DNIT4/2015(Detail Notice Inviting Tender)

For “Construction of 0.75 MLD Sewage Treatment plant based on MBBR Technology including operation and maintenance for period of 6 (six month)

In case operational manpower is provided by the Institution after expiry of 6(six months) the repair and maintenance cost for next 1 year, 2 years and 3 years should also be quoted separately at page no.80 of this tender document.

AT

Shaheed Bhagat Singh State Technical Campus, SBSSTC , Moga Road , (NH-95), FEROZPUR, PIN - 152004

SBSSTC ,FERZOPUR - Pb.

Feb - March - 2015

NATIONAL COMPETITIVE BID

(LUMP SUM TURN KEY RATE TENDER)

Name of work :- " Design, Supply, Construction, Installation,

and Commissioning of Sewage treatment plant based on moving bed biological reactor technology (Attached growth Process) of 0.75 MLD capacity complete in all respects with panel board room & all contingent mechanical & electrical , piping and instrumentation works including operation & maintenance for 6(six) months there-after at SBSSTC ,FEROZPUR,PUNJAB,INDIA

App. Cost	:	To be quoted by the bidder.
Time limit	:	One Year
Earnest Money	:	Rs. 1.25 Lac. (L.S)(Rs:One lac Twenty Five Thousand only).
Tender	:	

Name & address of the bidder to whom issued.

……...

……...

……...

Contact no. of Bidder …….....

Signature of the Issuing clerk.

Contractor

Shaheed Bhagat Singh State Technical Campus, FEROZPUR - Pb.,

(LUMP SUM TURN KEY RATE TENDER)

BID DOCUMENT
VOLUME -I

OFFICE OF THE , The DIRECTOR ,
Shaheed Bhagat Singh State Technical Campus,
FEROZPUR(PB)

NAME OF WORK : " Design, Supply, construction, Installation, and Commissioning of Sewage treatment plant based on moving bed biological reactor technology (Attached growth Process) of 0.75 MLD capacity complete in all respects with panel board room & all contingent Mechanical & Electrical , piping and instrumentation works including operation & maintenance for 6(six) months thereafter at SBSSTC, FEROZPUR.

ESTIMATED COST	:	To be quoted by bidder.
EARNEST MONEY	:	Rs. 1.25 lac.
TIME LIMIT	:	One Year.

1. Name of Contractor:
2. Address :
3. Mobile :
4. Tender document cost receipt no.....Dated.....
   Amt.....

Contractor

Shaheed Bhagat Singh State Technical Campus,
(Established BY Punjab Govt: in 1995)

TENDER NOTICE

Shaheed Bhagat Singh State Technical Campus, Invites Tenders on Lump Sum turn key for the below mentioned work from the eligible Contractors registered with Central/ State Government Departments / PSUs or Sales Tax Department .

Tenders complete in all respects should reach in the Office of The Director up to 11.00 A.M. on the date of opening as per schedule given below. The tender shall be opened in the office of The Director in the presence of contractors or their authorized representatives who may wishes to be present at that time.

District	Name of Work	Estimated Cost (Amt. in Rs.)	Earnest Money	document fee	Tender Time Allowed completion
FEROZPUR	" Design, Supply, Construction, Installation and commissioning of sewage treatment plant based on moving bed biological reactor technology (Attached growth Process) of 0.75 MLD capacity complete in all respects . With electrical panel room & all contingent Mechanical & Electrical , piping and instrumentation works with operation & maintenance for 6 (six) months thereafter at SBSSTC , FEROZPUR	To be quoted by the bidder.	Rs.1.25 Lac.(LS)	Rs. 500.00	12 months

SCHEDULE OF SHORT TIME TENDER

a)	Date and Time of Submission of request for issue of tender document	from 13-04-2015 onwards
b)	Date and Time of Issue of tender document	from 13-04-2015 onwards
c)	Date and Time of Receipt of tender	up to 05-05-2015 .upto11.00 AM
d)	Date and Time of Opening of the tender	05-05-2015 at 12.30P.M
e)	Date and Time of Submission of any Clarification in writing only.	Up to 23-04-2015

Contractor

1. The tender shall only be quoted on prescribed form obtainable from the office of the The Director office on cash payment of Rs 500/- (Non Refundable) or can be down loaded from the WEB site www.sbsstc.ac.in after 23-02-2015.
2. Tenders can be purchased from the office of the undersigned or downloaded from college web site and shall be submitted in three envelopes clearly marked as '

PRE-QUALIFICATIONS -------- (Envelope 'A')
EARNEST MONEY --------- (Envelope 'B')
PRICE BID ----------(Envelope 'C')

3. For any clarification / difficulty regarding tendering process bidders can contact

The Director , at SBSSTC , FEROZPUR.

4. The tender shall be submitted only personally at the office of the Director . Tender submitted in any other form or to any other person in the college shall not be opened. The contractual agencies will have to submit the necessary documents along with tender as per tender document. If the date of opening of tenders is declared a holiday, tenders shall be opened on the next working day.

5. Only bidders having laid qualifying criteria need to bid ,otherwise the tender shall be rejected.

6. Tender document fee (if not purchased direct) must be paid through bank draft on the name of ; The Director , SBSSTC , FEROZPUR Payable at FEROZPUR.

7. Joint Venture is also permitted.

THE DIRECTOR,
SBSSTC , FEROZPUR

SBSSTC , FEROZPUR .

DETAILED NOTICE INVITING TENDERS

1. THE DIRECTOR , SBSSTC , FEROZPUR invites Tenders on Lump sum rate basis for the below mentioned work from the eligible contractors registered with Central / State Government departments or Sales tax department .

Sr. No.	Name of the Work	Estimated Cost	Earnest Money	Tender Document Fee	Period of completion
1	2	3	4	5	6
	"Design, Construction, Installation , Testing & Commissioning of Sewage treatment plant based on moving bed biological reactor technology (Attached growth Process) of 0.75 MLD capacity complete in all respects. Panel room & all contingent Mechanical & Electrical , piping and instrumentation works and operation & maintenance for 6(six) months thereafter at SBSSTC , FEROZPUR	To be quoted by bidder	Rs.1.25 Lac.(LS)	Rs.500/-	ONE YEAR

2. SCHEDULE OF SHORT TIME TENDER

a)	Date and Time of Submission of request for issue of tender document	from 13-04-2015 onwards
b)	Date and Time of Issue of tender document	from 13-04-2015 onwards
c)	Date and Time of Receipt of tender	up to 05-05-2015 .upto11.00 AM
d)	Date and Time of Opening of the tender	05-05-2015 at 12.30P.M
e)	Date and Time of Submission of any Clarification in writing only.	Up to 23-04-2015 .

3. The tender documents can be down loaded from our website www..sbsstc.ac.in
The down loaded documents from the website should not be tempered, and if any such tempering is detected before or after the opening of bids, the bidder shall be penalized and de-bared from tendering .In case tender documents are downloaded from our web site , the bidder shall enclose another bank draft for Rs.500.00 in favour of THE DIRECTOR ,SBSSTC payable at Ferozpur.

Contractor

4. Any corrigendum / addendum / corrections, if any shall be published on the website only. The bidders should keep checking the website and follow accordingly.

5. Payment of Earnest Money Deposit has to be deposited through Bank FDR Pledge in the name of The Director ,SBSSTC, Ferozpur.

6. The tender shall be submitted by the bidder in the following way :

Pre qualification documents (eligibility criteria) as per tender requirements and Receipt of cost of bid documents / DD for Rs. 500.00.	Envelope- A
Earnest Money.	Envelope -B
Price Bid.	Envelope- C

7. On the date of receipt of bids Prequalification bid & earnest money envelopes (Envelope –A) & (envelope-B) shall be opened and checked and evaluated. After the opening of the Prequalification bid and earnest money envelope –B opened and after satisfaction of the eligibility of the bidder as per laid conditions and terms, the eligible bidders will be intimated the date and time of opening of commercial bid or can be opened on same day.

8. Bidders shall submit:
   - 8.1 Either the receipt issued by the OFFICE of the SBSSTC, FEROZPUR. proof of purchase of bid documents OR bank draft for Rs. 500.00 (in case of downloaded documents.)
   - 8.2 Earnest money in Form of FDR in favour of The director SBSSTC, FEROZPUR..
   - 8.3 Self attested photo copy of all the papers of envelope -A i.e. Registration / sale tax no: Certificate; PAN Card; VAT Number and all other documents or certificates as required in the eligibility criteria, without which the tenders shall not be considered and rejected.

9. Bids must be delivered to The Director , SBSSTC , FEROZPUR in his office before the time specified in the above table (as per server clock). In case bids are submitted through registered post does not take any responsibility for the delay caused and the bids received late shall not be entertained.

10. Bid documents consisting of qualification information and eligibility criterion of bidders, plans, specifications all sets of terms & conditions of contract to be complied with by the contractor can be seen on website www. sbsstc .ac.in .

11. If the date of opening of tenders happens to be a public holiday, then the tenders will be opened on next working day at the same time and place.

12. The Director , SBSSTC , FEROZPUR reserves the right to reject any or all tenders without assigning any reason.

13. Eligibility Criteria:

13.1 : Technical eligibility Criteria :

The bidder registered with any state /central Govt. Department / PSU or at least with sales tax department and must have successfully completed & commissioned at least:
One STP or ETP only of minimum 2.0 MLD(Two Million Litre per day) or more capacity in any Government /Semi Government Department /Refinery/Thermal Power Plants ; based on any biological technology except waste stabilization/oxidation pond during the last 10 (TEN) years counted from the date of commission of the work.(No private work done accepted)

- **In case of joint venture(J.V)** :
  Only two Parties can participate in joint venture (M.O.U. to be Submitted)
  At least one party must have successfully competed 2.0 MLD , STP as per above paragraph.
  (Certificate From Executive Engineer must be submitted)

13.2 : Financial eligibility criteria:

The bidder or one of the bidder in case of joint Venture must have 20 Lacs(Twenty lacs) FDR with BANK to meet the financial requirement of the project. Certificate from bank must be submitted .
In case of J.V one partner must full fill above eligibility.

14 : The proof of PAN issued by Income Tax Department;

15: All documents as per Annexure – 1Q ,2Q ,3Q AND 4Q must be submitted along with Pre Qualification Bid .

16: The proof of his valid VAT Registration Number (TIN) issued by concerned department.

17. The earnest money will be returned to un successful bidder within one month from the date of letter of refund from un-successful bidder .

The Director , SBSSTC , FEROZPUR.

SBSSTC , FEROZPUR

AGREEMENT

LUMP SUM TURN KEY RATE TENDER AND CONTRACT FOR THE WORKS.

Name of Contractor:

Name of work : " Design, Supply, Construction, Installation, and

Commissioning of Sewage treatment plant based on moving bed biological reactor technology (Attached growth Process) of 0.75 MLD capacity complete in all respects with panel board room & all contingent Mechanical and Electrical , piping and instrumentation works including operation & maintenance for 6(six) months .

This agreement made this day of ……..… between……...……. (herein after called the "Contractor") of the one part, and SBSSTC, Ferozpur through the The Director SBSSTC , FEROZPUR of the other part.

Whereas the contractor has offered to execute the above said work (mentioned against name of work) and accepted his tendered offer for the execution of the mentioned works.

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:-

1. In this agreement, words and expressions shall have the same meanings as are respectively assigned to them. as per the general conditions of contract hereinafter referred to.
2. The following documents shall be deemed to form and be construed as part of this Agreement:
   (i) The "Notice Inviting Tender" & "Instructions to Tenders" as at Annexure-A to this agreement.
   (ii) " Memorandum" at Annexure-B to this agreement.
   (iii) " Definition and Conditions of contract" as at Annexure-C to this agreement.
   (iv) " Additional conditions" as at Annexure-D to this agreement.
   (iv) Scope of work as per vol. II of tender document.
   (v) Technical specifications as per Vol. II of tender document.
   (vii) Price bid as per vol. III of the tender document and will be submitted by the bidder.
3. The work will be executed as per specifications relating to the work as indicated in the "Notice Inviting Tender".
4. Any correspondence and modifications of this DNIT offer and acceptance letter will form part of this Agreement.

Contractor

5. In considerations of the payments to be made by the The Director , SBSSTC , FEROZPUR to the contractor in respect of completed work. The contractor hereby covenants with the SBSSTC , FEROZPUR to execute the work in conformity in all respects with the provisions of this agreement and price quoted by the bidder.

6. The Director , SBSSTC , Ferozpur ; hereby liable to pay the contractor, in consideration of execution of works, the price in the manner as specified in this tender as per the schedule of payments in timely manner. In witness thereof, the parties hereto set their respective hands and seals on the day and year first above written.

Signature of Contractor
Dated the……. Day of …….,. 2015
Signature of witness of Contractor's Signature

Name :…….
Address:…….

Signed, sealed & delivered by …….. in the capacity of The Director SBSSTC , FEROZPUR, in …… presence of ……

Name & Address
,

1…….

2……

THE DIRECTOR
SBSSTC , FEROZPUR.,
(for & on behalf of)
SBSSTC , FEROZPUR

Annexure -A

SBSSTC , FEROZPUR PB.

(Notice Inviting Tender and Instructions to Bidder)

1. Tenders in form of lump sump price are hereby invited on behalf of the SBSSTC , FEROZPUR for the Work :-

" Design, Supply, construction, Installation, and Commissioning of Sewage treatment plant based on moving bed biological reactor technology MBBR of 0.75 MLD capacity complete in all respects with panel board room & all contingent Mechanical & Electrical , piping and instrumentation works including operation & maintenance for 6(six) months at SBSSTC , FEROZPUR

2. Envelope -A (qualification bid) & Envelope -B (Earnest money) will be opened by the Tender Committee , SBSSTC , FEROZPUR .In the office of the Director on the very date of receipt of bids at 12.30 PM in the presence of any participating bidder or their agents who may like to be present. The time allowed for completion of the work will commence from the date of issue of allotment letter to the contractor.

3. The tender should be based on Lump sum turnkey rate basis covering complete scope of work including all taxes and levies . Any other extra items apart from contract , but which may have to be executed to ensure completion as per drawings and specifications, the rates approved by the competent authority of the SBSSTC,FEROZPUR shall be paid.

4. Earnest money amounting to Rs. 1.25 Lac. must be furnished in the form of FDR in the name of the undersigned (by designation) and submitted with the tender in envelope -B. Any bid not accompanied with requisite earnest money in any form shall be rejected.

5. The Contractor, whose tender is accepted shall be required to furnish security at the rate of 5% percent of the cost of the work or it will be deducted from the running bills.

6. The offer shall remain open for acceptance for a period of 60 days from the date of opening of the Tender. The earnest money shall be forfeited if the bidder withdraws or modifies his offer within the validity period .

7. On acceptance of the tender, the contractor shall either himself remain available at site of work or arrange the availability of an representative, fully authorized in writing, at the site of work to receive instructions of the Engineer-In-Charge or his representative and to ensure prompt compliance thereof.

8. Sales tax or any other tax (prevailing on the date of tendering or levied during the currency of the work)on the material shall be payable by the contractor at its level and the SBSSTC , FEROZPUR will neither entertain any claim or deduct such amount in this respect.

Contractor

9. Before filling this tender, the contractor shall visit the site and can get information related to the work At his own level ,accessibility to the site, nature and extent of the ground, working conditions, stacking of materials, installations of Tools and Plants etc , supply of water and electricity for complete completion of the works contract. No claim , whatsoever shall be entertained by the college in any circumstances.

10. All the taxes will be paid by the contractor .

11. The bidder shall bear all costs associated with the preparation and submission of his tender and the college shall in no case be liable for these costs.

12. Each bidder shall submit only one tender, either by himself or as joint partner in JV. A tenderer who submits or participates in more than one tender, will be disqualified.

13. The contractor shall be bound to complete the whole work as described in the schedule of items of works and as per the specifications and drawings of the contract .
The certificate of completion as issued by the Engineer-in-charge shall be the conclusive proof of completion of work. or any Job .

14. The tender shall be typed or written in indelible ink and shall be signed by the tenderer or a person or persons duly authorized to sign on behalf of the bidder. All pages of the tender documents containing the entries and all corrections or amendments made therein shall be initial by the authorised person .

15. The following documents shall accompany the tender:

Pre qualification documents (eligibility criteria) as per tender requirements and Receipt of cost of bid documents / DD for Rs. 500.00.	Envelope -A
Earnest Money.	Envelope-B
Price Bid	Envelope -C

16. Contractor or the Bidder shall carefully examine the Tender Documents and fully converse themselves about all the conditions and matters, which may in any way, affect the work or the cost thereof. If the Bidder finds discrepancies or omission in the specifications or should he be in doubt as to their meaning, he may send the points in writing to The Director , SBSSTC , FEROZPUR during office hours on any working day before the date mentioned in time schedule.

17. At any time prior to the deadline for submission of Bids, the Director , may, for any reason, whether at his own initiative or in response to clarification requested by prospective Bidders modify the Tender Documents by issuing Addenda.

18. Such Addenda will be sent to all prospective bidders who have received the Tender documents and will be binding upon them .The Bidders shall duly sign and return the

Addenda along with their Bids, which shall form a part of their Bids. Non-receipt of addenda by the Bidders will not form basis for any claim whatsoever.

19. In order to afford prospective Bidder's reasonable time in which to take such Addenda into account in preparing their Bids, The Director , may at his discretion extend the deadline for the submission of Bids.

20. No alteration what so ever be made in the text of the Bid form by the Bidder. Any remark/deviation or explanation should be sent in a covering letter. The contract form of agreement is bound up with other documents so that the Bidder may know what their liability and duties .

21. The Bid prepared by the bidder and all correspondence and Documents relating to the Bid exchanged by the Contractor/Bidder and the Engineer in charge , shall be written in English Language.

22. The price bid should be submitted as per the Price Schedule and should conform to the scope of work, specifications, make and conditions given in Volume-II. The Price Bid will contain only Price and break-up for schedule of payment. Conditional Price bid shall be rejected and Bidder will be disqualified.

23. Unless stated otherwise in the Tender Documents, the Contract shall be for the whole work as described in Vol.-II. (Scope of Work, Technical Specifications given Drawing).

24. The Bidder shall quote for the entire works on a turn key basis such that the total price covers all the Contractor's obligation mentioned in or to be reasonably inferred from the tender documents in respect of the design, drawings including procurement, delivery, construction, erection and completion of works. This includes all requirements under the Contractor's responsibilities for testing and commissioning of the works.

25. The unit rates and prices shall be quoted by the Bidder / contractor entirely in Indian Rupees. All payments to the successful Contractor/Bidder under the proposed contract shall be made entirely in Indian Rupees (Rs.).

26. No extra interest except FDR own interest shall be reimbursed on Earnest Money as per FDR only .

27. If the Bid is made by a joint venture , it shall be signed by a duly authorized person holding power of Attorney for signing the Bid in which case a certified copy of the Power of Attorney shall accompany the Bid. All the payments and income tax deduction will be done for one partner only; on which name the bidding is done .

28. Bids determined to be substantially responsive will be checked by the office, for any arithmetical errors in computation and summation. Error will be corrected by the Engineer in charge , as follows:
Where there is a discrepancy between amount in figures and in words, lower amount will govern.

29. On completion of the works before issuing of the completion certificate by the Engineer-in-Charge the Contractor/ Bidder shall submit 3 (three) sets of as built drawings of civil and mechanical work.

30. One set of drawings and all other documents relating to the works under contract shall be kept in the site office and made readily available for discussions, examinations of the Engineer or his representatives along with the testing equipment and machinery.

31. As soon as the allotment letter is issued to the Contractor/ Bidder, he will submit to the Engineer-in-Charge his BAR CHART to complete the works by the time indicated in the contract.

32. The Contractor is advised to read carefully all chapters and follow the complete information regarding DNIT . Any enquiry regarding the DNIT can be send to the Director in writing only and needful reply on the web site shall be given before the specified dates.
Vague remarks and remarks like "will be given later" or " as per DNIT" are not acceptable.
If in the opinion of the Engineer-in-charge, the proposal is grossly incomplete, this will form sufficient reason for complete rejection of the tender on technical grounds.

33. The Bidder shall note that this is a Lump sum rate (turnkey based) tender. The Bidder shall give rate as per volume - III for evaluation of tender and to facilitate schedule of payments.
He shall therefore take utmost precaution to offer very standard equipment manufactured by only reputed manufacturers (wherever the makes are specified in the DNIT, the same shall be offered).

34. The Bidder should note that after the tenders are opened NO modifications, corrections, changes for technical bid or Price Bid will be allowed.
The Contractor/ bidder shall not be allowed to change the price quoted on his own.

35. All the equipment/machinery supplied shall be guaranteed for twelve (12) months after the commissioning of work. All defects shall be rectified to the entire satisfaction of the Engineer-in-charge. Damaged or non-working parts shall be replaced at no extra cost to SBSSTC , FEROZPUR
Defect liability shall be for a period of minimum 90(Ninety) days after the completion of work i.e. from the date of final checking testing and commissioning of the complete work.

36. Electric connection or generator set required for the execution of work will be given by the department at his own expenses.

37. The submission of a tender by tendered implies that he has read this notice and the condition of contract and has made himself aware of the scope and specifications of work to be done .

38. The Bidder, at the Bidder's own responsibility and risk is encouraged to visit and examine the Site of works and its surroundings and obtain all information that may be necessary for preparing the Bid and entering into a contract for construction of the Works. The cost of visiting the Site shall be at the Bidder's own expense.

39. No other document / drawing or calculation for sizes ; with Technical Bid need to submitted. All such drawing shall be prepared as per DNIT ;only after award of contract to lowest bidder as per DNIT .

40. BID EVALUATION
AS PER LUMP SUMP RATES ONLY.

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Price quoted by bidder : Capital cost of the STP is amount in Rupees Quoted by the bidder in price schedule.

Annexure 'B'

SBSSTC , FEROZPUR - PB.

I / We hereby offer to execute for the SBSSTC , FEROZPUR the work, specified in the tender written memorandum within the time specified in such memorandum at. Rs..... i.e. at rates entered in the Schedule Price Bid of " Notice Inviting Tenders " and annexed hereto and in accordance, in all respect, with the specifications, designs, drawings and instructions in writing referred to in of the "Conditions of Contract" and with such materials as are provided for and in all other respects in accordance with such conditions so far as applicable.

MEMORANDUM

a) General description & ITEM: " Design, Supply, construction, Installation, and Commissioning of Sewage treatment plant based on moving bed biological reactor technology (Attached growth Process) of 0.75 MLD capacity complete in all respects with panel board room & all contingent Mechanical & electrical , piping and instrumentation works and operation & maintenance for 6(six) months at SBSSTC , FEROZPUR

b) Cost of project Rs.....

c) Earnest money Rs. 1.25 lac. (Rs. one Lac twenty five thousand only .).L.S.

d) Security deposit 5% of the amount of the work executed OR
5% of the amount of the work done deducted from the bills.

f) Time allowed for one year from Issue of acceptance Letter, to the Contractor.

Should this offer be accepted in whole or in part, I/we hereby agree to abide by and full fill all the terms and provisions of the said conditions of contract annexed hereto and all the terms and provisions contained in the detailed "Notice Inviting Tender"

A sum of Rs. One Lac Twenty five thousand only is hereby forwarded in the shape of FDR in favour of The Director SBSSTC , FEROZPUR -PB. as Earnest money.

Dated the day of.....2015 Signature of the contractor.

Witness with Address

The above offer is hereby accepted by me on behalf of THE DIRECTOR , SBSSTC , FEROZPUR.

THE DIRECTOR ,

SBSSTC , FEROZPUR

Dated the---------- day of ----------2012.

Contractor

Annexure - C

SBSSTC , FEROZPUR - PB.

DEFINITIONS AND CLAUSE OF CONTRACT:

1. The "Contract" means the documents forming the tendered offer and acceptance thereof consisting a binding contract between The Director SBSSTC , FEROZPUR. and the contractor, the tender documents including the conditions, the drawings, design, the specifications supplemented with instructions issued from time to time by the Engineer- in-Charge and shall be binding on the parties in the stated order of precedence. All these documents taken together with the tendered offer and its acceptance shall be deemed to form the contract and shall be complementary to one another.
(S.B.S. College Of Engineering and Technology is SAME as SBSSTC)

2. The "Common Schedule of Rates" shall mean a printed document containing rates of different items of works pertaining to different Branches of P.W.D. i.e. Irrigation, B & R (Bldgs. & Roads Branch) and Public Health Branch and approved by the Committee of Direction of Chief Engineers of these P.W.D. Branches and Punjab Govt.

3. "Completed Works". shall mean the work completed in all respects as per laid down specifications, drawings, approved N.I.T.

4. The "Contractor" shall mean the individual or firm or company whether incorporated or not, undertaking the work and shall include the legal personal representative or the persons comprising such firm or company or the successors of such firm or company as well as the assignees of such individual or firm or company whose tendered offer has been accepted.

5. The 'completion date' is the date when the Engineer-in-charge certifies that the work can be put to use, after receipt of intimation from the contractor regarding its completion.

6. "Communication" between parties are the written and signed letters, notices, reminders, Memoranda and instructions recorded in the instructions book or books kept at site.

7. "Days & months" are calendar days and calendar months.
The "Engineer-in-charge" means the official representing for STP for SBSSTC , FEROZPUR who shall supervise the work and administer the contract with the assistance of his authorized subordinates who shall be in charge of the work and who shall sign the contract on behalf of the ,

8. "The department OR The COLLEGE " shall mean the SBSSTC , FEROZPUR PB.
The "Site" shall mean the land and or other places, or, into or through which work is to be executed under the contract or any adjacent land which may be allowed to be used for the purpose of carrying out the work.

9. The "Start date" is the date when contract came into existence upon the issue of "letter of acceptance" by the Engineer-in-charge.
"Schedule of items of works" shall mean the items of work to be executed at site of work if extra required to work allotted to the contractor.

10. The "Works or work" shall, unless the context otherwise requires, mean what the contractor is required to execute and hand over to the SBSSTC , FEROZPUR

11. In interpreting these "Conditions of contract", singular also means plural, male means female and vice versa.

CLAUSES OF THE CONTRACT :

1) PERFORMANCE GUARANTEE AND SECURITY

CLAUSE-1 :The contractor whose tender is to be accepted, shall furnish:

1.1 A bank guarantee of Schedule Bank in the prescribed format in favour of the SBSSTC , FEROZPUR -in-charge for an amount of 5% of the amount of contract immediate after acceptance of tender or the Security from bills will be deducted

1.2 The amount of security and Earnest money shall be released after expiry of one month from The date of commissioning of STP.
.

2) **EXTENSION OF TIME:**

CLAUSE-2:

If the contractor shall desire an extension of the time for completion of the work on the ground of his having been unavoidably circumstances , he shall apply in writing to the The Director within thirty days of the date of hindrance on account of which he desires such extension .

3) **COMPLETION CERTIFICATE:**

CLAUSE-3 :

Within 30 days of the completion of work, the contractor shall give notice of such completion to the Engineer-in-Charge & within 30 days of the receipt of such notice, the Engineer-in-Charge shall inspect the work and if there is no defect in the work, shall furnish the contractor with a certificate of completion, otherwise a provisional certificate of completion indicating the defects (a) to be rectified by the contractor .

4. **WINDING UP OF THE CONTRACT:**

CLAUSE-4:

On completion of the work, the contractor shall hand over the same to the Engineer-in-Charge or his authorized representative free from all defects, shortcomings or imperfections.
He shall also furnish the following documents duly signed by him or his authorized representative :.

(i) Completion drawings showing the work as finally constructed.

(ii) Variation statement showing the altered items, if any, against those provided in the original drawings.

(iii) Cement / Steel consumption register.

5) **PAYMENT ON INTERMEDIATE CERTIFICATES REGARDED AS ADVANCES:**

CLAUSE- 5 :

No running payment shall be made for work agreement costing Rs 3,00000.00 (Three lacs.) till the whole of the work shall have been completed and a certificate of completion given. But in the case of works agreement to cost more than rupees Three Lac, the contractor shall on submitting a bill thereof be entitled to receive a payment proportionate to the part thereof,
The final bills shall be submitted by the contractor within one month of the date fixed for completion of the work .

6) **BILL TO BE SUBMITTED MONTHLY:**

CLAUSE-6 :

A bill shall be submitted by the contractor each month on or before the 10th or any other date fixed by Engineer-in-charge accompanied by the following documents:

6.1 Measurements and quantities of items of works done since last bill.

6.2 Copies of quality control tests in specified format covering the work done since last bill.

The Engineer-in-charge shall get the bill verified, if possible, within 10 days from its presentation and the contractor shall be required to sign the correction made, if any, in token of its acceptance, before releasing or adjusting the payable amount .If the contractor does not submit the bill within time limit or delays its submission or acceptance of correction after verifications, the entire responsibility for non-payment or delay in payment shall rest with him.

7) **BILL TO BE ON PRINTED FORMS/EXTRA-ITEMS:**

CLAUSE-7:

The contractor shall submit all bills on the printed forms to be had on application from the office of the Engineer-in-charge and the rates in the bills shall always be entered at the rates specified in the tender or in the case of any extra works ordered, in pursuance of these conditions and not mentioned or provided for in the tender, at the rates hereinafter provided for such works.

The contractor shall deliver in the office of Engineer-in-charge on or before the 10th day of every month during the continuation of the work covered by this contract, a return showing details of any work to be charged of extra with value based upon the rates and prices mentioned in the contract or in the common schedule of rates applicable to the location of work on the date of tender. The contractor shall include in such return particulars of all demands of whatever kind and howsoever arising, which at the date thereof he has in respect of or in any manner arising out of execution of work. The contractor shall be deemed to have waived off all claims not included in such return and will have no right to enforce any such claim not so included, whatsoever be the circumstances.

8) **STORES, SUPPLIES, SECURED ADVANCE AND MOBILIZATION ADVANCE:**

CLAUSE-8:

The contractor shall arrange all the schedule material required for construction and other required materials at his own cost and will bear all the taxes including transportation, loading, unloading, stacking, storage, safe custody against the damage due to sun, rain, dampness, fire, theft, etc.

8.1 The contractor shall procure all material from sources approved by Engineer-in-Charge in writing. All the materials brought to the site shall be duly accounted for by the contractor and got insured against loss due to any reason what so ever. Proof regarding this supported by the copies requisite document shall be regularly submitted to Engineer-in-Charge. The Director , SBSSTC , FEROZPUR.

8.2 The material procured by the contractor shall be strictly according to the specifications of the material conforming to ISI or any other approving authority applicable, Storage of the material should be as per approved norms.

9) **MOBILIZATION ADVANCE:**

CLAUSE-9: On application by the contractor, mobilization advance to the extent of 25% of the value of the work may be paid to the contractor after the full fillment of following conditions before payment:

9.1. The contractor shall have physically completed at least 10% of the value of work.

9.2. The contractor shall have collected at site usable machinery and materials valuing at least 5% of the value of works and the same shall be hypothecated to Engineer-in- Charge by designation.

9.3 The material shall not be pledged for obtaining secured advance.

10) DRAWINGS, ORDERS ETC. WORK TO BE EXECUTED IN ACCORDANCE WITH SPECIFICATIONS:

CLAUSE-10:

The contractor shall execute the whole and every part of the work in the most substantial and workman-like manner, both as regards materials and labour and otherwise in every respect in strict accordance with the DNIT specifications . The contractor shall also confirm exactly, fully and faithfully to the designs, drawings and instructions in writing relating to the work signed by the Engineer-in-Charge and lodged in his office and to which the contractor shall be entitled to have access during the office hours or on the site of work.

11) **CLAIMS FOR PAYMENT OF AN EXTRA ORDINARY NATURE TO BE REFERRED TO :**

CLAUSE -11

No claim for payment of an extraordinary nature, such as claims for bonus, for extra labour employed in completing the work before the expiry of the contractual period at the request of Engineer in-Charge or claims for compensation where work has been temporarily brought to a standstill though no fault of the contractor, shall be allowed unless and to the extent that the same shall have been expressly sanctioned by The Director ,SBSSTC ,

All work under or in course of execution or executed in pursuance of the contract shall at all times be open to the inspection and supervision of the Engineer-in-Charge and his seniors/subordinates and the contractor shall at all times during the usual working hours and at all other times at which reasonable notice of the intention of the Engineer-in-Charge or his seniors/subordinates to visit the works shall have been given to the contractor, either himself present to receive orders and instructions or have a responsible agent. duly accredited in writing present for that purpose. Orders given to a Contractor's agent shall be considered to have the same force as if they had been given to the contractor himself.

its authorized representative and the contractor in connection with or arising out of this contract or the execution of work there under.

12) **CONTRACTOR TO SUPPLY MATERIALS, PLANT, SCAFFOLDING:**

CLAUSE-12:

The contractor shall arrange and supply at his own cost all material such as cement, steel, bricks, PVC./GI/DI/CI pipes & specials ,plant, tools, appliances, implements, ladders, cordage, scaffolding, water and power supply and temporary works requisite or proper for effective execution of the work of STP only . All the sewer network already provided by the College and any other future pipe network will be done by college only .

13) **CHANGE IN CONSTITUTION:**
CLAUSE - 13

Where the Contractor is a partnership firm, the previous approval in writing of Engineer-in-charge shall be obtained before any change is made in -the constitution of the firm. Where the contractor is an individual or a Hindu-Undivided Family Business concern, such approval as aforesaid shall likewise be obtained before the contractor enters into any partnership agreement, where under the partnership firm would have the right to carry out the work hereby undertaken by the contractor.

The contractor shall give not less than one week notice in writing to the Engineer- in-Charge or his subordinate in-Charge of the work before covering up or otherwise placing beyond the reach of measurement any work in order that the same may be measured and correct dimensions thereof may be taken before the same is so covered up or placed beyond the reach of measurement and shall not cover up the place beyond the reach or measurement .

14. **DISPUTES AND ARBITRATION:**
CLAUSE -14

14.1 If any dispute or difference of any kind whatsoever shall arise between the SBSSTC , FEROZPUR and contractor ,The chairman SBSSTC will settle the matters .If due to any reason the department could not pay or not willing to pay the due amount as per the payment schedule ,contractor can approach any court of law.

14.2 Whether before its commencement or during the progress of works or after the termination abandonment or breach of the contract. It shall, in the first instance, be referred for settlement to the Engineer in-charge of the work and he shall, within a period of 15 days after being requested in writing by the contractor to do so convey his decision to the contractor. Such decision in respect of every matter so referred shall subject to arbitration as hereinafter provided be final and binding upon the contractor. In case the work is already- in progress, the contractor shall proceed with the execution of the work on receipt of the decision of the Engineer-in-charge as aforesaid with all due diligence, whether ,any of the parties require arbitration as hereinafter provided or not.

15. **STORAGE OF CEMENT AND RECORD OF CONSUMPTION:**

CLAUSE:- 15:

Cement bags arranged by the agency shall be stored in separate godown to be constructed by the, contractor. Each godown shall be provided with a single Lock and Key . The keys of one lock each shall remain with the authorized representative of the College and the contractor at the site of work. Cement shall be taken out of the store according to daily requirement with the knowledge of both the parties and the account shall be maintained in the Performa as to be supplied by the Engineer in charge at the time of commencement of the work.

16) **SPECIFICATIONS:**

CLAUSE-16:

In the case of any class of work for which there is no specifications as mentioned in clause 11, the work shall be carried out in accordance with specifications laid down by the Bureau of Indian Standards and in the event of there being no such specifications, the work shall be carried out in all respects in accordance with the instructions and requirements of the Engineer-in-charge.

CONCRETE WORK :All the concrete work shall be design mix and have to be done with mechanical mixture unless permitted otherwise by the Engineer-in-charge. All R.C.C. work shall be compacted with a mechanical vibrator driven by petrol, diesel or electricity.

CURING OF CEMENT WORK: The contractor shall ensure proper curing of all work involving use of cement strictly as per stipulations of the Punjab P.W.D/BIS specifications. Since proper curing during the critical period has a direct bearing on the strength and safety of cement work, the Engineer-in-charge shall in the case of any default on the part of the contractor, take prompt action to arrange adequate curing at the cost of the contractor without issuing any prior notice in this respect, to avoid lapse of period of curing.

17. **TAXES & LEVIES:**

CLAUSE - 17

INCOME TAX :Income tax shall be deducted at source as per provisions of the Income Tax Act and a certificate of such deductions made in each financial year shall be furnished to the contractor by the officer.

SALES AND OTHER TAXES: Sales tax on Mechanical Items shall also be paid by Contractor to sales tax departments only.

Contractor

ADDITIONAL CONDITIONS of CONTRACT

1. The work shall be executed strictly in accordance with DNIT specification (latest edition correct up to date) to the entire satisfaction of the Engineer-in- charge coupled with provision that the various item of work will be carried out as per the specifications given in the NIT.

2. Should the tendered withdraw or modify his tender within 60 days from the date of opening of tenders or before allotment, whichever is earlier; his earnest money will be forfeited. In case the contractor does not start the work within a reasonable time after allotment, the Engineer-in-charge will be at liberty to de-bar the contractor for participating in tendering process in the collage for a particular period in addition of forfeiture of Earnest Money.

3. The contractor has to make his own arrangement for water, bricks, Cement, Steel. R.C.C./CI/PVS/DI/SW pipes & specials, wood work and every other item required directly or indirectly for completion of work.

4. No claim shall be entertained on account of increase in freight, price of labour and material or levy of any fresh tax during the currency of work or due to any cause what so ever. How ever if department delay the payment or fail to provide space in time then extra charges can be given.

5. The rates given in the attached schedule of rates are inclusive of octroi incidental charges, terminal tax, sales tax / Vat, and other local taxes and any/ all other charges(prevailing on the date of tendering and levied during the currency of the work).

6. Material like cement, steel and pipes etc. are to be arranged by the contractor himself and payment for the work involves these items shall be based on documentary evidences based on invoices from the approved agencies as per chart given below:-.

Contractor

STEEL : Grade Fe-500 T.M.T bars of / TATA / SAIL / TISCO/KAMDHANU or brand with the approval of the concerned Engineer-in-charge.

CEMENT: O.P.C cement of Shree Ultra Tech /J.K /Ambuja / A.C.C /ACC or as pre the approval of the concerned Engineer-in-charge.

7. The agency will arrange his own tools and plants and will make his own arrangement of water required for civil construction works i.e. for curing at his own cost. Nothing extra shall be paid for this purpose.

8. No carriage or incidental charges will be borne by SBSSTC , FEROZPUR. on any account.

9. The contractor shall provide at his cost and expenses all labour, materials etc., necessary for checking up of any portion of the work whenever required by the Engineer-in-charge or his staff and nothing etc. shall be paid for any labour or materials required. The rate to be quoted shall include the cost of all such works.

10. Over writing in tender is strictly forbidden & tender containing any doubtful figures shall be rejected. Correction if any, should properly be signed by the bidder.

11. For reinforced concrete work design mix can be adopted.

12. Income Tax shall be deducted as fixed by the Govt. From time to time from the running bills/payment of the contractor.

13. All arrangements for traffic during construction or maintenance shall be considered as part of the work and contractor's responsibility, nothing shall be payable to him on this account.

14. Any item got executed at site which is not included in the DNIT is payable to the contractor as under:

a) If it is CSR item it will be paid @ CSR+taxes + CP.

b) If it is N.S. item it will be paid as per analysis of rates submitted by the contractor and approved by the competent Authority.

15. All required quality control tests will be performed and recorded in the test record register as advised by the Engineer in charge of the contractor .

16. Before tendering, the contractor is advised in his own interest to visit the site and acquaint himself about the site conditions. No claim will be entertained later on any account whatsoever.

17. Validity of this tender shall be 120 days.

18. The work shall be carried out according to the standard Drawings/design as per DNIT and the rate for all items of the work shall be quoted for the complete job work.

19. If at any time, it is proved that work is below specifications or inferior, the contractor shall be equally responsible with the college officials and contractor has to rectify the defect at his own cost .

20. Shifting of machinery by the contractor during currency of work shall be his own liability.

21. Tenders received telegraphically or by email will not be accepted.

22. If there comes a holiday on the date of receipt opening of tenders the same shall be received & opened on the next working day at the same time.

23. Only the authorized signatories of the firms / bidder can apply for tender with proof of their being authorized signatory.

24. The Bidder should give his complete address, telephone number/mobile no. for correspondence.

SECTION -2

ANNEXURE AND FORMS

ANNEXURE – 1Q

(TO BE ATTACHED WITH PRE –QUALIFICATION DOCUMENTS)

EXPERIENCE ON SIMILAR WORKS FOR PURPOSE OF TECHNICAL ELIGIBILITY CRITERIA.

(The bidder can use the following format)

(The certificate must be signed by Executive Engineer of the Department)

All individual firms are requested to complete the information in this form. Applicants should enclose testimonials/ Clients' certificates in support of their claim.

1. Certificate Number of Contract

   Name of Contract :

   Location of works :

   Technology of STP :

2. Name of Employer :
3. Employer's address :
4. Nature of works :
5. Value of the total contract :
6. Date of award :
7. Date of Completion :
8. Contract duration (years and months) :

NOTE: Similar work means work of sewage treatment plant on any technology except waste stabilization pond system or oxidation ditch.

(contractor signature)

Contractor

ANNEXURE -2Q

(To be attached with Pre –Qualification documents)

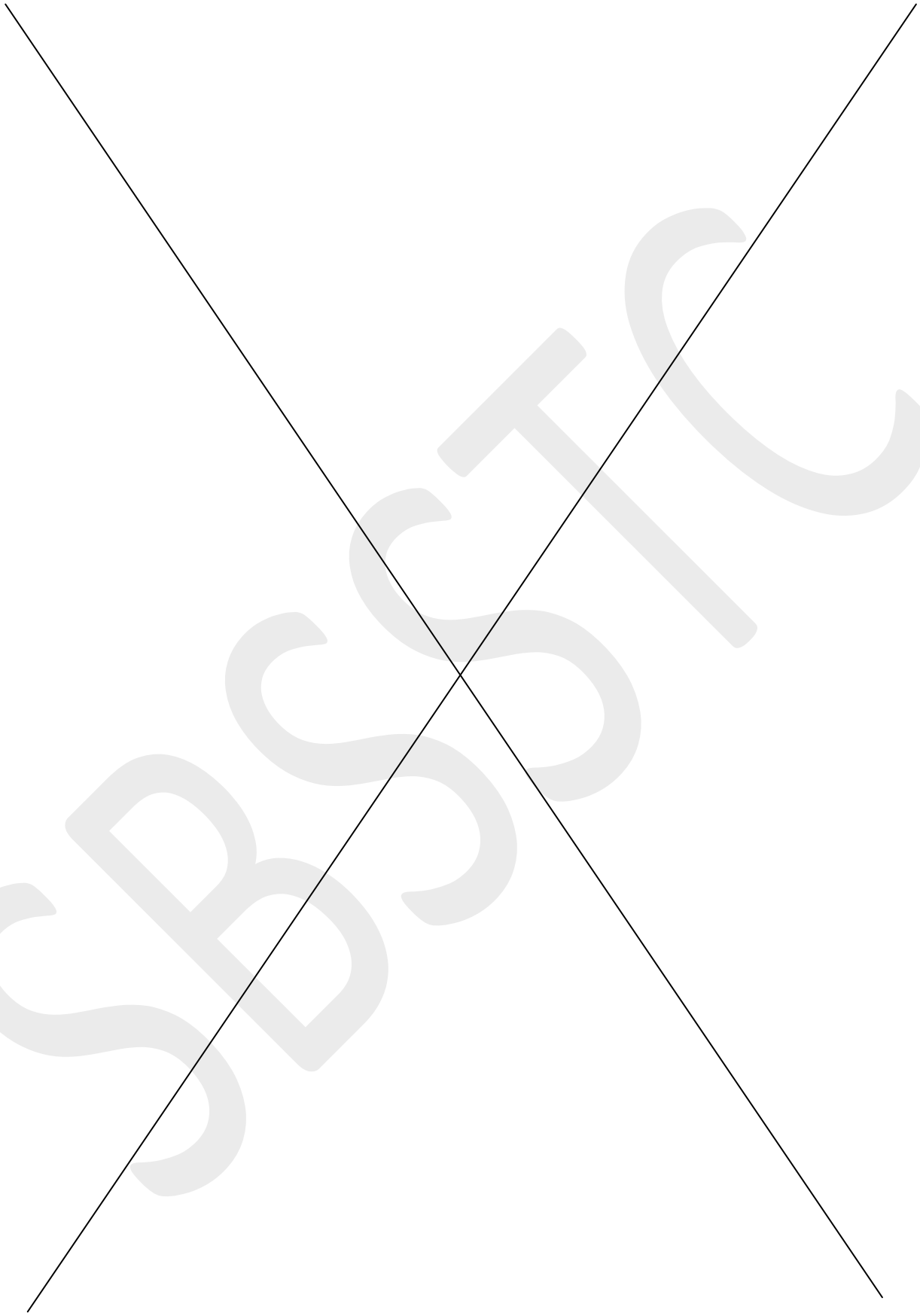
EQUIPMENT AVAILABILITY for CONSTRUCTION WORK

1. Concrete mixers ----------
2. Concrete Vibrators ----------
3. Shuttering plates ----------
4. JCB machine ----------
5. G. I. Pipe line . ----------
6. Pump Sets ----------
7. Any other

Note: Only major equipment needs to be reported here.

(contractor signature)

Contractor



ANNEXURE – 3Q

(To be attached with Pre –Qualification documents)

FORMAT FOR EVIDENCE OVERDRAFT or CREDIT FACILITIES

BANK CERTIFICATE

This is to certify that M/s ……. is a reputed company with a good financial standing with FDR of Rs:.....
.....

If the contract for the Project/Work, namely "
……...……
…..... ……
……..." is awarded to the above firm, we shall be able to provide overdraft/credit facilities to the extent of INR …… to meet their working capital requirements for executing the above contract.

Name of the Bank ……:……

Branch Manager signature :……..……..

Address of the Bank :……..

:……

…….

Contractor

ANNEXURE – 4Q

(To be attached with Pre –Qualification documents)

UNDERTAKING

I, the undersigned do hereby undertake that our firm

M/s_____

_____
_
_____
_

__would invest a minimum cash up to Rs…..... lacs during implementation of the contract

_____
(Authorized Signatory)

_____
Name and address the of Firm

TENDER DOCUMENTS FOR " Design, Supply, construction, Installation, and Commissioning of Sewage treatment plant based on moving bed biological reactor technology (Attached growth Process) of0.75 MLD capacity complete in all respects with panel board room & all contingent Mechanical and electrical , piping and instrumentation works including operation & maintenance for 6(six) months at **SBSSTC , FEROZPUR** ."

VOLUME - II

ON TURN KEY BASIS

BRIEF DESCRIPTION – SCOPE OF WORK AND TECHNICAL SPECIFICATIONS

*CIVIL WORKS

*MECHANICAL AND ELECTRICAL WORKS

*OPERATION & MAINTENANCE

Brief Scope of Work & Technical Specifications

VOLUME –II (PART -A) CIVIL WORKS

1.0 DETAIL OF WORK & SPECIFICATIONS: -

This volume contains scope of the work and

This volume contain scope of civil work and technical specifications for the bidder with respect to Civil works for the work of " Design, Supply, construction, Installation, and Commissioning of Sewage treatment plant based on moving bed biological reactor technology MBBR (Attached growth Process) of 0.75 MLD capacity complete in all respects

The tender is for turnkey job and the responsibility of the contractor will include all preparatory work, levelling and dressing of site, detailed design(hydraulic & structural), procurement, excavation work including de-watering and lowering of sub-soil water if required, disposal of all surplus earth at suitable site, civil works, testing and commissioning of STP and operation & maintenance during trial run /defect liability period for 90 days and operation & maintenance for 6 (Six) months thereafter at SBSSTC – Ferozpur.

1.1 LOCATION: SBSSTC , FEROZPUR highway and is about 5.0 – 7.0 Km

From FEROZPUR bus stand and also from FEROZPUR railway station.

1.2 DISPOSAL WORKS : There exists sewerage system in the college campus and at present sewage is being treated with oxidation pond technology. The site is located on the back side in the end of the campus.

1.3 PROPOSED SITE FOR STP WORKS: The proposed STP shall be installed in the existing disposal site and its adjoining land. The existing pumping system need rejuvenation and the same is proposed to be covered in the scope of work of this project .One collecting tank exists at site and shall remain in use. The present use of machinery or area is included in the scope of this work.

1.4 ESTIMATION OF SEWAGE FLOW: STP will be designed for a flow of 0.75 MLD. However the provision for 0.25 MLD in term of space only to be made with site to consider the future requirement.

1.5 DESIGN & DRAWINGS:

A basic scheme for rejuvenation of main pumping station & for construction of sewage treatment plant is described in the scope of work. Site plan can be seen in the office of the director SBSSTC , FEROZPUR . The bidder shall quote his rates based on the scope of work. However, this shall not absolve the bidder from responsibility of performance of the assets created in this contract. The bidders are required to furnish the following documents at the time of award of contact.

a) Site Plan and Flow diagram / Plan layout./ civil structural drawings

b) Hydraulic flow diagram .

1.6 The Scope of work for successful bidder includes:-

(a) Submission of all documents required according to the contract parameter.

(b) Submission of a guarantee that the treated effluent will correspond to the requirements given below.

1.7 Raw sewage & treated sewage characteristics:

For the design purpose for the proposed STP following parameters can to be adopted or Bidder can take sample at their own level .

Characteristics of Influent Sewage

Parameters	Influent sewage Characteristics
pH	6-8.0
TSS mg/l	200
COD mg/l	550
BOD mg/l	450
TDS mg/l	2000
O&G mg/l	5

Characteristics of the effluent (from final out let of STP)for the treated sewage for on land irrigation or plantation.

Parameters	Effluent characteristics
pH	6.5-8.00
BOD mg/l	≤ 100
COD mg/l	≤ 200
TSS mg/l	≤ 50

1.8
Drawings.

(a) The agency shall submit the final lay-out plan, hydraulic flow diagram and general arrangement drawings of individual units for STP , within 20 days of issuance of letter of award. The bidder shall include the units of existing MPS to be used for the purpose in the drawings .

(b) Training of the college's operational staff for the operation & maintenance of MPS & STP in the last two months of the O&M period of 6(Six) months.

(c) The bidder should provide details of the manpower required for the operation and maintenance of MPS & STP.

(d) RESIDUE MANAGEMENT:

Disposal of Solid Waste: Solid waste shall be the property of the college ,however disposal of all solid waste including that from sludge drying beds as generated from the STP during O & M shall be responsibility of the contractor and will be thrown at 10m distance

1.9 MAIN PUMPING STATION & PLANT'S CAPACITY

Normal operation period	24 hrs.
Day discharge	0.75 MLD(STP)
Raw water pumps	32.0 kilo litre per hour : For each of 2 no.(2Working) MPS
Sub soil water table	30.00 M below ground.
Invert level of incoming sewer	(-) 3.00 approximate Meter.
Inlet pipe dia.	As required
NGL	0.00 M

1.10 SCOPE OF WORK REQUIRED (CIVIL WORKS):

Design and engineer the STP to be operator friendly.

(Designed concrete will be minimum M-25 or more and steel Fe-500 grade for all Water retaining structures. For all other structures designed concrete will be minimum M-20 or more and steel Fe-500 grade.)

2.0 MAIN PUMPING STATION : the existing pump chamber can be used .

2.1. Screening channel for Coarse Fitting Screen :

Provide one set of coarse screens for the same. Coarse screen channel manually operated designed for flow of 1.0 MLD shall be provided. The details shall be as below;

Number	1
Material of fabrication of screens	MS-Epoxy coated .
Clear spacing between bars	30 mm.
Screen bar size	10mm x50 mm (10 mm facing toward the flow
Flow velocity	≤ 1.0 m /sec.

2.2 Raw sewage pumps:

The raw water pumps shall be SUBMERCIBLE or centrifugal, non-clog, solids handling (NC-SH) pumps with open impellers and shall be installed in the existing pump house. The NC-SH pumps shall be rated to handle solids up to even 20 mm size with an open impeller design.

Quantity	=	2 No. (2W) one standby already exist.
Capacity of each pump	=	32.00 m^3 / hour
Head	=	10m
Type	=	SUBMERCIBLE SLUDGE / SEWER PUMP, non-clog, solids handling .
MOC	=	As per detailed specifications of various components
Max .solid size	=	20 mm non compressible.
Drive	=	Electric driven by a Suitable motor.
Accessories	=	Panel, guide rail, chain , all suction and delivery pipes and specials such as bend ,tees , etc; valves , and cable of required length.

All the three no. pumps ,suction - delivery pipes & Valves etc; shall be adjusted in the existing pump house . Preferably the pumps shall be equipped with a Non Return Flap valve in the body itself, which functions as a normal foot valve

The delivery header of the pumps must conform to good piping engineering practice with necessary fittings for isolating the pumps for maintenance,

Sufficient space must be allowed around the pump for movement of operators and technicians for routine operation and maintenance activities.

2.3 Delivery header & Rising Main:

The delivery line of each pump & common header within the existing pump house shall be in MS or CI double flanged .

2.4 Sluice Valves:

Sluice Valves to be provided on the delivery side of each pump for isolation of the pumps. All other accessories, whether specified or not, but required for completeness shall form part of contractors scope.

3.0 SEWAGE TREATMENT PLANT (S.T.P):

The components specified in this DNIT are the minimum requirement and are for the guidance purpose only. However this does not absolve the contractor from his responsibility of giving satisfactory performance and meeting desired discharge standards as specified in tender document. The contractor can add any other process / method/ machine from his own level to give satisfactory results.

3.1 Brief Description of Units :

COMPONENTS	UNIT Minimum
Equalization Tank with Aeration Facility	One number
Screening Chamber (manual).	2nos:(1W+1SB)
MBBR	Two Reactors

Flocculation Tank with Polymer / Alum dosing tank	One No:
Secondary clarifier	One No:
Filter feed Sump	One No:
Filter feed pumps	4(3W+1SB)
Dual media Pressure filter	Four nos: for 0.75MLD
Filter Back wash water pumps	2(1W+1SB)
Liquid Chlorine dosing tanks with Dosing Pumps	Two No:
Treated water collection cum chlorination tank	5000 litre Two No:
Treated Effluent pumping sets	2(all Working)
Sludge thickener feed pumps	2(1W+1SB)
Sludge thickener	One
Sludge holding tank	One
Sludge drying beds feed pumps	2(1W+1SB)
Sludge drying beds	Minimum 2 No.
Dry Sludge Platform	One
MCC Room	One.
Interconnecting pipes, gates, valves, weirs, valve chamber, channels for conveyance of wastewater, sludge and filtrate.	LOT
Stairs as per requirement	LOT
Railings along the walkways , platforms & stairs	LOT
External water system in the plant area	LOT
Painting to all the above units, wherever required	JOB
Distribution Network by gravity of PVC pipe 10 m length	JOB.

3.2 EQUALIZATION TANK :

This tank shall be designed to equalized the variable flow and organic load with aeration facility. Equalization tank will receive raw sewage from the raw sewage pumping station . The tank shall be designed for flow of 1.0 MLD. The entire construction will be in civil work with 100mm CI or G.I pipe with flanged sluice valve of same size for scouring arrangement during maintenance. Following specification are required :

.

Quantity	=	One number
Total design flow	=	$42m^3$ / Hr .
Detention period	=	Minimum One day.
Min. free board	=	0.5 m

3.3 Screening Channels:

There shall be two manually operated screening channels (one working and one stand by) each designed for peak flow considering design Flow = 1. 0 MLD. capacity. The materials of construction for screens shall be MSEP flat. The screens will have 6 mm clear spacing between two bars each of 10mm thickness & 25 mm depth . Designed velocity through screen shall be between 0.5 m/sec to 1.3 m/sec.

The angle of inclination of the manual bar screen with the horizontal shall be 45^0 to 60^o.

There shall be a platform of 1.0m wide all around the screen chamber with railing as per specifications. RCC stairs 1.00 m wide for climbing up from ground level to platform and connecting inlet chamber ,screening chamber ,grit channel ,collecting sump & MBBR shall be provided. Hot dip galvanized or epoxy coated M.S Chute for screening disposal up to tractor trolley level is to be provided. If all the structures cannot be approached with one stair , another RCC stair shall be provided for proper approach and as decided by the Engineer in Charge.

There shall be one number CI sluice gate at each inlet of the screen channel with manually operated gear to regulate the flow of raw sewage.

Free board Minim.: 500 mm.

All other accessories, whether specified or not , but required for completeness shall form part of contractors scope.

3.4 Grit Removal chamber:

The grit particles in the sewage need to removal to protect mechanical equipment from abrasion. Manually cleaned grit chamber should be provided with adequate capacity to store the grit between intervals of cleaning.

There shall be 2 numbers (one working & one stand by) Grit channels, operated manually and each designed at Flow = 1.00 MLD.

There shall be sufficient space for storage of three days grit in each grit channel. Floor shall have 1.0% slope towards the inlet of the grit channel having a hopper in the end with sluice valve of 150 mm diameter for withdrawal of grit at a suitable height in the tractor trolley for disposal.

Below the down take pipes a brick masonry collection chamber shall be constructed from where the spillage and drain water will be discharged into the external sewerage system.

There shall be 1.0 M wide platform all around the grit channel/chamber with pipe railing and cast iron rungs for going inside the chamber fro cleaning and maintenance purpose.

There shall be a suitable platform for operation of 150 mm diameter Sluice Valve marked at the hopper of grit chamber operation.

Proportional weir as flow control device to be provided in grit channels. Proportional weir shall have free fall so that it never works under submerged conditions.

Design Criteria

Design Flow for each channel unit (MLD)	=1.00 MLD
Number of Units	= 2 (1 working +1 stand by)
Size of grit particle to be removed (mm)	= 0.12 to 0.16
Specific gravity of grit	= 2.60
Velocity controlled device at outlet	= Proportional weir
Free Board (m)	= 0.50 min.
Design temperature for sewage	= 20 degree C.

All other accessories, whether specified or not , but must required for completeness shall form part of contractors scope of work.

3.5. MBBR feeder channel : for 0.75MLD

There shall be one collection sump of suitable size (Minim. 30 seconds HRT at designed flow) constructed in RCC M-25 (min. with 500 mm free board) and with 100 mm i/d CI D/F drain pipe with CI D/ F SV of the recommended make for scouring in a separate manhole . The sump shall be connected to MBBR for feeding the influent.

The bed level of this sump shall be so maintained that it is 30 cm. (minim.) above the FSL of the MBBR. This is to avoid the entry of media in the channel through the inlet pipe.

All other part whether specified or not , but must required for completeness shall form part of contractors scope of work.

3.6. Moving Bed Bio Reactor (Aerobic Attached Growth Bio film Reactor)for 0.75 MLD

The sewage shall be conveyed to MBBR unit for treatment. The concept of the MBBR is to provide continuously operating Bio-film reactor, which is non-clogable , does not require back washing and has a very low pressure drop. This is achieved by growing bio-film on smaller ring media as carrier that move along with the waste water in the reactor. The air stream constantly keeps the bio-media in suspension and at the same time provided required oxygen to the biomass. Reactor shall be designed for single stream operation with 2 reactors , liquid depth not less than 4.00 m and free board not less than 0.5 M.
The bioreactor shall be designed to treat the sewage with aerobic attached growth moving bed process.

The reactor shall be rectangular in shape and constructed in RCC (M-25) (minimum) of suitable size to take the organic and solid load in the raw sewage and to deliver consistently the outlet sewage quality as per treated waste water quality mentioned.

There shall be a 1.00 m wide platform with pipe railing with the reactors and a RCC Stair of 1.00 m width which can be common with the primary unit.

Reactor shall have minimum 100 mm diameter pipe in a separate valve pit having provision for extended rod with wheel for scouring. CI rungs in all valves chambers and reactor, for maintenance and shall be connected to common pit or sump for drainage of reactors in to the main sump by gravity. Suitable sieve shall be provided in scour pit to prevent escape of media.

The Ring media shall be made of PVC . The media quantity shall be adequate to provide sufficient surface area for maintaining the microbial strength as required achieving the quality.
Nominal ring media should be around 20 mm and depth equal to 15 mm.

The oxygen requirement for BOD removal shall not be less than 1.00 kg Oxygen/Kgs. of BOD^5 removed. The diffusers used shall be suitable for coarse bubble air diffusion and for design purpose oxygen transfer efficiency shall be considered not more than 15%. The air agitation or diffusion is to be applied continuously to circulate the media and keep in suspension.

Cylindrical Sieves in SS-304 construction shall be provided at the outlet of each reactor to retain the media.
The inflow & outflow in each compartment shall be opposite to each other . The launder shall be provided with suitably designed weir to maintain control on the water level in the MBBR.
After the launder the reactor can be connected to a Flocculation tank and then to secondary clarifier through pipe .

3.6.1 Diffusers & Air Blowers:

Diffusers (EPDM) shall be submerged coarse bubble, high transfer efficiency, low pressure type, low energy consumption, low maintenance, non buoyant type. The coarse aeration system with diffusers shall be so arranged to provide a mixing pattern that causes the media to be thoroughly mixed through the whole depth and area of the Toxic volume and shall prevent media from floating at the tank surface.
The entire piping for distribution of air in reactor shall be of G.I material only. All the pipes in reactor shall be of G.I ,B- class.

3.6.2 Air blowers:

The air shall be supplied using positive displacement rotary type air blower .
Minimum 3 in numbers (2 working + 1 Stand by) each of 50% capacity. The capacity and head for the blowers shall be decided on the basis of S.O.R. requirements of diffusers as specified elsewhere duly considering the losses between the governing point of delivery (diffusers) and the blowers.
Blowers shall be complete with motor and accessories like base frame, anti-vibratory pad, silencer, non-return valve, air filter, , silencer, etc; as per requirements. Anti vibration pads should be installed at the bottom of frame structure .
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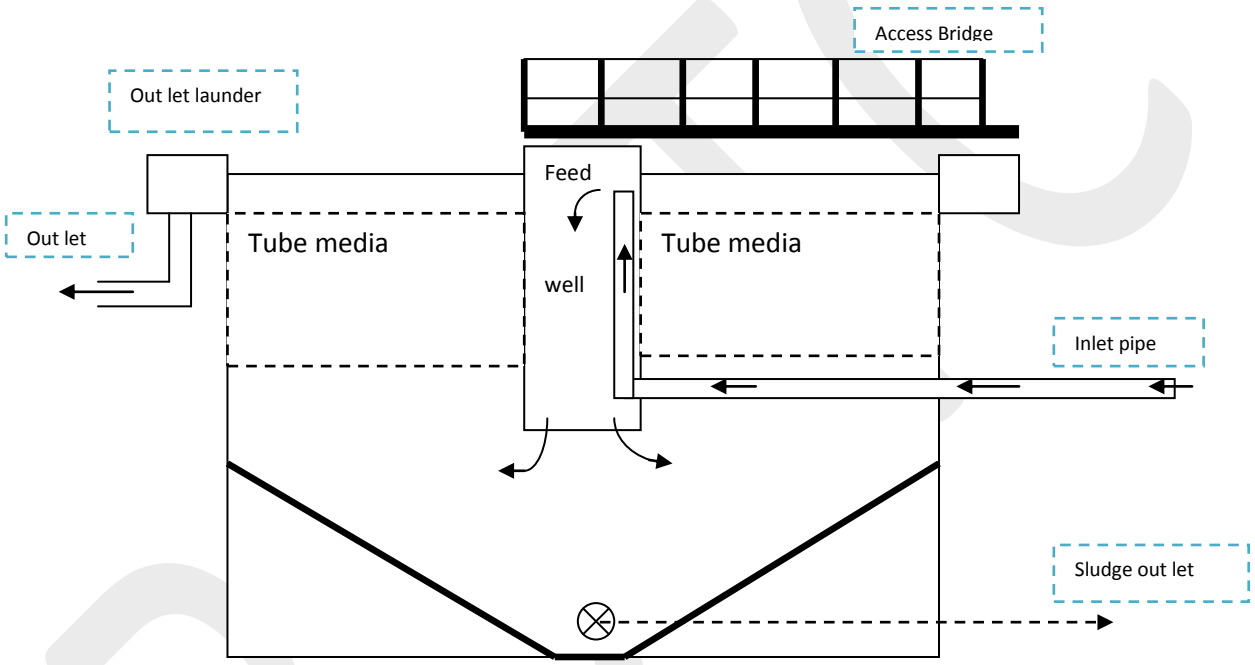
3.7 TUBE SETTLER Clarifier:

The tube settler clarifier should be designed for 0.75 MLD flow. The unit shall be constructed in RCC (M-25) with 30 mm thick smooth floor finish over the base slab. The flow shall enter in a RCC central pier with outlet ports at FSL and distributed radials in to the unit and outlet shall be through MSEP V-Notch type weir. The clarifier shall be designed at 20.00 cum/ sqm /day surface loading and solids loading at average flow @ 60 kg/day at 5000 MLSS with SWD not less than 3.00 M. The free board shall be 500 mm . Clarifier shall be provided with inlet GI pipe of suitable size with central column and inlet drum of diameter not less than 10% of clarifier diameter .
The tube settler media shall be of PVC made slanting wedge attached ; supported by M.S. Frame Box epoxy painted . The necessary supporting structure with epoxy coating to be provided below the Tube media.

Suitable bridge structure need to be provided to access the central well.

Basic side view drawing of tube settling clarifier

(Guidance only)



Other Specifications of Tube Settler :

Feed well	MS. EP
Bridge	M.S frame structure
V-notch weir	MS FRP/SS-316
Platform	MS Chequered plate/Grating
Handrail	40 NB MS E.P coated.
Vertical post	MS angle
Anchor Bolt	SS-316

All Fasteners and fixtures SS-316

All other accessories, whether specified or not , but must required for completeness shall form part of contractors scope of supply

3.8 Filter feed sump :

Overflow water from the clarifier is collected in an intermediate clarified water sump or Tanks This tanks /sump acts as a buffer tank between the secondary and the tertiary treatment stages in an STP. The filter inlet sump made of RCC shall be provided to feed sewage to filter on continuous basis.

Design flow = 0.75 MLD

Number of units = 1

Detention time = 2 Hr.at designed flow

Free Board = 0.5 M

The platform 900 mm wide with railing as per specifications shall be provided . The stair case minimum 900 mm wide shall be provided for access from the ground level to the top of the unit and operating platforms.

The inlet and outlet pipes shall be designed for design flow + 25%.

All other parts , whether specified or not , but required for completeness shall form part of contractors scope.

3.9 Filter feed pumps:

Filter feed pumps are used to take the water from the clarified water sump and pass it through the pressure sand filters .

Type	=	Horizontal Centrifugal type.
Working hours	=	18 hrs (per day)
Capacity	=	20 m^3 /hr.
Head	=	15 Meter.
Pumps Base platform	=	Pumps shall be installed on a concrete platform 40 cm higher that the level of nearest road and shall be covered with fibre glass sheet as directed to protected from rain.

3.10 Pressure Sand filter: Capacity = 200 m^3/day each , Quantity : 4 nos:

The following calculations show the filter capacity required for STP.

Design Parameter	Value	Remarks
flow	750 m^3/day	Quantity of sewage to be handled by the STP per Day.
FILTRATION hours	12 Hrs (per day)	Minimum Four Filters required .

The pressure sand filter is used as a tertiary treatment unit to trap the trace amounts of solids which escape the clarifier, and can typically handle up to 50 mg/l of solids in an economical manner.
The Filter vessel shall be designed as a pressure vessel (it consists of a straight cylindrical shell, with convex dish-shaped ends welded to the top and bottom). The vessel should be designed to withstand a pressure with effective filtration . In this vessel, a bolted dish at the top for ease of maintenance shall be provided. A hand-hole of > 300 mm diameter shall be provided at the bottom of the cylinder, to facilitate removal of media from the vessel at the time of servicing. A set of pipes, valves, bypass line, backwash waste line etc. shall also provided to facilitate operations such as filtration, bypass (during servicing), backwash etc. Pressure gauges shall be provided at the inlet and outlet, to monitor the pressure drop across the filter. The bidder need to provide back wash system to clean the filter at its own level by providing frontal pipe network of suitable size. The back wash system can be pre set timer or pressure difference sensor system.
The shell height shall typically vary between 1.2 m to 1.5 m .
The depth of sand media should be 0.6 to 0.7m
Graded pebbles ranging from 0.5 inches to 1inches are filled as bottom layers in the filter, up to a depth of nearly 0.5 -0.6 m.

The top layers consist of the filtering sand media (Coarse and fine sand) to a depth of 0.6 – 0.7 m. A freeboard of nearly 0.4 m above the level of sand shall be provided (to allow for expansion of sand during backwash).Necessary appurtenances shall be provided at the top for distributing the inflow uniformly across the cross-sectional area of the filter: similarly, a pipe manifold with laterals shall be fitted at the bottom as the under drain system.
The pressure filter shall be made of M.S with epoxy coating inside and outside to avoid corrosion. The overflow effluent channel/CI pipe of suitable capacity from unit shall be connected to inlet chamber by gravity.
The proposal of selection and designing of the pressure sand filtration is rest with the Bidder only and department always prefer to adopt any other advanced technology like on line self clean micron filtration system for 0.75MLD out put .

All other parts , whether specified or not , but must required for completeness shall form part of contractors scope of supply.

3.11 Sludge Sump & Pump house:

Sludge sump shall be provided to collect the sludge settled at the bottom of clarifier and to collect the back wash water from generated during the back wash of pressure filter. Sludge sump shall be circular or rectangular RCC structure and shall be connected through pipe with clarifier.
Minimum working depth of the sump shall be 1.0 m below the invert level of the incoming pipe. Top level of the sump shall be 60 cm above the Formation Level. The blending in the Sludge sump shall be arranged to ensure minimum surface loading of 12 cum/sq m/day for sludge thickener and this blended sludge be pumped using non clog submersible pumps 2 units (1W + 1 SB) in to sludge thickener. The sludge thickening and mechanical dewatering plant shall designed suitably so as to give 100% trouble free operation at all times

Sludge from the sump shall be pumped to the thickener by means of common rising main.

Sludge sump shall be constructed in M 25 grade concrete . Pumps shall be installed on a concrete platform 60 cm higher that the level of nearest road and shall be covered with fibre glass sheet to protect the pumps from rain.

Sludge sump shall be painted inside with appropriate abrasion and corrosion resistant paint .

Sludge pumps:

Type = Centrifugal type

No. of pumps = 2(1W+1SB)

Drive = Electric motor of suitable capacity

All other accessories, whether specified or not , but must required for completeness shall form part of contractors scope of supply.

3.12 Sludge thickener

The Sludge from the clarifiers shall be taken in to sludge sump with aeration facility and this blended sludge be pumped using pumps 2 units (1W + 1 SB) in to sludge thickener.

Thickener can be a circular preferable RCC construction in M-25 (minimum) tank of suitable size material designed at 50 kg/sqm/day solids loadings. The excess sludge wasted shall be calculated for not < 0.50 kg/kg BOD_5 removed . 50% TSS shall be considered as non volatile solids with 4 –hours loading for peak flow for the design of thickener with mechanical scrapper .The tank shall be provided skimmer, trough, scum baffle , weir plate and sludge scrapping mechanism. Suitable piping and valve arrangement shall be done. Scum from thickener shall be taken to the thickened sludge holding sump. Mechanical scrapper shall be provided for increasing concentration of sludge from 1% to 3.5%. The supernatants shall be collected in the launders outside/inside the periphery of the tank and shall be carried to the sludge holding sump by gravity..

3.13 Thickener Mechanism (Central Driven)

Thickener Mechanism shall be suitable for installation in side the tank . The mechanism shall comprise of the following main components.

- Bridge structure to access the drive .
- Drive assembly with drive head, chain and sprocket, geared motor .
- Feed well , Central Shaft , Cone scraper
- Rake arms , Tie rods for rake arms
- blades and squeegees
- Weir plate

3.13.1 Bridge Superstructure

It shall span the entire diameter of the tank. The bridge shall rest on the clarifier wall at both the end. The bridge shall be of truss type welded steel junction with walkway of chequered plates for the bridge and central platform. The truss bridge shall be provided with one row of the middle strut.

3.13.2 Driver Assembly

The central drive had shall rest on the bridge at the centre. The drive head shall be coupled to a geared motor through chain and sprocket and shall support the centre shaft at the bottom for rotating the rake arms. The service factor for the gear shall not be less than 2.0.

3.13.3 Feed Well

A fixed feed well shall be of hung from the bridge superstructure. The inlet feed pipe shall run under the bridge up to the feed well.

3.13.4 Central shaft

The centre shaft shall be of made of solid pipe and shall be attached to the output shaft of the drive head. The centre shaft shall be bolted to the drive head at the top and shall support the rake arms at the bottom through torque frame.

3.13.5 Rake Arms and Tie Rod

Two sets of rake arms shall be attached to the centre shaft torque cage in diametrically opposite direction through a hinged connection. The rate arms shall be attached to the centre shaft through tie rods with provision for adjustment of inclination of the rake arms. Each rake arms shall be provided with blades at the bottom and adjustable squeegees for scraping of sludge.

3.13.6 Weir Plate

V-notch weirs of size 5mm thick , 120mm wide shall be provided along the periphery of thickener for uniform draw-off of the overflow. The weir plate shall be fixed to the tank wall by means of plate washers.

3.13.7 Cone Scraper

A cone scraper shall be attached to the bottom of the centre shaft and shall serve to stir the sludge in the bottom hopper.

3.13.8 Material of Construction :

Tank ---------- RCC (M-25)(minimum)/MSEP

Feed well ---------- MSEP

Bridge	MSEP
Rake Arm	MS
Vertical shaft / Center cage	MS
Blades	SS-316
V-notch weir	SS-316
Squeegees	Neoprene
Walkway	MS Chequered plate
Handrail	40 NB MS.
Vertical post	CI
Scum skimmer	SS-316
Scum Box	SS-316
Scum Baffle	FRP
Anchor Bolt	SS-316
All Fasteners	SS-316

3.14 Thickened Sludge holding sump:

There can be one thickened sludge holding sump of RCC M-25 .Thickened sludge shall be collected in a sludge holding sump with mixing facility.

The Sludge from this sludge sump shall be transfer to the sludge drying beds with the help of non clog submersible pumps . Pumps shall be installed on a concrete platform 40 cm higher that the level of nearest road and shall be covered with GI/fibre glass sheet as directed. The shed shall be extended in such a way that the pumps are protected from rain.

3.15 Sludge Drying beds (SDB) (minimum 2 No.)

Suitably sized Sludge drying beds constructed in brick work (1:4) with suitable drainage arrangements have to be designed for one complete cycle of 7 to 10 days. Flat brick lining in 1:5 cement sand mortar on 12.5mm thick 1:3 cement sand slurry is proposed at the bottom of sludge drying beds and necessary slope for drainage are to be achieved by grading the natural ground to required slopes. A 150mm thick layer of gravel having 30-50 mm size is spread on the brick lining which is followed by 150 mm thick layer of gravel having a size of 12-30mm. On top of this gravel layer, a 300 mm thick layer of coarse sand is laid.

The sludge thickness applied over sludge drying beds should not be more than 300mm. There should be access of 1.0 m concrete paved path from one side of each S.D.B' s. The concrete paving on path shall consist of under layer of 100 mm thick CC 1:3:6 with stone ballast and covered with 150 mm thick upper layer of CC 1:2:4 .

3.16 Back Wash Water collection sump:

The waste water from pressure filter is to be collected to the back wash collection sump of required Capacity.

3.17. Back Wash Water pumps :

The overflow of back wash water sump shall be transferred to the equalization tank by gravity and the solids collected at the bottom of the sump shall be transferred to the sludge drying beds through pumping.

BACK WASH WATER PUMPS:

Type	= Horizontal Centrifugal type or submersible type
Qty.	= 2(1W+1SB)
Capacity	= as per flter requirement.
MOC	= The material of construction for all parts coming in contact with the liquid shall be of stainless steel of most appropriate grade and thickness.
Pumps platform	= Pumps shall be installed on a concrete platform 60 cm higher that the level of nearest road and shall be covered with fibre glass sheet as directed to protect the pumps from rain.

3.18. Treated water Cum chlorination sump:

A treated water cum chlorine contact tank shall be provided with mixing arrangement for disinfection using Sodium Hypochlorite as disinfectant. The tank shall be constructed in civil . The baffle walls shall be provided to achieve proper disinfection. The baffle walls shall be constructed in brick masonry CM 1:4 and plastered with 20 mm thick cement plaster 1:2 on either side. The length /width ratio of this tank shall not be less than 3.00 and the water depth not less than 2.0 meter.

The treated water is disinfected to destroy and render harmless disease-causing organisms, such as bacteria, viruses, etc. The common form of Chlorine to be used shall be Sodium Hypochlorite (Hypo) available commercially at 10-12 % strength.
The Chlorine disinfection system shall consists of a Hypo-holding tank (size as per 0.75MLD flow rate of the STP) and an electronically metered dosing pump. Hypo solution of desired concentration shall be prepared in the tank.
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Treated effluent from pressure filter shall be taken to the treated effluent cum chlorination sump through pipe . The treated water will to be used for horticultural purposes in the college campus .

Design flow	= 0.75 MLD
Number of units	= 1
Detention time	= 30 minutes .
Free board	= 250mm
Top of the tank	= open type

3.19 MCC room (1 no.):

M.C.C. (Motor control centre) room building:

The MCC room building shall be single storey brick masonry structure with RCC roof and shall accommodate MCC & PCC panels. Bidder shall consider following parameters for the preparation of lay out plans

Unit	Minimum floor area
MCC Room	12.00 Sq. m
Clear height	3.0mtr.

3.20 Inter connecting Pipes, Gates, Valves, Channel etc;

All interconnecting Pipes, Gates, Valves, Channels for conveying wastewater/sludge from one unit to the other and also for bypassing various units shall be included in this scope of work.

Entire piping used for inter connection shall be GI/CI . Internal pipe of MBBR shall be G.I, B- CLASS .

All inter connecting pipes and channels shall be designed hydraulically for designed flow + 25%.

All valves & gates are manually operated.

All items of piping works for MPS & STP shall be inclusive of excavation in any type of strata, including supply, laying, jointing and testing of all pipelines, construction of sewer appurtenances and valve chambers, pipe support pedestals complete in all respects.

3.21 Stairs as per Requirement

RCC/MS staircase shall be provided to access all the platform provided/required for all the units above ground level. The tread width shall be minimum 230mm and c/c spacing between two consecutive treads shall not be more than 175 mm. The width of the staircase and their type shall be as approved by Engineer-in-charge before execution of the work.

3.22 Railing along Platforms and stairs:

Railing along all platforms and stairs shall consist of 40mm GI pipe class B (two rows) & height of railing 0.9 m with CI vertical posts at distance of 2.0 m c/c .The vertical pipe apart from painting shall be epoxy coated also.

3.23 External Sewerage System :

The external sewerage system consisting of suitable pipes shall be provided for conveying the wastewater from all the units to the sump of Main pumping station. Required number of manholes shall be constructed as per drawings approved by Engineer-in-charge.

3.24 Painting, Whitewashing and Allied works

All the units or instruments of the MCC room shall be painted wherever required.
All the internal surfaces of the walls, ceiling of the building shall be painted with synthetic enamel paint. All the external surfaces of the building shall be either brick faced or plastered with cement sand mortar 1:4 and outside with cement based paint.

The inner concrete surfaces of all the water retaining structures including channel shall be painted (two coats) with approved make bitumen paint.

All the GI/ CI/DI pipes and specials and other equipment shall be painted with two coats of approved make anti corrosive paints.

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4.0 SCOPE OF WORK SHALL ALSO REQUIRE ;

Operation and maintenance of complete plant machineries to be used for a period of 6 (six) months after testing and running the same successfully for 30 days during trial run / defect liability period.

5.0 Miscellaneous work :

1. All liquid retaining RCC structure should be M-25(minimum) designed mix with protective coating as required.
2. All PCC shall be minim. 10 cm thick M-15.
3. Internal lighting, exhaust fan, ceiling fan, cables, switchgears and other control equipment is in scope of contract.
4. Contractor will have to make own arrangement for water requirement during construction.
5. Contractor will have to make own arrangement for electricity requirement during construction.
6. All the reaction tanks/chambers with drain and filtrate shall be connected in such a way that the entire tank can be emptied and taken into main pumping station by gravity. There should be no necessity of filtrate pumps.
7. Pipe network for conveying water to various units/locations in the plant area, required during operation/maintenance of the plant is also covered in the scope of work. However, source of water shall be the college's responsibility.

6.0 Contract Limits:

1. Contract limits starts from the provision of inlet Submersible Pumps in the receiving chamber of STP to the Final outlet of chlorination tank .

2. Contract limit terminates at the laying of PVC delivery pipe of with up to 10 m from the filter pumps to on land irrigation area provided by the college authority.

3. All electrical cabling from main panel in MCC Room to various consumption points of STP area only.

7.0 Scope of Work For Operation & Maintenance (O & M) of MPS & STP:

COMPULSARY O & M Period 6 months :

On the completion of all work, the contractor shall run the MPS & STP to stabilize the same for three months (90 days) before handing over the same to the college. at the cost of the contractor and produce the results specified in the NIT .The minimum time period required will be of 6 months . During the O & M all the charges for electricity or diesel for DG sets will be born by SBSSTC , Ferozpur.

ADDITIONAL PERIOD FOR THE OPERTAION AND MAINTENANCE :

After the six month period of it is the discretion and power of the Engineer in charge to continue the O & M for further time period or college authority will provide its own staff for the running , operation and maintenance .The earnest money or security deposit will be returned or refund to the bidder if college take over the O & M at its own level.

However the bidder has to quote the price for consecutive 1'st , 2'nd and 3'rd year separately along with the Price bid. The security amount of 2% of O&M cost will be retained by the department if the bidder will be allowed to continued the service of O & M .

Following points will be kept in view by the agency during O&M period and the cost of 6 month should be included in the scope of O&M work.

7.1 The MPS & STP and the space around various units shall be kept clean. Proper illumination will be ensured at night.

7.2 The contractor may employ qualified and trained employees as per the requirement of the Engineer in charge on contract basis. These employees whether they are employed by the agency directly or through any agency shall be the employees of the contractor for all purpose whatsoever and shall not be deemed to be in the employment of college for any purpose whatsoever. any repair to the structures damaged due to natural disaster e.g. earthquake/floods, shall be done by the college.

-The incoming/treated sewage water shall be tested for the different parameters from approved labs . The sampling will be done with mutual consent and in - presence of authorised staff of both sides only. The parameter covered will be BOD, COD, TSS ,oil and grease and the cost of first three sampling will be paid by the contractor.

-All sorts of Tool and plant, required for proper O&M of the Plant, shall be arranged by the contractor at his own cost.
-The O&M cost shall be payable on monthly basis on completion of every month and on submission of monthly bills by the contractor.
-The spares required shall not be payable to the contractor as the cost is included in the O&M charges quoted by the contractor.

-The sampling of the treated water tests shall be performed for at least once a month from final outlet of STP only .
-The comprehensive manual to be submitted before the operation and maintenance period i.e. before commissioning of the plant.

7.3 The contractor shall have to keep his maintenance/watch & ward staff round the clock at Disposal area.

7.4 The contractor is required to include the cost of work which has been left in the scope of work, but is essential for the successful completion & running of the MPS & STP. It will be sole responsibility of the contractor to achieve the parameters of the effluent indicated in this document.

SPECIFICATIONS

Of

CIVIL ,
ELECTTRICAL,
MECHANICAL

WORK

CIVIL WORK SPECIFICATIONS

1. Earthwork, Plain cement concrete, Reinforced Cement Concrete, Brick Masonry ,Plastering, Pipe laying, flooring ,doors & windows. finishes & other contingent building works will be done as per standard procedure and guideline.

1.1 All surplus soil during excavation shall be transported and disposed of as directed by the Engineer-in-charge . In case the excavated material falls short of requirement, the backfill earth shall be taken from borrow pits approved by the Engineer in charge.

1.2 A permanent baseline & bench marks shall be established to serve as reference.

1.3 All excavated materials obtained from excavation shall be college's property.

Scope of Mechanical Work

& Electrical Work

TECHNICAL SPECIFICATIONS

1. Scope of Work (Mechanical & Electrical work)

General

This volume contains scope of the work & technical specification w.r.t. Mechanical works & electrical for design, construction, erection, testing and commissioning of Sewage Treatment Plant of 0.75 MLD capacity based on M.B.B Reactor technology (attached Growth process) complete in all respect including operation and Maintenance for 90 days thereafter at SBSSTC, FEROZPUR.

Scope of Mechanical works.

The components of Machinery works of the Main Pumping Station (MPS) & Sewage Treatment Plant for the bidder are as under:

FOR Main Pumping Station :

Providing, installing , testing & commissioning 2 no. Submersible / centrifugal type electric driven pump sets for sludge water each of 32.00 m^3/hr (per day) capacity and of head as per process flow sheet submitted by the bidder complete with all electric fittings such as panel board fittings , earthling etc; complete to enable the unit to run efficiently and successfully. .

2.

FOR STP:

1. Fine and Coarse Screen
2. Grit chamber valve.
3. Air Blowers- 3No. [2W+1 SB] each of 50% capacity.
4. Aeration system, piping work (FOR :Equalization and MBBR tanks)
5. Tube Media Mechanism—1 no.
6. Sludge Thickener Mechanism- 1no.
7. Submersible Sludge pumps for feeding sludge thickener —2no. (1W + 1 SB)
8. Sludge transfer pumps for pumping sludge in to drying beds -- 2no. (1W + 1 SB)
9. Hypo chlorite feed system—(1W+1SB)
10. Filtration System.

11. Electrical Panel board and Cabling of stp only.
12. Earthing.
13. Plant lighting.
14. Distribution Boards.
15. Manufacture's manual for operation and maintenance of equipment supplied.
16. Supply of Equipment drawings, technical specifications .

Brief description of some of the units is as under:

3.0 Pumping Machinery: -

The pump shall confirm to the specification as mentioned under mechanical items. Each pump will have independent suction pipe with sluice valve & an independent delivery pipeline with sluice valve, Non Return Valve shall be provided.

Raw Sewage Lifting Pumps:

There shall be 2No. (2W) of 32.00 m^3 / hr. capacity at suitably designed head. The raw water pumps shall be SUBMERCIBLE TYPE

4.0 Air Blowers:

This includes supply, erection, testing and commissioning of positive Displacement type rotary air blowers to be provided for supplying air to the bio reactors and sludge sumps. The working head for blowers shall be decided on the basis of maximum liquid depth in tank duly considering the losses between point of delivery (diffusers) and the blowers. Blowers shall be complete with electric motor and accessories like base frame ,anti-vibratory pad, silencer ,NRV, air filter etc; as per requirements. Vibrations due to operation of blowers should not damage the structures. Further blowers should acoustic enclosure to ensure that the noise level at10.00 away from the blower is below 120 db. The header / rising main shall be adequately anchored suitably . The header shall be designed to supply required quantity of air to basins at various locations through air supply pipes. Air supply pipes above water level shall be of epoxy coated GI and below water level shall be of GI.

Rating : 3 nos. (2 working + 1 standby)

5.0 Flocculation Tank Mechanism:

This includes supply, erection, testing and commissioning of Flocculation Tank mechanism including pedals , electric dive unit with reduction gear suitable for installation in the RCC tank proposed by the bidder to meet the requirements specified in the scope of civil works.

Flocculation Tank Mechanism complete:1 Nos.

6.0. Tube Media Mechanism

This includes supply, erection, testing and commissioning of tube media mechanism suitable for installation in the RCC tank proposed by the bidder to meet the requirements specified in the scope of civil works.

7.0 Filter feed Pumps:

This includes supply, erection, testing and commissioning of Filter feed pumps of suitably designed capacity for feeding the effluent in to Pressure Filter provided by the bidder to meet the requirements specified in the scope of civil works.

Filter Feed pumps:: 4 Nos.

8.0Sludge Thickener Mechanism:

This includes supply, erection, testing and commissioning sludge thickener mechanism suitable for installation in the RCC tank (M-25) proposed by the bidder to meet the requirements specified in the scope of civil works.

Sludge Thickener Mechanism
(Central driven fixed full bridge type) : 1 No.

9.0 Hypo dosing Mechanism:

This includes supply, erection, testing and commissioning of Hypo Chlorite dosing mechanism including Hypo dosing pump and Hypo tank proposed by the bidder to meet the requirements specified in the scope of civil works.

HYPO Solution feed Mechanism complete:1 Nos.

10. Sludge Pumps:

This includes supply, erection, testing and commissioning of 2 Nos. (1 W + 1 SB) Sludge Pumps provided at the Tube settler to sludge thicker. The details of the sludge pump is as follows:

No. of stations:1 No.

No. of pumps::2 Nos.

11. Sludge transfer pumps;

Sludge transfer pumps shall be provided to feed sludge to the sludge drying beds. The pumps can be screw type suitable for handling biological sludge of 2 to 2.5% solids consistency . Suitable platform and cover shed with FRP top shall be provided for these pumps.

Pumps capacity & head Sufficient for handling total sludge .
Type Screw type
Liquid to handle Bio-sludge of 3 to 3.50 consistency
Specific gravity1.03
Efficiency>30%
Installation mode Fixed
Quantity2 (1W+1SB)

12. Main Electrical Panel (MEP)

This includes supply, installation, testing and commissioning of STP Main Electrical Panel complete in all respects with suitable switchgear.

STP-MEP:1 No.

13. Cabling, Cable Trays and Junction Boxes

This includes supply, erection, testing and commissioning of power & control cabling required for inter-connecting all the control panels to their respective sources and loads at STP. The cabling shall be complete in all respects. Civil works like construction of cable trenches with angles, chequered plates etc. are also included in the scope. Cable trays & junction boxes shall be installed to accommodate the cables wherever required.

Earthing works

This includes earthing arrangement of all ground exposed non-current carrying metal components of electrical equipment at STP.

14. **Earthing Works**

General specifications for cabling and earthing shall be as follows:

Cabling: This includes supply, erection, testing and commissioning of panel board & Control cabling required for inter-connecting all MPS. The cabling shall be complete in all respects. Civil works like construction of cable trenches with angles, chequered plates etc. are also included in the scope. Cable trays & junction boxes shall be installed to accommodate the cables wherever required.

Power & Control Cables:LOT
Junction Boxes:LOT

Earthing: This includes the earthing arrangement of all ground-exposed non-current carrying metal components of electrical equipment, cable grounding conductors armour or shielding and enclosures . Earthing Works:LOT

15. FITTING OF MACHINERY

15.1 The Contractor shall provide the required cutting, drilling and welding etc. that will be required for the mechanical/electrical construction work.

15.2 Cutting and drilling of structural members shall not be permitted, except when approved by the Engineer-in-charge. A core drill shall be used wherever it is necessary to drill through concrete or masonry.

15.3 The Contractor shall provide the required welding for equipment supports as desired by Engineer in Charge.

15.4 Switch plates in designed areas shall be suitably engraved with a legend showing function or areas where required by Codes or shown on the drawings.

16. Painting

- Shop painting should conform to the standard requirements. All equipment shall be shop primed and finished with high-grade, oil-resistant acrylic enamel or other coating approved in writing by the Engineer-in-charge. Surfaces that will be in-accessible after assembly shall be painted or otherwise protected before assembly by a method that provides effective protection throughout the expected economic life of the equipment.
- Unless otherwise required in the detailed equipment specification, surfaces to be painted at the plant site shall be shop-painted with one or more coats of a primer, which will adequately protect the equipment until finishing coats are supplied at site.
- Machined and polished metallic surfaces that are not to be painted shall be coated with an approved rust-preventive compound.
- Before applying paint, the surfaces to be painted shall be cleaned and shall be free from rust, dust, oil etc. The painting shall be with two coats of zinc rich /chrome primer and two coats of finish paint. Each coat shall not be less than 50 micron.
- Contractor shall provide the required painting for all unfinished surfaces of electrical materials, including supports.
- All scratched or marred surfaces shall be refinished with touch up paint to match the original finish.

17 - Liability of the contractor

- The contractor shall obtain and pay for the required bonds, insurance's, licenses, permits and pay all taxes, fees and utility charges that shall be required for the works.
- If during the period of erection, Contractor or his workmen damage willingly or accidentally any part of the building structure or materials, the contractor shall be completely responsible for the damages and he will have to make rectification /replacement at his own cost.

- All equipment and materials shall be of latest design, and standard products of established manufacturers.
- The equipment approval at the factory only allows the manufacturer to ship the equipment to the project site. The contractor shall be responsible for the proper installation and satisfactory start-up operation of the equipment in accordance with the manufacturer's requirement and to the satisfaction of the Engineer-in-charge.
- Inspection of the equipment at the factory by the Engineer-in-charge will be made after the manufacturer has performed satisfactory checks, adjustment tests and operations.
- The contractor shall be absolutely and solely responsible for damages due to accidents, injuries or losses, occurring to any person and property by his sub- contractor, agents or employees involved on his behalf in the execution of the work.

List of Approved Makes for Major Items

S.NO.		APPROVED MAKES
1	Bus Bars	Marsh / L&T / Roto / Champion
2	All Cables	L&T /Siemens /Schneider / Master pact/
3	Motors	Kirloskar/C:Greaves/ABB
4	PUMPS	Kirloskar / Crom: Greaves/Grundfose
5	**BLOWERS**	Usha / Everest / BETA / Swan
6	CI Sluice Gate	PRINCE / Audco /Kartar / JALOTA
7	Paint	Berger, Asian Paints and
8.	G.I. Pipes	Jindal / Ravindra
9.	DI Pipes	Hindalco, Jindal, Mahavir,
10.	Diffusers	PPAQUA / MICRO /USHA/WELCOME
11.	Doors & Windows a) Aluminum Section b) Glass Section c) Hinges d) Laminated Board	Indian Aluminum , Modi, Saint Gobain Earl Bihari or equivalent Kit ply, Nova pan
12.	Dosing Pumps	PPAqua / Neuton
13.	WATER METER	Kranti / Hudco/Guru/any ISI approved

S.NO.	ITEM	APPROVED MAKES
14	Exhaust Fan	Bajaj / Crompton Greaves / GE / Khaitan
15	Fabrication of Aluminum Items	Hindalco, Jindal, Mahavir, Indian Aluminum
16	**PVC pipe**	Surya / PARKASH
17	HDPE Pipes	Reliance (Nocil) , Duraline, Hasti, Jain Irrigation
18	Indicating Lamps	L&T / Esbee / Siemens
19	Instrumentation	Forbes Marshall / Endress Hauser / ABB / Emerson / Toshniwal
20	a) Level Transmitter, Flow transmitter, Level Switch b) Air Flow Meter c) Wastewater Flow Meter d) Pressure Gauge	Fitzer Instruments / George Fitcher / Toshniwal Forbes Marshall / Endress Hauser / ABB / Emerson / Toshniwal , H. Guru
21.	Knife Gate Valves	Fouress / BDK / Jash / Intervalve / VAG Valves / Audco / IVC
22	Luminaries	Wipro / Phillips / Crompton / Osram / SSK / Bajaj / Anchor / Havells
23.	MCC	ABB/L and T Jash / Voltas / Triveni / Huber/Champion
24.	Mechanical Bar Screens	Voltas / Triveni / HUBER/Champion/Kay Kay
25.	Mechanical Detritor	Siemens / Crompton / Bharat Bijlee / Kirloskar
26.	Motors	Jyoti/NGEF/ALSTOM
27.	Moulded Case Circuit Breaker (MCCB)	L&T-DH / Schneider-NS / Siemens-Sentron / ABB-
28.	MS Open Channel Gate	Jash / Yashwant / Upadhyay / BIC / Oriental Castings Champion

- Engineer in charge can decide the make of the machinery or part

S.NO.	ITEM	APPROVED MAKES
29.	Receptacles	Automation / Tata Honeywell / Alstom
30.	Sanitary wares	Hindware / Johnson / Parryware/
31.	Screw Pump	ROTO / Tushaco / Ramo/Geeta
32.	Selector Switch	L&T /Salzer/abb
33.	Sewage Pumps(Centrifugal) Single Phase Preventer	Kirloskar/Mather Platt/Beacon/KSB/Jyoti/Worthington
34.	Sluice Valves, NRV, Reflux Valves, Check	L&T / Minar/prince
35.	Valves, Butterfly Valves	Indian Valve Company (IVC) / Kirloskar / VAG Valves / BDK / Inter valve/champion
36.	Structural Steel	SAIL/TATA/Rashtriya Ispaat Udyog
37.	Submersible Raw Sewage Pumps	Kishor / Grundfos / KSB / Aqua / ABS / Kirloskar
38.	Volt and Ampere Meter	L & T / Siemens / GE
39.	with Selector Switch	Kirloskar/Voltamp/Alstom/CROMPTON/BHEL KIRLOSKAR ELECTRIC Co.,Schnider, Crompton, Alstom ,L&T / Rishabh,
40.	Water Tanks	Sintex / Diplast
41.	MBBR media	PPAQUA / Aqwise / Siemens.

NOTE: Though various options have been given to the bidder for quoting the rates , but the final choice of the brand shall lie with the Engineer in Charge.

Volume - III

PRICE SCHEDULE
&
BREAK UP OF PAYMENTS

To Be Submitted in
Envelope “C”

Design, Supply, construction, Installation, and Commissioning of Sewage treatment plant based on moving bed biological reactor technology (Attached growth Process) of 0.75 MLD capacity complete in all respects
with panel board room & all contingent Mechanical & Eectrical , piping and instrumentation works including operation & maintenance for 6(six) months there-after at SBSSTC,FEROZPUR.

THE DIRECTOR ,
SBSSTC , FEROZPUR -PB.

1.0 SCHEDULE OF PAYMENTS:

A Sewage Treatment Plant

CIVIL WORK:

Design ,construction ,erection ,testing & commissioning of 0.75 MLD capacity sewage treatment plant based on moving bed biological reactor technology (attached growth process) complete in all respects including all contingent mechanical & electrical ,piping & instrumentation works at sewage treatment plant complete as described in the scope of work ,O& M of the unit for 90 days after the completion.

S.No.	NAME OF THE UNIT	% age of quoted price
1.1	On submission of Site plan /Hydraulic flow / Structural Drawings.	8%
On Completion of Civil unit :		
1.2	Inlet chamber and Screen Chamber	3%
1.3	Grit removal channels.	1%
1.4	Equalization Tank with aeration	20%
1.5	Sludge Drying Beds .	10%
1.6	MBBR tanks	20%
1.7	Secondary Tube settler clarifier	20%
1.8	Sludge sump	1%
1.9	Sludge thickener	5%
1.10	Thickened Sludge holding sump	1%
1.11	Sludge drying beds filling .	1 %
1.12	Treated Effluent cum chlorination tank	5%
1.13	On plant Commissioning	5%

		Total = 100%

Contractor

2.0 BREAK UP OF PAYMENT FOR SUPPLY & INSTALLATION OF MECHANICAL and ELECTRICAL MACHINERY :

S.NO.	ITEMS	Percentage of Mechanical & Electrical quoted
2.1	On Submission of drawings with layout.	20%
2.2	After the Inspection of equipment at work place of bidder.	35%
2.3	At the time of delivery of the Equipment at site	35%
2.4	After Installation at desired place	5%
2.5	Testing & commissioning for 3 months	5%

(The mechanical work includes all types of specials, valves piping , along with other requirements for completion of the job.)

(While quoting the price for this job , The bidder is requested to read whole of the document. The bid has been prepared with special format and font .)

THE DIRECTOR
SBSTCC , FEROZPUR-PB

2.0 PRICE BID : (TO BE QUOTED)

	SEWAGE TREATMENT PLANT	Total amount in (Indian Rupees)
A	Design ,construction ,erection ,testing & commissioning of 0.75 MLD capacity sewage treatment plant based on moving bed biological reactor technology (attached growth process) complete in all respects including all contingent electrical, mechanical ,piping & instrumentation works at sewage treatment plant complete as described in scope of work (all inclusive)	
A-1	All civil work	.....
A-2	All Mechanical work	.....
A-2	All electrical work	.....
		Total:..... ....

Seal and signature of the bidder:

B: PRICE BID FOR OPERATION AND MAINTENANCE

1. For First Year :.....Rs:.....
2. For Second Year:..Rs:.....
3. For Third Year:.....Rs:.....

- Payment will be made on Monthly bases

Seal and Signature of Bidder: