6.	Electric motors	Kirloskar / Crompton / ABB / Siemens / Bharat Bijlee
7.	Twin lobe roots air blower	ACME Air Equipment / Kay / Everest Transmission / Air Vak / Usha
8.	Chemical dosing tank	Sintex / Frontier / Water well / Equivalent
9.	Tubular and coarse air diffusers	Jay Engineering / Membrane India / Aqua Inc
10.	UPVC pipe Class 10kg/cm ²	Supreme / Astral / Ashirwad
11.	GI & MS pipeline	Tata / Jindal (Hissar) / Prakash Surya
12.	GI fittings	Unik / 'R' brand / Jain sons
13.	FRP vessel	Pentair / Aventura / Hydrocell / Hytank
14.	Multiport valves	Pentair / Aster / Pharer / RM / Midas
15.	Butterfly valves	Nova / C&R / Inter Valve / Castle / Deep / Zolta / Equivalent
16.	Non return valve	Karan / C&R / Inter Valve / Castle / Deep / Zolta / Equivalent
17.	Ball valve	Nova / C&R / Inter Valve / Castle / Deep / Zolta / Equivalent
18.	Expansion / vibration eliminator	Resistoflex / Kanwal
19.	Pressure gauge	Fiebig / H Guru
20.	Level controller	Femac / Nand Shyam / Mimic
21.	Strainer	Zoloto / Emerald / Maharaja Casting.

S. No.	MATERIAL	APPROVED MAKES
1.	SS Screen with basket	PACE / ARVI / Equivalent
22.	Foot valve	C&R / Inter Valve / Castle / Deep / Zolta / Equivalent
23.	Float valve	CIM / Leader / C&R / Inter Valve / Castle / Deep / Zolta / Equivalent
24.	Multiport valve	Pentair / Astral / Initiative / UKL / Midas
25.	Flanges	Class 150 / Table 'H'
26.	Filter press	Pharmtech / Sachin / Vasu / Bhagylakshmi / Equivalent
27.	Tube dac media	MM Aqua / Cooldac / Energy / Vasu
28.	Gear box	Radicon / Elicon / Priemer
29.	Electrical control panel	Fabricated
30.	Power cables & control cables	Havells / Finolex / Polycab
31.	PVC insulated copper wires	Finolex / Skyline / National / Batra Henley / Polycab

EFFLUENT TREATMENT PLANT OF 20 KLPD CAPACITY FOR MILK CHILLING CENTRE PETLAWAD AND KANNOD

LIST OF CONTENTS FOR EFFLUENT TRETMENT PLANT:20 KLPD

S. NO.	DESCRIPTION
I)	Technical Specifications
	I) A) Technical Specifications
	I) B) Technical Specifications – Electro – Mechanical Equipment
	I) C) Technical Specifications – Civil
II	List of approved make

TECHNICAL SPECIFICATIONS

1.0 OPERATING PRINCIPLE:

In order to conserve water and to abate pollution, Waste Water Treatment Plant has been proposed to ensure that treated effluent (water) characteristics are well below the permissible limits of local / national pollution control norms even under varying flow conditions which are typical for such systems. This implies that the selected process shall be able to withstand the shock load situation.

We propose to use compact waste water treatment system working on the principle of extended aeration process after required pretreatment operation followed by post tertiary treatment and disinfection.

The waste water treatment plant will be designed with a suitable capacity of liquid effluent waste. Waste water treatment plant will consists of screen chamber, oil and grease traps, equalization / collection sump with two numbers pumps, flash mixer, flocculator, primary tube settler, aeration reactors, Secondary settling tank with tube dac media, sludge holding tank, filter feed pump sump, treated effluent storage tank, filter feed pumps, multi-grade / pressure sand filter, activated carbon filter, micron filter, chlorination, MS / GI pipe and fitting, valves and associate electrical works with control panel per plant.

2.0 PROCESS DESCRIPTION:

Considerations:

- a. Raw effluents include waste water from can washing, equipment cleaning, floor washing, container washings, etc of the chilling center and processing unit.
- b.
- c. Inlet characteristic considered for designing the proposed waste water treatment plant:
- d.

S.No.	Description / Parameter	UOM	Value	MPPCB limit
1	Flow	Cu.mt./day	20	
2.	pH		6 – 8	6.5 – 9
3.	Total Solids	ppm	3000	Less than 2200
4.	Suspended Solids	ppm	1000	Less than 100
5.	Total Dissolved Solids	ppm	2000	Less than 2100
6.	Biological Oxygen Demand	ppm	1200- 1500	Less than 30
7.	Chemical Oxygen Demand	ppm	2000 – 2500	Less than 250
8.	Oil, Grease and Fat	ppm	350	Less than 10

c. Output Quality Considered:

S.No.	Description / Parameter	UOM	Value	Limit
1	Flow	Cu.mt./day	16	
2.	pH		6.5 – 8	6.5 – 9
3.	Total Solids	ppm	Less than 2200	Less than 2200
4.	Suspended Solids	ppm	Less than 100	Less than 100
5.	Total Dissolved Solids	ppm	Less than 2100	Less than 2100
6.	Biological Oxygen Demand	ppm	Less than 30	Less than 30
7.	Chemical Oxygen Demand	ppm	Less than 250	Less than 250
8.	Oil, Grease and Fat	ppm	Less than 10	Less than 10

Treatment Scheme:

Waste water treatment plant should be designed to ensure that treated effluent (water) characteristics are well below the permissible limits, even under varying flow conditions. This implies that the selected process shall be able to withstand the shock load situation.

The treatment plant shall be designed with a capacity to handle 20 KLD of liquid waste water.

Primary Treatment:

Here, the raw effluent from different sources will be allowed to pass through the **screen chamber (Stage – 1)** and **grease trap (Stage – 2)** into the **equalization tank (Stage – 3)** for homogenization of effluent. Here, effluent will be homogenized thoroughly by purging air through coarse diffusers.

Screens with basket shall be provided in screen chamber and it shall be manually cleaned. Two pumps will be provided in each of the collection cum equalization tank to pump the collected waste water to the next unit. Automatic level controller will be provided in the tank to turn the pump off at the low water level in the tank and to start the pump when water level is high automatically. Air will be introduced in this tank to prevent any potential foul smell problem and to provide the mixing of wastewater to avoid the sedimentation of solids in this tank. Diffusers used for aeration purpose shall be non-clog, coarse bubble membrane type.

From equalization tank, effluent will be pumped into the **flash mixer and flocculator (Stage – 4)** where caustic and PAC/alum and poly-electrolytes will be dosed as per the requirement. From here, effluent will flow by gravity into the **primary tube settler tank (Stage - 5)** for settling of sludge. It shall have tube dac media. The settled sludge will be taken in the **filter press (Stage - 12)** for drying of sludge. The sludge cake obtained will be packed in the HDPE bags and will be disposed through the Common Biomedical Waste Treatment Facility.

Secondary Treatment:

Effluent from primary settling tank flows by gravity into the **aeration reactor (Stage – 6)** for aeration using nitrifying and denitrifying bacteria. FAB reactor shall be fitted with tubular diffusers for supplying air (oxygen) to mix the content of reactor and to transfer atmospheric oxygen through twin lobe roots air blower. The aeration system will be designed in a way so as to achieve complete mixing of organisms with raw wastewater. The dissolved organic matter will be subject to biological degradation by bacterial action in presence of oxygen and nutrients. This will convert dissolved organic matter into stable settable matter. (MLSS in aeration tank shall be maintained 3500-4000 Mg/L).

From aeration reactor, the mixed liquor passes into the **secondary tube settler tank (Stage – 7)**. Secondary tube settler tank will be a hopper bottom sedimentation tank provided with tube dac media. The suspended solids will settle at the bottom of the tank and clear supernatant will overflow to filter feed pump sump through outlet launder. Excess sludge will be removed by sludge pump into the **filter press (Stage – 12)**. Provision for sludge recirculation will also be provided. The dewatered sludge will be disposed off with municipal solid waste.

Tertiary Treatment:

The clear supernatant after secondary tube settler tank will be collected in to the filter feed pump sump. The clarified effluent will be then fed to filtration unit.

Filtration unit consisting of **multi-grade filter (Stage – 8)**, **activated carbon filter (Stage – 9)** and **micron filter (Stage – 10)** will remove the residual impurities such as odor/color, suspended solids, BOD/COD. On line chlorination (**Stage – 11**) will be done to ensure proper disinfection.

EQUIPMENT DESCRIPTION

20 KLPD WASTE WATER TREATMENT PLANT

S.No.	Description	UOM	Qty			
1	COARSE AND FINE BAR SCREEN	No.	2			
	<p>Providing, fixing, testing & commissioning of coarse bar screen with basket with suitable frame work arrangement for lifting of basket and complete in all required accessories such as system for lifting solids.</p> <p>Application For removing large size floating and suspended particles from effluent</p> <p>Location Screen chamber</p> <p>Dimensions of Screen Chambers channel 500 mm x 500 mm with water depth of 750 mm</p> <p>Type Fine bar screen</p> <p>Bar spacing 25 mm and 10 mm</p> <p>Mounting of screen At 40 degree in screen chamber</p> <p>MOC SS - 304</p>					
2	WASTE WATER TRANSFER PUMP	No.	2			
	<p>Providing, fixing, testing & commissioning of waste water transfer pumps with suitable arrangement for lifting of pump, complete in all required accessories such as piping, required header, flow control valves, cabling, electrical connections, etc.</p> <p>Application To transfer raw waste water from equalization tank to flocculator</p> <p>Location Equalization Tank</p> <p>Operating Capacity 1.5 m³/hr at 10 m head</p> <p>Type Submersible, cutter pump</p> <p>MOC CI and MS</p>			1 operational and 1 standby		
3	COARSE DIFFUSERS	No.	6			
	<p>Providing, fixing, testing & commissioning of coarse diffusers</p> <p>Application To supply air in the form of coarse air bubble for homogenization and mixing of effluent</p>					

	Location	Equalization Tank, Flocculator, Filter Feed Pump Sump and Treated Effluent Storage Tank				
	MOC	Diffuser: EPDM Membrane, Supporting structure: PVC				
	Air Discharge Capacity	2 cu.mt./hr per diffuser				
4	TUBULAR AIR DIFFUSERS		No.	6		
	Providing, fixing, testing & commissioning of tubular diffusers					
	Application	To supply air in the form of coarse air bubble for aeration				
	Location	Fluidized aerobic bio-reactor				
	MOC	Diffuser: EPDM Membrane, Supporting structure: PVC Other wetted part such as Clips and Nipple: SS – 304				
	Air Discharge Capacity	6 cu.mt./hr per diffuser				
5	TWIN LOBE ROOTS AIR BLOWER		No.	2		
	Providing, fixing, testing & commissioning of twin lobe roots air blower with acoustic enclosure and header with control valves		1 operational and 1 standby			
	Application	To supply air to diffusers				
	Location	Equipment room				
	Operating Capacity	50 cu.mt./hr of air discharge at 0.45 kg/sq.cm.				
	MOC	CI and MS				
	Feature	Acoustic Enclosure to meet the noise norms				
6	TUBE SETTLERS		cu.mt	3		
	Providing, fixing, testing & commissioning of PP UV Stabilized Tube Dac Media					
	Application	To settle the sludge				
	Location	Primary and Secondary Tueb Settling Tanks				
	Vertical Height	750 mm				
	Slant Height	866 mm				
	Angle of inclination	60 degree				
	Shape	Hexagnal Chevron				
	Material	PVC				
7	CHEMICAL DOSING TANK		No.	3		
	Providing, fixing, testing & commissioning of dosing tank					

	Application	For storing Caustic and Alum /PAC/PE solution				
	Location	Flash Mixer ad Flocculator				
	Capacity	50 liters				
	MOC	HDPE.				
	Fittings	a. Coarse diffusers for mixing				
		b. Alum Dosing Pump				
8	CHEMICAL DOSING PUMP		No.	3		
	Providing, fixing, testing & commissioning of dosing pump		1 Operational and 1 Standby			
	Application	To dose polyelectrolyte solution at desired rate				
	Location	Polyelectrolyte Solution Tank				
	Operating Capacity	4 lph				
	MOC	PP				
	Supporting Structure	MS Epoxy Coated				
9	FILTER FEED PUMPS		No.	2		
	Providing, fixing, testing & commissioning of filter feed transfer pumps complete in all required accessories such as piping, required header, flow control valves, cabeling, electrical connections, etc.		1 operational and 1 standby			
	Application	To transfer clarified from filter feed pump sump to the multi-gradefilter				
	Location	Filter feed pump sump				
	Operating Capacity	2 m3/hr at 30 m head				
	Type	Self-priming, non-clogg				
	MOC	CI and MS				
10	MULTI-GRADE FILTER		No.	1		
	Providing, fixing, testing & commissioning of multi-grade filtercomplete in all required accessories such as piping, valves, etc.					
	Application	To remove suspended particles from settled water in filter feed pump sump				
	Location	Outlet of filter fed pump sump				
	MOC	FRP				
	Type	Vertical pressure vessels				
	Pressure	Max. 3.5 kg/sq.cm.				
		Min. 1.0 kg/sq.cm.				
	Flow	2 cu.mt./hr				
	Piping	1 INCH				
	Valve	1 INCH				

	Fittings	Pressure gauge of 4 inch dia dial ranging from 0 to 7 kg at inlet and outlet of pressure vessels				
		Sampling ports at inlet and outlet of pressure vessels				
		Backwash arrangements				
	Media	Graded quartz sand media confirming to CPHEEO and BIS specifications				
11	ACTIVATED CARBON FILTER		No.	1		
	Providing, fixing, testing & commissioning of activated carbon filter complete in all required accessories such as piping, valves, etc.					
	Application	To remove odour and colour producing substance from water in the filter feed pump sump				
	Location	Outlet of filter fed pump sump				
	MOC	FRP				
	Type	Vertical pressure vessels				
	Pressure	Max. 3.5 kg/sq.cm. Min. 1.0 kg/sq.cm.				
	Flow	2 cu.mt./hr				
	Piping	1 INCH				
	Valve	1 INCH				
	Media	Graded Quartz Sand and Granular Activated Carbon of 850 - 900 Iodine Value confirming to CPHEEO and BIS specifications				
12	MICRON FILTRATION SYSTEM		No.	1		
	Providing, fixing, testing & commissioning of micron bag filter complete in all required accessories such as piping, valves, etc.					
	Application	To remove solids, odour and colour producing substance upto the size of 5 micron from treated effluent water				
	Location	Outlet of filter fed pump sump after activated carbon filter				
	MOC	PP				
	Type	Vertical pressure vessels				
	Pressure	Max. 3.5 kg/sq.cm. Min. 1.0 kg/sq.cm.				
	Flow	5 kl/hour				
	Features	Dished ends, bell mouth type				
	Connections	40 mm				

	Fittings	Pressure gauge of 4 inch dia dial ranging from 0 to 7 kg at inlet and outlet of pressure vessels				
		Sampling ports at inlet and outlet of vessels				
	Filtering Media	PP ultrasonically welded micron bag filter of rating 5 micron				
13	FILTER PRESS SYSTEM WITH FILTER PRESS FEED PUMP		No.	1		
	Providing, fixing, testing & commissioning of filter press complete in all required accessories such as piping, valves with sludge transfer pumps, etc.					
	Application	To separate solid and liquid and to act as dewatering device				
	Location	Waste water treatment plant				
	Press Structure	PP				
	Closing	Hydraulic				
	Design Pressure	6 kg/sq.cm.				
	Working Pressure	5 kg/sq.cm.				
	Filter element	PP Chamber type recessed plates				
	Discharge	Individual cock / spigots				
	Drainage surface	Pipes				
	No. of chambers	12				
	No. of plates	10				
	Filter Cloth	12				
	Filter press feed pump		No.	2		
	Type	Self priming, non-clogg sludge pump				
	Operating capacity	1 cu.mt./hr at 3 kg/cm ²				
	MOC	CI				
14	LEVEL CONTROL SWITCH		No.	4		
	Providing, fixing, testing & commissioning of level control switch to each pump with required cables and accessories					
	Application	To keep pumps in auto positions so that pump will start at a particular level and will switch off at a particular level of liquid				
	Location	Receiving / holding sump and filter feed pump sump				

	MOC	SS – 316 / TEFLON					
15	INTERCONNECTING PIPES AND VALVES		No.	1			
	Providing, fixing, testing & commissioning of interconnecting pipe and fittings to convey waste water from one unit to other						
	Application	To carry waste effluent from one unit of waste water treatment plant to other unit					
	Location	Battery limit of waste water treatment plant					
	Size	As per requirement					
	MOC	GI, MS and UPVC					
16	ELECTRIFICATION WORK		No.	1			
	Providing, fixing, testing & commissioning of electrical control panel with required cabling work to operate different electro-mechanical equipemnt						
	Application	Electric supply to different motors and rives for efficient and trouble free operation and maintenance of waste wtaer treatment plant					
	Location	Within battery limit ofwaste water treatment plant					
	Features						
		Auto switching over of mechanical equipments between operational and standby					
		Electric Panel shall have voltmeter and ammeter					
		Electric Panel shall have starters, switches and MCB of L&T, Simens					
		Wiring shall be of copper minimum 4 core					
		Wiring shall be through PVC conduit pipe					
		Connections to each motor and drive shall be through suitable copper gland					
		Suitable earthing will be provided between motors and panel					
17	WATER METER		No.	1			
	Providing, fixing, testing & commissioning of water meter at the outlet of micron bag filter to measure treated effluent quantity						

	Application	To measure flow and quantity of treated effluent				
	Location	At the outlet of micron filtration system before discharging the treated effluent for land application / gardening and plantation purpose				
18	SLUDGE RECYCLE PUMP		No.	2		
	Providing, fixing, testing & commissioning of air pump for recirculation of sludge from secondary tube settler tank to Aeration reactor		1 Operational and 1 standby			
	Application	To transfer sludge from secondary tube settler tank to aeration reactor				
	Location	Secondary Tube Settler Tank				
	Type	Self – priming, non-clogg				
	Capacity	1 cu.mt./hr				
19	CHLORINATION SYSTEM		No.	2		
	Providing, fixing, testing & commissioning of chlorination system with all required accessories		1 Operational and 1 standby			
	Application	For disinfection of treated effluent				
	Location	After Micron Filter				
	Capacity	6 liters per hour				
	Pump type	Electronic dosing pump				
	MOC	PP				
	Dosing tank	100 liters				
20	TREATED EFFLUENT TRANSFER PUMP		No.	2		
	Providing, fixing, testing & commissioning of treated effluent transfer pumps complete in all required accessories such as piping, required header, flow control valves, cabeling, electrical connections, etc.		1 operational and 1 standby			
	Application	To transfer treated effluent from treated effluent storage tank for reuse.				
	Location	Treated effluent storage tank				
	Operating Capacity	2 m3/hr at 35 m head				
	Type	Self-priming, non-clogg, mono-block				

SPECIFICATIONS FOR VARIOUS CIVIL AND MS EPOXY COATED FABRICATED STRUCTURE INCLUDING SITE DEVELOPMENT WORK FOR EFFLUENT TREATMENT PLANT 20 KLPD

Site preparation, excavation, RCC water proof structure (as per M – 25 standard), back filling and water testing of different units as per the description in Table 1.

S.No.	Unit Description	Capacity (in cu.mt.)	Liquid Depth (in Meter)	Free Board (in meter)
1.	Screen Chamber	1	1.0	0.75
2.	Oil and Grease Chamber	2	1.5	0.75
3.	Grit Chamber	2	2.0	0.75
4.	Equalization Tank	10	2.5	1.0
5.	Flash Mixer	1	1.5	0.75
6.	Flocculator	1	1.5	0.75
7.	Primary Tube Settler Tank	4	2.5 + Hopper	1.0
8.	Aeration Reactor	20	4.0	1.0
9.	Secondary Tube Settler Tank	4	2.5 + Hopper	1.0
10.	Filter Feed Pump Sump	5	3.0	1.0
11.	Treated Effluent Storage Tank	5	3.0	1.0
12.	Sludge Holding Sump	2	1.5	0.75
13.	Equipment Room	6 m x 5 m x 3.5 m (Height)		
14.	Foundations for Different Equipment as per requirement			

NOTE:a. The tentative invert level is about 1.5 meter below the ground level, it may vary as per the actual site conditions. As per the actual level of the inlet line the levels of all other units will be modified accordingly. Nothing extra shall be paid for such modifications.

o. All units shall be provided plinth protection of 0.60 m wide and shall be joined by 1.25 m wide pathway and steps as per the site conditions.

p. All units shall be provided with support hand rail of 1 meter height all around outer walls in MS “B” Class pipe painted by synthetic enamel as per requirement. For bends in railing, regular bends shall be used and no elbows shall be used for this purpose. For supports of railings, MS pipe of class ‘B’ 32 mm dia shall be used. The joints shall be well ground, smoothed. Then the pipe surfaces and supports shall be applied with one coat of anti corrosive red oxide primer followed by one coat of synthetic enamel paint of approved make & shade, for corrosion resistance immediately after fabrication. One coat of synthetic enamel paint shall be again applied on all railings and their supports after testing and commissioning.

q. Necessary cut-outs, insert plates etc. shall be provided.

r. CI steps of at 300 mm c/c spacing in staggered manner along the inner wall of the tank at a suitable location shall be provided.

s. 100 mm thick PCC 1:3:6 shall be provided below base raft extending 100 mm on all the sides.

t. All internal surfaces will be provided with smooth cement plaster with waterproofing compound.

u. All external surfaces upto 300 mm below ground level shall be plastered with cement paint of approved make and shade.

v. The MCC, Operator shed shall have proper flooring with shed.

w. **Internal Electrification of MCP cum operator shed:** Lighting of MCP room shall consist of following: (i) Supply, fixing, wiring and commissioning of approved make of distribution board with suitable DP incomer and enough number of SP outgoing MCB's. MCC room: 2 Nos. Light points suitable for LED Lamps.

x. **Piping work:** The piping work covered under this contract is the complete interconnecting piping with necessary pipe fittings, specials, flanges, etc for the waste water treatment plant between various units.

The piping work shall include all necessary pipe inserts required to be provided at various places and all the inserts shall be of suitable construction with puddle flange in the centre and properly grouted so as to prevent leakage.

The piping work shall also include all necessary excavation of pipe trenches for underground pipe with bedding of sand and shall also include all necessary pipe supports, plate inserts, etc.

Pipe anchoring works, brick masonry pillars, RCC pedestals etc. as required to support the pipe due to site conditions etc. or as may be required for supporting the various pipes above the ground level within the treatment plant area and for the piping work to convey waste water from different points to treatment unit are included in the scope of work.

All the necessary valves for the entire treatment plant piping as required shall be provided. The valves shall conform to the relevant BIS standards.

y. All the structural details shall be designed, checked & verified by a chartered registered structural engineer and stability certificate shall be issued by him for the same. The structure designed shall be earthquake proof for the project area zone. A certificate to this extent shall be furnished from the registered Structural consultant. If asked for the design calculation shall be made available to the Owner.

z. All the units of the plant shall be joined with a pathway 1.25 m width with a nominal slope on both the sides. Pathway shall be made with minimum 60 mm thick PCC 1:1.5:3, self finished over 100mm thick CC 1:4:8. Where the site may be in contours necessary steps, side walls etc. as required may be provided in brick work, Concrete and IPS etc. Bidder shall assess this at site and the prices shall be inclusive of such requirements.

aa. The bidder must, along with the bid, furnish the List of Spares required for normal operation of the plant for two years after commissioning and quote optionally for the spares.

bb. The bidder must quote optionally for operation & maintenance of the entire plant for a period of one year after successful commissioning. The bidder must furnish full details along with the terms and conditions etc.

BATTERY LIMITS FOR THE WASTE WATER TREATMENT PLANT WORK

The scope of work described in the Schedule of Requirements shall be governed by the following battery limits:

e. Raw effluent line from different sources (piping length will not be more than 100 meters) including chambers / manhole (maximum 6 numbers) to the waste water treatment plant site, entire turnkey project for waste water treatment plant.

f. Treated effluent line from the outlet of water meter / flow meter, line length not exceeding 10 m. This treated effluent could be used for irrigation purposes within the campus. Supply and installation of further piping shall be arranged by Owner at their own cost and shall not be in the scope of the bidder.

g. Supply, erection and charging of the Motor Control Centre shall be in the Contractor's scope. The supply, laying, connection and charging of 3½ x 35 sq.mm. armoured Aluminium conductor, PVC insulated and sheathed power cable for main incomer of MCC is included in contractor's scope of work. This cable shall be laid underground from the existing Panel at ETP site and its length shall not exceed 10 m. Termination of this cable at both ends with suitable glands and lugs is included in the contractor's scope. Supplying and providing necessary earthing system including two number GI plate type earthing pits, GI strip/wires from MCC to all electrical equipment/ controls is included in contractor's scope.

h. Unit lighting and yard lighting in the ETP area including conduits, wiring, cables, light fittings, poles/brackets of approved design is included in Contractors scope.

TESTING, TRIAL RUNS, COMMISSIONING & HANDING OVER

c. Testing and Trial Runs

The contractor shall have to test each equipment used for the plant for at least 72 hrs continuous running with designed load and to the full satisfaction of the Engineer-in-Charge. After testing the individual equipment and stabilization of the plant, the contractor shall run the whole plant at no extra cost to the at least for one month as directed by the Engineer-in-Charge. Any defects found in design, workmanship or in any of the equipment shall be rectified by the contractor at his own cost within a reasonable time to be decided by the Engineer-in-charge, and beyond this period suitable penalty shall be levied and the plant shall be tested again for faultless running for one month to the entire satisfaction of Engineer-in-Charge.

Necessary instruments, gauges, supervisory personnel etc. shall be furnished / provided by the contractor free of cost for conducting the tests. The recording of tests result shall be as per formats to be approved by the Engineer-in-Charge and will form part of the completion documents.

d. Commissioning and handing over

During trial runs as described above, the contractor shall satisfy the Engineer-in-Charge in all respects regarding the satisfactory quality of effluent, quality of materials, equipment and workmanship used in the plant. Only after satisfying himself, regarding the above points, the Engineer-in-charge will take over the plant and such date of taking over shall be deemed as date of commissioning. The guarantee period described above will start from this date. The contractor shall have to obtain necessary statutory approval for setting up of Waste Water Treatment Plant to its commissioning/handing over. The charges for this shall be all included in bid prices.

PLANT GUARANTEES

The under mentioned clauses shall be read in conjunction with Warranty / Guarantee provisions given elsewhere in this document.

a. Manufacturer's Guarantees

The manufacturer's guarantee for design, workmanship and performance for all bought out items shall be made available to the purchaser/owner and shall be valid at least for the entire defects liability period.

In the event of failure of any particular equipment which fails more than three times during the guarantee period as mentioned in clause below, the contractor shall replace at his own cost that equipment. Manufacturer's/Contractor's guarantee, as mentioned in clause above, for such replaced equipment shall also be made available to the purchaser/owner and should be kept at least for one year from the date of last replacement.

b. Performance Guarantee

The contractor shall give guarantee for a period of one year from the date of successful commissioning for the treatment plant against design, defective materials, workmanship, performance and guaranteed effluent quality. In the event the commissioning of the plant is not possible due to non-availability of effluent, contractor shall be issued mechanical completion certificate by Engineer-in-Charge provided each equipment is tested satisfactorily as directed by Engineer-in-Charge. However, the contractor shall have to maintain the plant at his own cost, in such a case for a period of three months beyond which period, if he is required to maintain further, he will be paid extra at mutually agreeable rate. However, testing and commissioning of the plant shall be carried out by the Contractor during the Defects Liability period. Any defects found in the workmanship materials or performance of the plant shall be made good by the contractor at his own expense within the time specified by Engineer-in-Charge.

For this purpose the performance guarantee furnished by successful bidder, as per general conditions of contract shall be retained till the completion of the guarantee period as stated above. The contractor, at his own expense shall start and commission the plant and prove that it is giving satisfactory service and desired characteristics of the treated effluent, for one month before handing over the plant to the Owner. During this start up and commissioning period the contractor shall train the Owner's operational staff without any extra cost to the Owner. The contractor shall also have to guarantee the quality of the treated final effluent to meet the specification. For given design quantity and quality of untreated effluent, if the Contractor fails to achieve the treated effluent criteria, the Contractor shall rectify the plant at no extra cost, so as to achieve the requisite performance guarantee and satisfy commissioning of the plant to the Engineer-in- Charge.

All the above guarantees will be based on collection and analysis of samples as mentioned in clause below.

c. Collection and analysis of samples

The guaranteed effluent shall be based on complete analysis of treated effluent collected after stabilization of the plant as per Special Conditions of Contract.

LIST OF APPROVED MAKES OF MATERIAL

S. No.	MATERIAL	APPROVED MAKES
1.	SS Screen with basket	PACE / ARVI / Equivalent
2.	Raw effluent transfer submersible cutter pump	CNP / CRI / Lubi
3.	Filter feed pumps / Sludge recirculation pumps and treated water transfer pumps	Kirloskar / CRI / CNP / Lubi
4.	Filter press feed pump	Weltech / Kirloskar / Johnson / CRI / Lubi

S. No.	MATERIAL	APPROVED MAKES
1.	SS Screen with basket	PACE / ARVI / Equivalent
5.	Dosing pump	Asia LMI / Edose / Pentair / Nortom / Milton Roy
6.	Electric motors	Kirloskar / Crompton / ABB / Siemens / Bharat Bijlee
7.	Twin lobe roots air blower	ACME Air Equipment / Kay / Everest Transmission / Air Vak / Usha
8.	Chemical dosing tank	Sintex / Frontier / Water well / Equivalent
9.	Tubular and coarse air diffusers	Jay Engineering / Membrane India / Aqua Inc
10.	UPVC pipe Class 10kg/cm2	Supreme / Astral / Ashirwad
11.	GI & MS pipeline	Tata / Jindal (Hissar) / Prakash Surya
12.	GI fittings	Unik / 'R' brand / Jain sons
13.	FRP vessel	Pentair / Aventura / Hydrocell / Hytank
14.	Multiport valves	Pentair / Aster / Pharer / RM / Midas
15.	Butterfly valves	Nova / C&R / Inter Valve / Castle / Deep / Zolta / Equivalent
16.	Non return valve	Karan / C&R / Inter Valve / Castle / Deep / Zolta / Equivalent
17.	Ball valve	Nova / C&R / Inter Valve / Castle / Deep / Zolta / Equivalent
18.	Expansion / vibration eliminator	Resistoflex / Kanwal
19.	Pressure gauge	Fiebig / H Guru
20.	Level controller	Femac / Nand Shyam / Mimic
21.	Strainer	Zoloto / Emerald / Maharaja Casting.
22.	Foot valve	C&R / Inter Valve / Castle / Deep / Zolta / Equivalent
23.	Float valve	CIM / Leader / C&R / Inter Valve / Castle / Deep / Zolta / Equivalent
24.	Multiport valve	Pentair / Astral / Initiative / UKL / Midas
25.	Flanges	Class 150 / Table 'H'
26.	Filter press	Pharmtech / Sachin / Vasu / Bhagylakshmi / Equivalent
27.	Tube dac media	MM Aqua / Cooldac / Energy / Vasu
28.	Gear box	Radicon / Elicon / Priemer
29.	Electrical control panel	Fabricated
30.	Power cables & control cables	Havells / Finolex / Polycab
31.	PVC insulated copper wires	Finolex / Skyline / National / Batra Henley / Polycab

EFFLUENT TREATMENT PLANT FOR DAIRY PLANT BADWAH, BURHANPUR, CHAPADA AND DUDHI - 15 KLPD CAPACITY .

LIST OF CONTENTS FOR WASTE WATER TREATMENT PLANT:

S. NO.	DESCRIPTION
I)	Technical Specifications
	I) A) Technical Specifications
	I) B) Technical Specifications – Electro – Mechanical Equipment
	I) C) Technical Specifications – Civil
II)	List of Approved Makes

TECHNICAL SPECIFICATIONS

1.0 OPERATING PRINCIPLE:

In order to conserve water and to abate pollution, Waste Water Treatment Plant has been proposed to ensure that treated effluent (water) characteristics are well below the permissible limits of local / national pollution control norms even under varying flow conditions which are typical for such systems. This implies that the selected process shall be able to withstand the shock load situation.

We propose to use compact waste water treatment system working on the principle of extended aeration process after required pretreatment operation followed by post tertiary treatment and disinfection.

The waste water treatment plant will be designed with a suitable capacity of liquid effluent waste. Waste water treatment plant will consist of screen chamber, oil and grease traps, equalization / collection sump with two numbers pumps, flash mixer, flocculator, primary tube settler, aeration reactors, Secondary settling tank with tube dac media, sludge holding tank, filter feed pump sump, treated effluent storage tank, filter feed pumps, multi-grade / pressure sand filter, activated carbon filter, micron filter, chlorination, MS / GI pipe and fitting, valves and associate electrical works with control panel per plant.

2.0 PROCESS DESCRIPTION:

Considerations:

- a. Raw effluents include waste water from can washing, equipment cleaning, floor washing, container washings, etc of the chilling center and processing unit.
- b.
- c. Inlet characteristic considered for designing the proposed waste water treatment plant:
- d.

S.No.	Description / Parameter	UOM	Value	MPPCB limit
1	Flow	Cu.mt./day	15	
2.	pH		6 – 8	6.5 – 9
3.	Total Solids	ppm	3000	Less than 2200
4.	Suspended Solids	ppm	1000	Less than 100
5.	Total Dissolved Solids	ppm	2000	Less than 2100
6.	Biological Oxygen Demand	ppm	1200- 1500	Less than 30
7.	Chemical Oxygen Demand	ppm	2000 – 2500	Less than 250
8.	Oil, Grease and Fat	ppm	350	Less than 10

c. Output Quality Considered:

S.No.	Description / Parameter	UOM	Value	Limit
1	Flow	Cu.mt./day	12	
2.	pH		6.5 – 8	6.5 – 9
3.	Total Solids	ppm	Less than 2200	Less than 2200
4.	Suspended Solids	ppm	Less than 100	Less than 100
5.	Total Dissolved Solids	ppm	Less than 2100	Less than 2100
6.	Biological Oxygen Demand	ppm	Less than 30	Less than 30
7.	Chemical Oxygen Demand	ppm	Less than 250	Less than 250
8.	Oil, Grease and Fat	ppm	Less than 10	Less than 10

Treatment Scheme:

Waste water treatment plant should be designed to ensure that treated effluent (water) characteristics are well below the permissible limits, even under varying flow conditions. This implies that the selected process shall be able to withstand the shock load situation.

The treatment plant shall be designed with a capacity to handle 15 KLD of liquid waste water.

Primary Treatment:

Here, the raw effluent from different sources will be allowed to pass through the **screen chamber (Stage – 1)** and **grease trap (Stage – 2)** into the **equalization tank (Stage – 3)** for homogenization of effluent. Here, effluent will be homogenized thoroughly by purging air through coarse diffusers.

Screens with basket shall be provided in screen chamber and it shall be manually cleaned. Two pumps will be provided in each of the collection cum equalization tank to pump the collected waste water to the next unit. Automatic level controller will be provided in the tank to turn the pump off at the low water level in the tank and to start the pump when water level is high automatically. Air will be introduced in this tank to prevent any potential foul smell problem and to provide the mixing of wastewater to avoid the sedimentation of solids in this tank. Diffusers used for aeration purpose shall be non-clog, coarse bubble membrane type.

From equalization tank, effluent will be pumped into the **flash mixer and flocculator (Stage – 4)** where caustic and PAC/alum and poly-electrolytes will be dosed as per the requirement. From here, effluent will flow by gravity into the **primary tube settler tank (Stage - 5)** for settling of sludge. It shall have tube dac media. The settled sludge will be taken in the **filter press (Stage - 12)** for drying of sludge. The sludge cake obtained will be packed in the HDPE bags and will be disposed through the Common Biomedical Waste Treatment Facility.

Secondary Treatment:

Effluent from primary settling tank flows by gravity into the **aeration reactor (Stage – 6)** for aeration using nitrifying and denitrifying bacteria. FAB reactor shall be fitted with tubular diffusers for supplying air (oxygen) to mix the content of reactor and to transfer atmospheric oxygen through twin lobe roots air blower. The aeration system will be designed in a way so as to achieve complete mixing of organisms with raw wastewater. The dissolved organic matter will be subject to biological degradation by bacterial action in presence of oxygen and nutrients. This will convert dissolved organic matter into stable settleable matter. (MLSS in aeration tank shall be maintained 3500-4000 Mg/L).

From aeration reactor, the mixed liquor passes into the **secondary tube settler tank (Stage – 7)**. Secondary tube settler tank will be a hopper bottom sedimentation tank provided with tube dac media. The suspended solids will settle at the bottom of the tank and clear supernatant will overflow to filter feed pump sump through outlet launder. Excess sludge will be removed by sludge pump into the **filter press (Stage – 12)**. Provision for sludge recirculation will also be provided. The dewatered sludge will be disposed off with municipal solid waste.

Tertiary Treatment:

The clear supernatant after secondary tube settler tank will be collected in to the filter feed pump sump. The clarified effluent will be then fed to filtration unit.

Filtration unit consisting of **multi-grade filter (Stage – 8)**, **activated carbon filter (Stage – 9)** and **micron filter (Stage – 10)** will remove the residual impurities such as odor/color, suspended solids, BOD/COD. On line chlorination (**Stage – 11**) will be done to ensure proper disinfection.

EQUIPMENT DESCRIPTION				
15 KLPD WASTE WATER TREATMENT PLANT				
S.No.	Description	UOM	Qty	
1	COARSE AND FINE BAR SCREEN	No.	2	
	Providing, fixing, testing & commissioning of coarse bar screen with basket with suitable frame work arrangement for lifting of basket and complete in all required accessories such as system for lifting solids.			
	Application	For removing large size floating and suspended particles from effluent		
	Location	Screen chamber		
	Dimensions of Screen Chambers channel	500 mm x 500 mm with water depth of 750 mm		
	Type	Fine bar screen		
	Bar spacing	25 mm and 10 mm		
	Mounting of screen	At 40 degree in screen chamber		
	MOC	SS - 304		

2	WASTE WATER TRANSFER PUMP		No.	2				
	<p>Providing, fixing, testing & commissioning of waste water transfer pumps with suitable arrangement for lifting of pump, complete in all required accessories such as piping, required header, flow control valves, cabling, electrical connections, etc.</p>		1 operational and 1 standby					
	Application	To transfer raw waste water from equalization tank to flocculator						
	Location	Equalization Tank						
	Operating Capacity	1.5 m ³ /hr at 10 m head						
	Type	Submersible, cutter pump						
	MOC	CI and MS						
3	COARSE DIFFUSERS		No.	6				
	<p>Providing, fixing, testing & commissioning of coarse diffusers</p>							
	Application	To supply air in the form of coarse air bubble for homogenization and mixing of effluent						
	Location	Equalization Tank, Flocculator, Filter Feed Pump Sump and Treated Effluent Storage Tank						
	MOC	Diffuser: EPDM Membrane, Supporting structure: PVC						
	Air Discharge Capacity	1 cu.mt./hr per diffuser						
4	TUBULAR AIR DIFFUSERS		No.	5				
	<p>Providing, fixing, testing & commissioning of tubular diffusers</p>							
	Application	To supply air in the form of coarse air bubble for aeration						
	Location	Fluidized aerobic bio-reactor						
	MOC	Diffuser: EPDM Membrane, Supporting structure: PVC Other wetted part such as Clips and Nipple: SS – 304						
	Air Discharge Capacity	6 cu.mt./hr per diffuser						
5	TWIN LOBE ROOTS AIR BLOWER		No.	2				
	<p>Providing, fixing, testing & commissioning of twin lobe roots air blower with acoustic enclosure and header with control valves</p>		1 operational and 1 standby					
	Application	To supply air to diffusers						
	Location	Equipment room						

	Operating Capacity	40 cu.mt./hr of air discharge at 0.45 kg/sq.cm.					
	MOC	Cl and MS					
	Feature	Acoustic Enclosure to meet the noise norms					
6	TUBE SETTLERS		cu.mt	3			
	Providing, fixing, testing & commissioning of PP UV Stabilized Tube Dac Media						
	Application	To settle the sludge					
	Location	Primary and Secondary Tueb Settling Tanks					
	Vertical Height	750 mm					
	Slant Height	866 mm					
	Angle of inclination	60 degree					
	Shape	Hexagnal Chevron					
	Material	PVC					
7	CHEMICAL DOSING TANK		No.	3			
	Providing, fixing, testing & commissioning of dosing tank						
	Application	For storing Caustic and Alum /PAC/PE solution					
	Location	Flash Mixer and Flocculator					
	Capacity	50 liters					
	MOC	HDPE.					
	Fittings	a. Coarse diffusers for mixing					
		b. Alum Dosing Pump					
8	CHEMICAL DOSING PUMP		No.	3			
	Providing, fixing, testing & commissioning of dosing pump		1 Operational and 1 Standby				
	Application	To dose polyelectrolyte solution at desired rate					
	Location	Polyelectrolyte Solution Tank					
	Operating Capacity	4 lph					
	MOC	PP					
	Supporting Structure	MS Epoxy Coated					
9	FILTER FEED PUMPS		No.	2			
	Providing, fixing, testing & commissioning of filter feed transfer pumps complete in all required accessories such as piping, required header, flow control valves, cabling, electrical connections, etc.		1 operational and 1 standby				
	Application	To transfer clarified from filter feed pump sump to the multi-grade filter					
	Location	Filter feed pump sump					

	Operating Capacity	1.5 m3/hr at 30 m head					
	Type	Self-priming, non-clogg					
	MOC	CI and MS					
10	MULTI-GRADE FILTER		No.	1			
	Providing, fixing, testing & commissioning of multi-grade filtercomplete in all required accessories such as piping, valves, etc.						
	Application	To remove suspended particles from settled water in filter feed pump sump					
	Location	Outlet of filter fed pump sump					
	MOC	FRP					
	Type	Vertical pressure vessels					
	Pressure	Max. 3.5 kg/sq.cm. Min. 1.0 kg/sq.cm.					
	Flow	1.5 cu.mt./hr					
	Piping	1 INCH					
	Valve	1 INCH					
	Fittings	Pressure gauge of 4 inch dia dial ranging from 0 to 7 kg at inlet and outlet of pressure vessels Sampling ports at inlet and outlet of pressure vessels Backwash arrangements					
	Media	Graded quartz sand media confirming to CPHEEO and BIS specifications					
11	ACTIVATED CARBON FILTER		No.	1			
	Providing, fixing, testing & commissioning of activated carbon filtercomplete in all required accessories such as piping, valves, etc.						
	Application	To remove odour and colour producing substance from water in the filter feed pump sump					
	Location	Outlet of filter fed pump sump					
	MOC	FRP					
	Type	Vertical pressure vessels					
	Pressure	Max. 3.5 kg/sq.cm. Min. 1.0 kg/sq.cm.					
	Flow	1.5 cu.mt./hr					
	Piping	1 INCH					
	Valve	1 INCH					
	Media	Graded Quartz Sand and Granular Activated Carbon of 850 - 900 Iodine Value confirming to CPHEEO and BIS specifications					
12	MICRON FILTRATION SYSTEM		No.	1			

	<p>Providing, fixing, testing & commissioning of micron bag filter complete in all required accessories such as piping, valves, etc.</p>																									
	<table border="1"> <tr> <td>Application</td> <td>To remove solids, odour and colour producing substance upto the size of 5 micron from treated effluent water</td> </tr> <tr> <td>Location</td> <td>Outlet of filter fed pump sump after activated carbon filter</td> </tr> <tr> <td>MOC</td> <td>PP</td> </tr> <tr> <td>Type</td> <td>Vertical pressure vessels</td> </tr> <tr> <td>Pressure</td> <td>Max. 3.5 kg/sq.cm. Min. 1.0 kg/sq.cm.</td> </tr> <tr> <td>Flow</td> <td>3 kl/hour</td> </tr> <tr> <td>Features</td> <td>Dished ends, bell mouth type</td> </tr> <tr> <td>Connections</td> <td>40 mm</td> </tr> <tr> <td>Fittings</td> <td>Pressure gauge of 4 inch dia dial ranging from 0 to 7 kg at inlet and outlet of pressure vessels Sampling ports at inlet and outlet of vessels</td> </tr> <tr> <td>Filtering Media</td> <td>PP ultrasonically welded micron bag filter of rating 5 micron</td> </tr> </table>	Application	To remove solids, odour and colour producing substance upto the size of 5 micron from treated effluent water	Location	Outlet of filter fed pump sump after activated carbon filter	MOC	PP	Type	Vertical pressure vessels	Pressure	Max. 3.5 kg/sq.cm. Min. 1.0 kg/sq.cm.	Flow	3 kl/hour	Features	Dished ends, bell mouth type	Connections	40 mm	Fittings	Pressure gauge of 4 inch dia dial ranging from 0 to 7 kg at inlet and outlet of pressure vessels Sampling ports at inlet and outlet of vessels	Filtering Media	PP ultrasonically welded micron bag filter of rating 5 micron					
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13	FILTER PRESS SYSTEM WITH FILTER PRESS FEED PUMP	No.	1																							
	<p>Providing, fixing, testing & commissioning of filter press complete in all required accessories such as piping, valves with sludge transfer pumps, etc.</p>																									
	<table border="1"> <tr> <td>Application</td> <td>To separate solid and liquid and to act as dewatering device</td> </tr> <tr> <td>Location</td> <td>Waste water treatment plant</td> </tr> <tr> <td>Press Structure</td> <td>PP</td> </tr> <tr> <td>Closing</td> <td>Hydraulic</td> </tr> <tr> <td>Design Pressure</td> <td>6 kg/sq.cm.</td> </tr> <tr> <td>Working Pressure</td> <td>5 kg/sq.cm.</td> </tr> <tr> <td>Filter element</td> <td>PP Chamber type recessed plates</td> </tr> <tr> <td>Discharge</td> <td>Individual cock / spigots</td> </tr> <tr> <td>Drainage surface</td> <td>Pipes</td> </tr> <tr> <td>No. of chambers</td> <td>12</td> </tr> </table>	Application	To separate solid and liquid and to act as dewatering device	Location	Waste water treatment plant	Press Structure	PP	Closing	Hydraulic	Design Pressure	6 kg/sq.cm.	Working Pressure	5 kg/sq.cm.	Filter element	PP Chamber type recessed plates	Discharge	Individual cock / spigots	Drainage surface	Pipes	No. of chambers	12					
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Drainage surface	Pipes																									
No. of chambers	12																									

	No. of plates	10						
	Filter Cloth	12						
	Filter press feed pump		No.	2				
	Type	Self priming, non-clogg sludge pump						
	Operating capacity	1 cu.mt./hr at 3 kg/cm2						
	MOC	CI						
14	LEVEL CONTROL SWITCH		No.	4				
	Providing, fixing, testing & commissioning of level control switch to each pump with required cabels and accessories							
	Application	To keep pumps in auto positions so that pump will start at a particular level and will switch off at a particular level of liquid						
	Location	Receiving / holding sump and filter feed pump sump						
	MOC	SS – 316 / TEFLON						
15	INTERCONNECTING PIPES AND VALVES		No.	1				
	Providing, fixing, testing & commissioning of interconnecting pipe and fittings to conevy waste water from one unit to other							
	Application	To carry waste effluent from one unit of waste water treatment plant to other unit						
	Location	Battery limit of waste water treatment plant						
	Size	As per requirement						
	MOC	GI, MS and UPVC						
16	ELECTRIFICATION WORK		No.	1				
	Providing, fixing, testing & commissioning of electrical control panel with required cabeling work to operate different electro-mechanical equipemnt							
	Application	Electric supply to different motors and rives for efficient and trouble free operation and maintenance of waste wtaer treatment plant						
	Location	Within battery limit ofwaste water treatment plant						
	Features							

		Auto switching over of mechanical equipments between operational and standby					
		Electric Panel shall have voltmeter and ammeter					
		Electric Panel shall have starters, switches and MCB of L&T, Simens					
		Wiring shall be of copper minimum 4 core					
		Wiring shall be through PVC conduit pipe					
		Connections to each motor and drive shall be through suitable copper gland					
		Suitable earthing will be provided between motors and panel					
17	WATER METER		No.	1			
	Providing, fixing, testing & commissioning of water meter at the outlet of micron bag filter to measure treated effluent quantity						
	Application	To measure flow and quantity of treated effluent					
	Location	At the outlet of micron filtration system before discharging the treated effluent for land application / gardening and plantation purpose					
18	SLUDGE RECYCLE PUMP		No.	2			
	Providing, fixing, testing & commissioning of air pump for recirculation of sludge from secondary tube settler tank to Aeration reactor		1 Operational and 1 standby				
	Application	To transfer sludge from secondary tube settler tank to aeration reactor					
	Location	Secondary Tube Settler Tank					
	Type	Self – priming, non-clogg					
	Capacity	1 cu.mt./hr					
19	CHLORINATION SYSTEM		No.	2			
	Providing, fixing, testing & commissioning of chlorination system with all required accessories		1 Operational and 1 standby				
	Application	For disinfection of treated effluent					
	Location	After Micron Filter					
	Capacity	6 liters per hour					
	Pump type	Electronic dosing pump					
	MOC	PP					

	Dosing tank	100 liters				
20	TREATED EFFLUENT TRANSFER PUMP		No.	2		
	Providing, fixing, testing & commissioning of treated effluent transfer pumps complete in all required accessories such as piping, required header, flow control valves, cabling, electrical connections, etc.		1 operational and 1 standby			
	Application	To transfer treated effluent from treated effluent storage tank for reuse.				
	Location	Treated effluent storage tank				
	Operating Capacity	2 m3/hr at 35 m head				
	Type	Self-priming, non-clogg, mono-block				

SPECIFICATIONS FOR VARIOUS CIVIL AND MS EPOXY COATED FABRICATED STRUCTURE INCLUDING SITE DEVELOPMENT WORK FOR EFFLUENT TREATMENT PLANT.-15 KLPD CAPACITY

Site preparation, excavation, RCC water proof structure (as per M – 25 standard), back filling and water testing of different units as per the description in Table 1.

S.No.	Unit Description	Capacity (in cu.mt.)	Liquid Depth (in Meter)	Free Board (in meter)
1.	Screen Chamber	.75	.5	0.75
2.	Oil and Grease Chamber	2	1.5	0.75
3.	Grit Chamber	1.5	1.5	0.75
4.	Equalization Tank	8	2.5	1.0
5.	Flash Mixer	1	1.5	0.75
6.	Flocculator	1	1.5	0.75
7.	Primary Tube Settler Tank	3	2.5 + Hopper	1.0
8.	Aeration Reactor	15	4.0	1.0
9.	Secondary Tube Settler Tank	3	2.5 + Hopper	1.0
10.	Filter Feed Pump Sump	3	3.0	1.0
11.	Treated Effluent Storage Tank	5	3.0	1.0
12.	Sludge Holding Sump	2	1.5	0.75
13.	Equipment Room	6 m x 5 m x 3.5 m (Height)		
14.	Foundations for Different Equipment as per requirement			

NOTE:

a. The tentative invert level is about 1.5 meter below the ground level, it may vary as per the actual site conditions. As per the actual level of the inlet line the levels of all other units will be modified accordingly. Nothing extra shall be paid for such modifications.

b. All units shall be provided plinth protection of 0.60 m wide and shall be joined by 1.25 m wide pathway and steps as per the site conditions.

c. All units shall be provided with support hand rail of 1 meter height all around outer walls in MS "B" Class pipe painted by synthetic enamel as per requirement. For bends in railing, regular bends shall be used and no elbows shall be used for this purpose. For supports of railings, MS pipe of class 'B' 32 mm dia shall be used. The joints shall be well ground, smoothed. Then the pipe surfaces and supports shall be applied with one coat of anti corrosive red oxide primer followed by one coat of synthetic enamel paint of approved make & shade, for corrosion resistance immediately after fabrication. One coat of synthetic enamel paint shall be again applied on all railings and their supports after testing and commissioning.

d. Necessary cut-outs, insert plates etc. shall be provided.

e. Steps of at 300 mm c/c spacing in staggered manner along the inner wall of the tank at a suitable location shall be provided.

f. 100 mm thick PCC 1:3:6 shall be provided below base raft extending 100 mm on all the sides.

g. All internal surfaces will be provided with smooth cement plaster with waterproofing compound.

h. All external surfaces upto 300 mm below ground level shall be plastered with cement paint of approved make and shade.

i. The MCC, Operator shed shall have proper flooring with shed.

J. Internal Electrification of MCP cum operator shed: Lighting of MCP room shall consist of following: (i) Supply, fixing, wiring and commissioning of approved make of distribution board with suitable DP incomer and enough number of SP outgoing MCB's. MCC room: 2 Nos. Light points suitable for LED Lamps.

k. Piping work: The piping work covered under this contract is the complete interconnecting piping with necessary pipe fittings, specials, flanges, etc for the waste water treatment plant between various units.

The piping work shall include all necessary pipe inserts required to be provided at various places and all the inserts shall be of suitable construction with puddle flange in the centre and properly grouted so as to prevent leakage.

The piping work shall also include all necessary excavation of pipe trenches for underground pipe with bedding of sand and shall also include all necessary pipe supports, plate inserts, etc.

Pipe anchoring works, brick masonry pillars, RCC pedestals etc. as required to support the pipe due to site conditions etc. or as may be required for supporting the various pipes above the ground level within the treatment plant area and for the piping work to convey waste water from different points to treatment unit are included in the scope of work.

All the necessary valves for the entire treatment plant piping as required shall be provided. The valves shall conform to the relevant BIS standards.

l. All the structural details shall be designed, checked & verified by a chartered registered structural engineer and stability certificate shall be issued by him for the same. The structure designed shall be earthquake proof for the project area zone. A certificate to this extent shall be furnished from the registered Structural consultant. If asked for the design calculation shall be made available to the Owner.

m. All the units of the plant shall be joined with a pathway 1.25 m width with a nominal slope on both the sides. Pathway shall be made with minimum 60 mm thick PCC 1:1.5:3, self finished over 100mm thick CC 1:4:8. Where the site may be in contours necessary steps, side walls etc. as

required may be provided in brick work, Concrete and IPS etc. Bidder shall assess this at site and the prices shall be inclusive of such requirements.

n. The bidder must, along with the bid, furnish the List of Spares required for normal operation of the plant for two years after commissioning and quote optionally for the spares.

o. The bidder must quote optionally for operation & maintenance of the entire plant for a period of one year after successful commissioning. The bidder must furnish full details along with the terms and conditions etc.

BATTERY LIMITS FOR THE WASTE WATER TREATMENT PLANT WORK

The scope of work described in the Schedule of Requirements shall be governed by the following battery limits:

i. Raw effluent line from different sources (piping length will not be more than 100 meters) including chambers / manhole (maximum 6 numbers) to the waste water treatment plant site, entire turnkey project for waste water treatment plant.

j. Treated effluent line from the outlet of water meter / flow meter, line length not exceeding 10 m. This treated effluent could be used for irrigation purposes within the campus. Supply and installation of further piping shall be arranged by Owner at their own cost and shall not be in the scope of the bidder.

k. Supply, erection and charging of the Motor Control Centre shall be in the Contractor's scope. The supply, laying, connection and charging of 3½ x 35 sq.mm. armoured Aluminium conductor, PVC insulated and sheathed power cable for main incomer of MCC is included in contractor's scope of work. This cable shall be laid underground from the existing Panel at ETP site and its length shall not exceed 10 m. Termination of this cable at both ends with suitable glands and lugs is included in the contractor's scope. Supplying and providing necessary earthing system including two number GI plate type earthing pits, GI strip/wires from MCC to all electrical equipment/ controls is included in contractor's scope.

l. Unit lighting and yard lighting in the ETP area including conduits, wiring, cables, light fittings, poles/brackets of approved design is included in Contractors scope.

TESTING, TRIAL RUNS, COMMISSIONING & HANDING OVER

e. Testing and Trial Runs

The contractor shall have to test each equipment used for the plant for at least 72 hrs continuous running with designed load and to the full satisfaction of the Engineer-in-Charge. After testing the individual equipment and stabilization of the plant, the contractor shall run the whole plant at no extra cost to the at least for one month as directed by the Engineer-in-Charge. Any defects found in design, workmanship or in any of the equipment shall be rectified by the contractor at his own cost within a reasonable time to be decided by the Engineer-in-charge, and beyond this period suitable penalty shall be levied and the plant shall be tested again for faultless running for one month to the entire satisfaction of Engineer-in-Charge.

Necessary instruments, gauges, supervisory personnel etc. shall be furnished / provided by the contractor free of cost for conducting the tests. The recording of tests result shall be as per formats to be approved by the Engineer-in-Charge and will form part of the completion documents.

f. Commissioning and handing over

During trial runs as described above, the contractor shall satisfy the Engineer-in-Charge in all respects regarding the satisfactory quality of effluent, quality of materials, equipment and workmanship used in the plant. Only after satisfying himself, regarding the above points, the Engineer-in-charge will take over the plant and such date of taking over shall be deemed as date of commissioning. The guarantee period described above will start from this date. The contractor shall have to obtain necessary statutory approval for setting up of Waste Water Treatment Plant to its commissioning/handling over. The charges for this shall be all included in bid prices.

PLANT GUARANTEES

The under mentioned clauses shall be read in conjunction with Warranty / Guarantee provisions given elsewhere in this document.

a. Manufacturer's Guarantees

The manufacturer's guarantee for design, workmanship and performance for all bought out items shall be made available to the purchaser/owner and shall be valid at least for the entire defects liability period.

In the event of failure of any particular equipment which fails more than three times during the guarantee period as mentioned in clause below, the contractor shall replace at his own cost that equipment. Manufacturer's/Contractor's guarantee, as mentioned in clause above, for such replaced equipment shall also be made available to the purchaser/owner and should be kept at least for one year from the date of last replacement.

b. Performance Guarantee

The contractor shall give guarantee for a period of one year from the date of successful commissioning for the treatment plant against design, defective materials, workmanship, performance and guaranteed effluent quality. In the event the commissioning of the plant is not possible due to non-availability of effluent, contractor shall be issued mechanical completion certificate by Engineer-in-Charge provided each equipment is tested satisfactorily as directed by Engineer-in-Charge. However, the contractor shall have to maintain the plant at his own cost, in such a case for a period of three months beyond which period, if he is required to maintain further, he will be paid extra at mutually agreeable rate. However, testing and commissioning of the plant shall be carried out by the Contractor during the Defects Liability period. Any defects found in the workmanship materials or performance of the plant shall be made good by the contractor at his own expense within the time specified by Engineer-in-Charge.

For this purpose the performance guarantee furnished by successful bidder, as per general conditions of contract shall be retained till the completion of the guarantee period as stated above. The contractor, at his own expense shall start and commission the plant and prove that it is giving satisfactory service and desired characteristics of the treated effluent, for one month before handing over the plant to the Owner. During this start up and commissioning period the contractor shall train the Owner's operational staff without any extra cost to the Owner. The contractor shall also have to guarantee the quality of the treated final effluent to meet the specification. For given design quantity and quality of untreated effluent, if the Contractor fails to achieve the treated effluent criteria, the Contractor shall rectify the plant at no extra cost, so as to achieve the requisite performance guarantee and satisfy commissioning of the plant to the Engineer-in- Charge.

All the above guarantees will be based on collection and analysis of samples as mentioned in clause below.

c. Collection and analysis of samples

The guaranteed effluent shall be based on complete analysis of treated effluent collected after stabilization of the plant as per Special Conditions of Contract.

LIST OF APPROVED MAKES OF MATERIAL

S. No.	MATERIAL	APPROVED MAKES
1.	SS Screen with basket	PACE / ARVI / Equivalent
2.	Raw effluent transfer submersible cutter pump	CNP / CRI / Lubi
3.	Filter feed pumps / Sludge recirculation pumps and treated water transfer pumps	Kirloskar / CRI / CNP / Lubi
4.	Filter press feed pump	Weltech / Kirloskar / Johnson / CRI / Lubi
5.	Dosing pump	Asia LMI / Edose / Pentair / Nortom / Milton Roy
6.	Electric motors	Kirloskar / Crompton / ABB / Siemens / Bharat Bijlee
7.	Twin lobe roots air blower	ACME Air Equipment / Kay / Everest Transmission / Air Vak / Usha
8.	Chemical dosing tank	Sintex / Frontier / Water well / Equivalent
9.	Tubular and coarse air diffusers	Jay Engineering / Membrane India / Aqua Inc
10.	UPVC pipe Class 10kg/cm2	Supreme / Astral / Ashirwad
11.	GI & MS pipeline	Tata / Jindal (Hissar) / Prakash Surya
12.	GI fittings	Unik / 'R' brand / Jain sons
13.	FRP vessel	Pentair / Aventura / Hydrocell / Hytank
14.	Multiport valves	Pentair / Aster / Pharer / RM / Midas
15.	Butterfly valves	Nova / C&R / Inter Valve / Castle / Deep / Zolta / Equivalent
16.	Non return valve	Karan / C&R / Inter Valve / Castle / Deep / Zolta / Equivalent
17.	Ball valve	Nova / C&R / Inter Valve / Castle / Deep / Zolta / Equivalent
18.	Expansion / vibration eliminator	Resistoflex / Kanwal
19.	Pressure gauge	Fiebig / H Guru
20.	Level controller	Femac / Nand Shyam / Mimic
21.	Strainer	Zoloto / Emerald / Maharaja Casting.
22.	Foot valve	C&R / Inter Valve / Castle / Deep / Zolta / Equivalent
23.	Float valve	CIM / Leader / C&R / Inter Valve / Castle / Deep / Zolta / Equivalent
24.	Multiport valve	Pentair / Astral / Initiative / UKL / Midas
25.	Flanges	Class 150 / Table 'H'
26.	Filter press	Pharmtech / Sachin / Vasu / Bhagylakshmi / Equivalent
27.	Tube dac media	MM Aqua / Cooldac / Energy / Vasu
28.	Gear box	Radicon / Elicon / Priemer
29.	Electrical control panel	Fabricated
30.	Power cables & control cables	Havells / Finolex / Polycab
31.	PVC insulated copper wires	Finolex / Skyline / National / Batra Henley / Polycab

**SCHEDULE- (III)
SPECIAL CONDITIONS OF CONTRACT**

The following Special instructions to bidders shall supplement the General conditions of Contract, wherever there is a conflict the provision herein shall prevail over those in the General conditions of Contract.

1.0 The bidder shall include a list of recommended spare parts for following

- Normal operations of one year under his scope of services
- Two years trouble free operations, after handing over to ISDS; list shall state the price of all spare parts for maintaining store inventory.

2.0 Any disposal of material in plant area shall be prohibited. The waste/dispose material shall be disposed from plant by the contractor at his own cost.

3.0. During the project execution phase, contractor shall arrange for necessary quality tests of various materials being utilized for civil works as per the norms of the P.W.D.from a Govt.Engg.College / Govt.Polytecnic College at his own cost. The contractor should maintain a record of such tests as per the given format & keep it at site for inspection of officers of I.S.D.S./Consultant at any time .The contractor has to submit a copy of this record & all test results before release of payment as per schedule-(I)-clause(22)- stage No-2

S.NO	Date of sampling	Details of sample	Name of Test	Detail of test performing authority			Remarks
				Name	Date on which sample sent for the test	Result of the test	

4.0 The plant shall include such guards, hand-railing, access steelwork, walkways, etc, as may be required to meet the current relevant regulations for the safety of personnel and of the plant, and to afford adequate and safe access to all parts of it. All shall be of substantial design and construction. All moving parts shall be covered with safety guards.Where corrosion or abrasion of materials may be expected from contact with water or sediment or from any other cause, the Contractor shall supply suitably resistant materials. The Contractor shall make all reasonable efforts to reduce noise and vibration to a minimum. All rotating parts of the plant shall be statically and dynamically balanced so that they operate over all specified conditions without undue vibration.The equipment and system involved shall be designed such that noise level at any operating time shall not exceed 85 dB at 1 m distance from equipment

5.0 All chemicals, nutrients and first fill of lubricants for equipment as necessary for commissioning and operation & maintenance of the plant shall be provided by the contractor. ISDS will provide water& electricity free of cost to contractor after commissioning of plant .

6.0 Platforms, ladders, walkways and railings for the safe and easy access to the units shall beprovided. CI rungs shall be provided for safe and easy maintenance of all chambers, manholes and plant units.

4.0 After commissioning of plant, one year operation & maintenance of ETP run shall be provided by the Contractor during which daily monitoring of raw and treated effluent quality and effluent through put shall be done and log sheets to be maintained duly signed bythe representative of project authority . Over and above the daily monitoring of effluent quality, the Contractor shall arrange at his own cost, analysis of the composite raw and treated effluent samples for 7 consecutive days for all the effluent parameters specified in the consent note at an external laboratory approved by MoEF under EPA act 1986 or from the MPPCB laboratory. The results shall conform to the performance guarantee for the plant which shall be a pre requisite for the takeover of the plant. In case of non-compliance to the guaranteed treated

effluent quality for given design input conditions, the Contractor shall take necessary measures to bring the plant to the desired performance.

8.0. In case during the guarantee test run, the effluent flow or organic load shall be found to be less than the rate input, the contractor shall undertake that as and when rated throughput and organic load conditions are available, the contractor shall extend necessary assistance to achieve the guaranteed output quality, through re-deputation of his personnel at a later date at mutually agreed terms.

9.0 The Contractor shall train the Dairy plant personnel in the Operation & Maintenance practice for the Effluent Treatment Plant units during the operation & maintenance period for following aspects:-

Familiarization with operational procedures and minimum on site testing parameters. Hands on experience on Operation of Equipment & chemical consumptions.

Routine preventive maintenance activities of the facilities.

Knowledge of emergency and break down systems.

Operational control & parameters to achieve treated output within norms.

Data sheet/ log book & record keeping as per norms of MPPCB & Standard practices Safety regulations and accident prevention.

10.0 The scope of services shall include the Preparation and Submission of Operation & Maintenance Manual (One soft copy and 3 sets of hard copies) prior to plant commissioning. The Manual shall cover the following aspects: Brief process description & flow sheet. Unit wise function and description, equipment details with sizes and as built drawings, operational instructions, maintenance procedures. Plant start-up, commissioning, normal operations, effluent parameters testing procedures, emergency operation steps etc required for smooth operation & maintenance of ETP units.

11.0 The contractor shall provide list of spare parts to maintain necessary inventory by owner for routine / smooth operation & maintenance of ETP after successfully handing over of ETP.

12.0 The invert level of inlet line before Screen Chamber shall be fixed considering the invert level of last manhole at site. As per the actual level of the inlet line the levels of all other units will be modified accordingly.

13.0 All electrical works including electrical motors for the various equipment, cabling, Motor Control centre, starters, earthing conductors and earth pits etc. are to be provided by the Contractor. The scope of work includes all necessary civil works like panel foundations, cable trenches, cable supports, unit lighting, etc. complete. Commissioning of all the equipment after the electricity is supplied shall be within the scope of contract.

14.0 The manufacturer's guarantee for design, workmanship and performance for all bought out items shall be made available to the purchaser/owner and shall be valid at least for the entire defects liability period. In the event of failure of any particular equipment which fails more than three times during the guarantee period as mentioned in clause below, the contractor shall replace at his own cost that equipment. Manufacturer's/Contractor's guarantee, as mentioned in clause above, for such replaced equipment shall also be made available to the purchaser/owner and should be kept at least for one year from the date of last replacement.

15.0 Bidder should also mention tentative area required, power consumption / load for offering equipments for ETP and cost of operation & maintenance of ETP in per KL along with turnkey quote for the capacities of ETP for all units.

16.0 All the necessary valves for the entire treatment plant piping as required shall be provided. The valves shall conform to the relevant BIS standards and shall be provided as per the design requirements and piping network.

17.0 All the units of the plant shall be joined with a pathway 1.2 m width with a nominal slope on both the sides. As the site may be in contours there is a possibility that steps, side walls etc. Are required to be provided in brick work, Concrete and IPS etc. Bidder shall make a note of this and the prices shall be inclusive of such requirements.

SCHEDULE - (IV)

PRICE BID FORMAT

S. N.	Name of dairy plant/ Chilling centres	Capacity of ETP	Basic Cost of ETP including civil, mechanical , electrical works And installation, successful trial run and training to ISDS staff for 16 hours (Rs.)	Applicable GST Amount	Charges for one year operation and maintenance (Rs.)	Applicable GST Amount	Total cost (Rs.)
1	Dairy Plant Jhabua	50 KLPD					
2	Dairy Plant Burhanpur	15 KLPD					
3	Milk,Chilling Center,Phoolgawadi	30 KLPD					
4	Milk Chilling Center-Petlawad	20 KLPD					
5	Milk chilling centre Kannod	20 KLPD					
6	Milk chilling centre Chapada	15 KLPD					
7	Milk chilling centre Dudhi	15 KLPD					
8	Milk chilling centre Badwah	15 KLPD					

Signature of Bidder with seal

Name: -

Designation

Address

SCHEDULE - (V)

ANNEXURE-I

FORMAT FOR ORGANISATION DETAILS

- i. Name of the Co./unit:-----
- ii. Address of the Co./unit: -----
- iii. Telephone Numbers (With S.T.D.Code) /Mob.No : -----
- iv. Fax Number & Mail I.D. :-----
- v. Name of the C.E.O./Proprietor/partner :
- vi. Name & designation of other authorized : -----

Signatory of the Co./Unit

- vii Particulars of Regn.Certificate issued :.....
by the competent authority :.....
(Regn.No , Date & enclose copy)
- viii GST No & Date :
- ix PAN No :

- x. Number of years of experience. :.....
(Enclose copy of work/purchase order and
Performance Report
In tabular form issued by the concerning
authority)
- xi. How many years have your organization :.....
been in this business under the present name? :.....
What were the fields when your organization :.....
was established? Whether any new fields were :.....
added in your organization? And if so, when?

- xii. Have your Co./Unit or its sister concerned ever been Black listed/Debarred by MPCDF or its
Sister Milk Unions or G.O.I./State Govt. Department & its Undertaking...YES / No
- xiii. If YES , when & why \ Give reason in details :.....
.....

(I /We hereby undertake that information furnished in the tender document are correct to the best of our knowledge and belief)

Seal Signature of the Bidder

ANNEXURE-II

FORMAT FOR KEY PERSONNEL

i. Details of key technical and Administrative Personnel with the applicant and those that would be assigned to the work.

S.No,	Name	Age	Qualifications	Experience in related field	Year with the applicant	Contact Mob.No
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i. Key Technical personnel:

.....
.....
.....
.....
.....

(I /We hereby undertake that informations furnished in the tender document are correct to the best of our knowledge and belief)

Seal & Signature of the Bidder

ANNEXURE-III

FORMAT FOR SIMILAR WORK EXPERIENCE

Total cost of work order :.....
:.....
Name of work :.....
Name of the owner of the project, :.....
contact number ,email ID and :.....
address :.....
Brief Description of the project :.....
:.....
Copy of Completion certificate
attached :Yes / No
Time period for actual completion :.....
Stipulated date of completion :.....
Period of completion of the entire :.....
project, give reason, if delayed. :.....
:.....
:.....

(I /We hereby undertake that information furnished in the tender document are correct to the best of our knowledge and belief)

Seal & Signature of the Bidder

ANNEXURE-IV

FORMAT FOR FINANCIAL STATEMENT

Information regarding financial standing of the Bidder of the following three years, financial year ended 31st March

Sr. No.	Details (Financial Year)	Amount (INR)	
1	FY- 2018-19		Audited BalanceSheet Attached- yes/no
2	FY-2017-18		Audited BalanceSheet Attached- yes/no
3	FY- 2016-17		Audited BalanceSheet Attached- yes/no

(I /We hereby undertake that informations furnished in the tender document are correct to the best of our knowledge and belief)

Seal & Signature of Bidder

ANNEXURE-V

FORMAT FOR DEVIATION FROM TECHNICAL REQUISITE

1. This tender document provides design standards & treatment process to be used in tender package and “basis of design” and “standards & specifications”. These all define the qualitative limitations.
2. It is compulsory on bidder to provide complete details of equipment and makes. Which supplier is proposing to provide.
3. Items, which deviate from the tender proposal, shall be as per design specification of supplier and shall be treated as deviation from the text of this tender document.

Deviation Statement Sheet to be filled by Bidder, if any

Sr. No	Clause No of Tender Document	Deviation	Remark
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(I /We hereby undertake that informations furnished in the tender document are correct to the best of our knowledge and belief)

Seal &Signature of the Bidder

ANNEXURE-VI

Declaration form to be signed by the Bidders submitting the offer downloaded from website (Web Declaration Form).

We hereby declare that:

- 1) "We have downloaded the tender document from website <http://www.mptenders.gov.in> and printed the same. We have verified the content of the printed document from the website and there is no addition, no deletion and or no alteration to the content of the tender document".
- 2) We are aware that, if at any stage, addition/deletion/alteration/manipulation is found in the content of the tender documents, our offer will be summarily rejected/tender will be terminated.
- 3) In case of any dispute, the hard copy of Tender documents approved by Competent Authority and preserved in the office of C.E.O., I.S.D.S. INDORE shall prevail and considered as final and we shall have no objection for this.

(I /We hereby undertake that informations furnished in the tender document are correct to the best of our knowledge and belief)

Seal & Signature of Bidder

ANNEXURE-VII

FORMAT FOR EXPERIENCE OF WORK/WORKS OF E.T.P. CAPACITY WISE

Information regarding Bidder executed / completed contract of similar nature during the three financial years i.e.2018-19, 2017-18 , 2016-17., in either of the followings:-

(I) One contract / work of similar nature capacity not less than 80 % of the tendered capacity of the proposed E.T.P..

Details of the work & enclosure :-
.....
.....

OR

(II) Two contracts / works of similar nature each capacity not less than 60 % of the tendered capacity of the proposed E.T.P.

:-
Details of the works &
enclosures ...
.....
.....
.....
.....
.....

OR

(III). Three contracts / works of similar nature each capacity not less that 40 % of the tendered capacity of the proposed E.T.P.

:-
Details of the works &
enclosures ...
.....
.....
.....
.....
.....
.....
.....

.....Similar nature of works means Effluent treatment plants based on aerobic treatment (Extended Aeration), for similar bio-degradable organic waste, preferably for successfully project executed for Dairy /Food Industry in India.À

(I /We hereby undertake that informations furnished in the tender document are correct to the best of our knowledge and belief.

Seal & Signature of Bidder

