



INDIAN INSTITUTE OF TECHNOLOGY PATNA

Tender No. – IITP/IWD/RS/04/2020

IIT PATNA, BIHTA

NOTICE INVITING e-TENDER

Tender for “Operation and Annual Maintenance Contract” for Sewage treatment Plant (STP-2 and 3).

Indian Institute of Technology Patna at Bihta, Patna invites the **Item Rate e-tender** as per the brief particulars / scope mentioned hereafter for ‘ **Annual Maintenance Contract for Sewage treatment Plant (STP-2 and 3) and at IIT Patna at Bihta**’. ‘in two bids system from the eligible and interested bidders who are well equipped, experienced, financially sound Firms for the following works :-

SI No	NAME OF WORK	ESTIMATED COST (Rs)	TIME OF COMPLETION	EMD (Rs)
1	‘Operation and Maintenance Contract for Sewage treatment Plant, 2 nos. (STP-2 and 3) at IIT Patna at Bihta’	Rs.22,40,436/-	12 months	Rs.44,809/- (Rupees Forty Four Thousand Eight Hundred Nine Only)

1. Time schedule of Tender activities:

(i) Date & Time for Online submission of tender documents: 20/08/2020 to 10/09/2020 Up to 3:00 PM

(ii) Date & Time of opening tender (Technical Bid): 11/09/2020 at 3.00 PM

2.0) Eligibility Criteria:

a. Contractors/Firm who fulfill the following requirements shall be eligible to apply. The Joint Ventures are not accepted.

i) Experience of having completed during the last 5 years following 'similar works' ending last day of the month previous to the one in which applications invited:

a) For Startups :Four similar works, each costing not less than the amount equal to 20% of estimated cost put to tender.

b) For non Startups: Three similar works, each costing not less than 40 % of estimated cost put to tender.

(Either of the two a) or b) from above as applicable to the bidder.).

OR

Two similar works, costing each not less than the amount equal to 60% of estimated cost put to tender.

OR

One similar work of aggregate cost not less than the amount equal to 80% of estimated cost.

AND

One work of any nature either part of (i) or a separate one) costing not less than the amount equal to 20% of the Estimated cost put to tender with some Central/State Government Organization / Central Autonomous Body / Central Public Sector undertakings.

The 'similar works' shall mean "**Operation and Maintenance of Sewage Treatment Plant/Effluent Treatment Plant..**

ii) For evaluation purpose, the completion cost of works mentioned in the Completion Certificate shall be enhanced by 7% per annum till the end of month prior to date of NIT.

- b) Should have average annual financial turnover on works amounting at least 30% of the estimated cost of the work during the last three consecutive financial years ending on 31.03.19 duly certified by a Chartered Accountant.
- c) Should not have incurred any loss in more than two years during the immediate last five consecutive financial years, ending 31.03.2019, Copies of balance sheet/ certificate from Chartered Accountant to be submitted.
- d) Should have valid PAN (Permanent Account Number of Income Tax) & Service Tax Registration no. Copies of documentary evidence to be submitted.
- e) It is desirable that the bidder should have valid PF Registration No. & GST registration (If required), ESI, Income tax clearance certificate. In case, the bidders do not have PF Registration No. & GST registration the same shall be obtained if required by successful bidder within one month from the date of LOI or before release of First RA Bill.
- f) Provisions for Startups (as defined in gazette notification No. D.L-33004/99 dated 18.02.2016 and 23.05.2017 of Ministry of Commerce and Industry and as amended from time to time).

The Startups are exempted from submission of EMDs. For availing the relaxation, bidder is required to submit requisite certificate towards Startup enterprise registration issued by Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce & Industry and the certificate should be certified by the Chartered Accountant (not being an employee or a Director or not having any interest in the bidder's company/firm).

Further, prior turnover and prior experience shall not be required for all Startups [whether Micro & Small Enterprises (MSEs) or otherwise] subject to their meeting the quality and technical specifications specified in tender document.

If a Startup [whether Micro & Small Enterprises (MSEs) or otherwise] gets qualified without turnover and experience criteria specified in tender and emerges lowest bidder, the order on such Startup shall be placed for entire tendered quantity.

- 3) Tender documents comprising of the following are available on the website of IIT Patna: www.iitp.ac.in & e-procure.gov.in
 - (i) Notice Inviting Tender

- (ii) Instruction to Tenderers & General Conditions of Contract ,
- (iii) Additional Conditions of Contract, Brief Scope of work
- (iv) Price Bid format /Bill of Quantity and Summary of Cost

4) The complete tender documents are available on the website and the same can be downloaded by the intending bidders directly from website www.iitp.ac.in & www.eprocure.gov.in/eprocure/app. Relevant experience certificates and other documents as mentioned above CI 1.0(a) to 1.0 (f) duly self-attested should be submitted. Completion certificates from the clients shall be in the name of the company who is submitting the tender .The Contractor has to produce original documents for the verification as and when demanded. The tender of any tenderer shall be rejected if in the detailed scrutiny; documents submitted along with the tender are found to be unsatisfactory /forged. The decision of IITP in this regard shall be final and the binding on the tenderer.

5) All tenders shall be accompanied by the Earnest Money Deposit (EMD) as specified to be deposited in the institute's account through SBI i-collect and the receipt of submission is to be uploaded along with other technical bid documents. For details regarding submission of EMD, the webpage with following link may be visited: <https://www.iitp.ac.in/images/pdf/snp/SBI%20I-Collect.pdf>

Alternatively, the bidders may provide an unconditional bank guarantee of same amount valid for 6 months from the last date of bid submission in the format provided in Annexure-II or Fixed Deposit Receipt endorsed in favour of IIT Patna. The EMD shall be valid for minimum period of 180 days (one hundred eighty days) from the last day of submission of tender. Tenders submitted without EMD or within adequate amount of EMD shall be rejected.

6) **The** Terms & Conditions contained in this NIT and tender documents shall be applicable. In case of any unscheduled holiday taken place on the last day of issue of tender/submission of tender, the next working day will be treated as scheduled day and time for issue/submission of Tender.

7) **IITP** reserves the right to accept any tender or reject any or all tenders or annul this tendering process without assigning any reason and liability whatsoever and to re-invite the tender at its sole discretion.

8) The corrigendum or addendum, extension, cancellation of this NIT, if any, shall be hosted on the IITP website. The bidders are required to check IITP website regularly for this purpose, to take into account any changes before submission of tender. All Corrigendum and addendum are to be submitted duly signed & stamped. All bidders are advised to check website www.iitp.ac.in regularly.

9) The price bid (Online submission only) of those bidders whose bid has been technically accepted on the basis of documents submitted shall be opened with prior intimation to them. However, it is made clear that the offer of the L-1 bidders shall be accepted subject to the confirmation of authenticity of the PQ documents/BG from the concerned department/bank.

10) List of Technical bid Documents to be uploaded:

a) Scanned copy of Earnest Money Deposit (EMD) submission or its exemption, if any.

b) Scanned copy of Experience certificates as defined in Eligibility Criteria as defined in Para 2.0 of NIT.

c) Scanned copy of GST No and scanned copy of Pan Card.

d) Scanned copy of Audited Annual Accounts for Financial Years 2016-17, 2017-18, 2018-19. Average Annual Turnover for last three financial years i.e. 2016-17, 2017-18, 2018-19 as per eligibility criteria.

e) Scanned copy of EPF & ESI Registration Certificate.

f) Scanned copy of Annexures no- 3 to 7.

g) Scanned copy of Requisite certificate towards startup enterprise for claiming exemption from EMD's and experience relaxations as per Circular of Dept. of Promotion of industry and internal trade (DPIIT).

Note: - Technical Bid will be evaluated along with above mentioned documents/credential (i.e. from a to f)

11) Contact details for site related Queries / Visit:

Executive Engineer, Civil, RZ, IWD, TEL NO. 06123028005
Indian Institute of Technology Patna, Bihta
Bihar
Pin: 801103

INFORMATION AND INSTRUCTIONS FOR CONTRACTORS FOR e- TENDERING FORMING PART OF NIT

- a. Information and instructions for Contractors is part of NIT. Tender Notice is available on **<http://www.eprocure.gov.in/eprocure/app>** & www.iitp.ac.in
- b. The bid document consisting of scope of works and the set of terms and conditions of the contract to be complied with and other necessary documents can be seen and downloaded from website **<http://www.eprocure.gov.in/eprocure/app>**. But the bid can only be submitted after uploading the mandatory scanned documents such as EMD and other documents as per tender document.
- c. The Draft information and instructions to Contractors may be modified suitably by NIT approving authority as per requirement.
- d. The bidder must ensure to quote rate for each items separately in the specified column. If any column of rate against any item remains left blank by the bidder, it shall be treated that the bidder has quoted nil rate for that and the item will be executed by the bidder free of cost.
- e. IIT Patna shall not be responsible for non-receipt bid due to internet issues or any other reasons.
- f. The estimated cost of the work is Rs.22,40,436/-. This is only a rough guide.
- g. Tender documents consisting of specifications, schedule of quantities of the various classes of work to be done and the set of terms & conditions of contract to be complied with by the contractor whose tender may be accepted and other necessary documents can be seen on website **<http://www.eprocure.gov.in/eprocure/app>**.
- h. The information and instructions for tenderers / bidders posted on the web-site shall form part of bid/tender documents.
- i. The bid can only be submitted after scanning and uploading the mandatory details within the period of tender submission as per critical data sheet.
- j. Online bid documents submitted by intending bidders shall be opened only of those bidders, whose Earnest Money Deposit (EMD) placed are found in order.

- k. IIT Patna will deduct a sum at the rate of 5% of the gross amount of each running bill of the contractor as security deposit (Total 10% including 5% performance security). Security deposit shall be refunded after completion of contract.
- l. The successful bidder has to submit a performance guarantee (P.G.) of 5% (Five percent) of the tender amount within 10 days from the date of issue or Letter of Acceptance (LOA). This guarantee shall be in the form of DD/BG/FDR of any schedule bank in favour of Registrar, IIT Patna, payable at Patna.
- m. Tenderers are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their tenders as to the nature of the ground and sub-soil (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender. A tenderer shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charges consequent on any misunderstanding or otherwise shall be allowed. The tenderer shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water, electricity access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a tender by a tenderer implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant, etc. will be issued to him by the Government and local conditions and other factors having a bearing on the execution of the work.
- n. The competent authority does not bind itself to accept the lowest or any other tender and reserves the right to reject any or all the tenders received without the assignment of any reason. All tenders in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the tenderer shall be summarily rejected.
- o. Canvassing whether directly or indirectly, in connection with tenders is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable to rejection.
- p. Tender for the works shall remain open for acceptance for a period of ninety days (90) from the date of opening of tenders. If any tenderer withdraws his tender before the said period or issue of letter of acceptance, whichever is earlier, or makes any modifications in the terms and conditions of the tender which are not acceptable to the Institute, then the Institute shall, without prejudice to any other right or remedy, be at liberty to forfeit 100% of the said earnest money as aforesaid. Further the tender shall not be allowed to participate in the re-tendering process of work.
- q. In case the contractor fails to commence the work specified in the tender documents on 7th day or such time as may be mentioned in the letter of award or from the date of handing over the site wherever is later, the Institute shall, without prejudice to any other right or remedy, be at liberty to forfeit whole of the earnest money absolutely.

- r. The bidders may contact to EE Civil, IWD, IIT Patna (Ph:- 0612-3028005) for any clarification during the office hrs.
- s. The Bidder(s) may note that ONLINE BIDS will ONLY be accepted. All the requisite supporting documents mentioned in the bid document should and must be uploaded. The Bids sent through FAX, E-mail, by hand and/or by post shall not be accepted/ processed in any case.
- t. In case, holiday is declared by the Government on the day of opening the bids, the bids will be opened on the next working day at the same time. The IITP reserves the right to accept or reject any or all the tenders.
- u. Conditional tenders will be summarily rejected.

Additional condition of Contract and Scope of work

Comprehensive operation and maintenance of Sewage Treatment Plant

At IIT Patna

1. The tender is for Comprehensive Annual Operation and Maintenance of STP (2 numbers except spare/equipment replacement cost) situated at residential zone of IIT Patna at Bihta. Contractor shall Operate and maintain the entire STP for a period of 01 (One) years after which the contract may be extended depending on the performance of the contractor annually and upto maximum 03 Years on same terms and condition and if agreed by both parties. The contractor has to handover the system in good operating condition after completion of contract period. The firms/ agencies/ contractors who wish to quote are required to visit and examine the whole systems and satisfy themselves before submitting their offer and to apprise themselves about the plant and equipment's accessories and parts of the complete systems.
2. LOG BOOK for recording of parameters related to Sewage Treatment Plant shall be maintained by the firm/ agency/ contractor showing the complete operation and maintenance as per the format of IIT Patna including effluent test reports and it should be made available to IIT Patna on a monthly basis.
3. Contractor shall provide all necessary consumables, chemicals etc. as required for the complete maintenance and performance as per requirements during the AMC period. The firm/ agency / contractor have to operate and keep all equipments well maintained for the Plant so as to give proper desired output at all times.
4. Tools and equipment required for comprehensive Operation and maintenance for the STP shall be provided kept by the firm/ agency / contractor during the contract.
5. Proper care shall be taken to avoid major breakdown at the plant. In the event of any breakdown, the same will be rectified immediately within 24 hours from the date of reporting of the fault. Similarly, if any breakdown takes place due to negligence of firm/ agency/ contractor, the whole component has to replaced/ rectified to bring it to the original condition immediately.
6. The rates shall be quoted on monthly basis. The rates shall be all inclusive of taxes and duties etc.
7. Rate should be quoted in figure as well as in words as per ANNEXURE-I.
8. IITP reserve the right to amend or withdraw any of the terms and conditions contained in the Tender Document or to reject any or all tenders without giving any notice or assigning any reason or to cancel the tender. The decision of director, IITP, in this regard shall be final and binding on all.
9. The rates at any stage once quoted shall not be withdrawn.
10. No advance payment will be made at any circumstances. On successful completion of every month, payment will be released within a reasonable period from the date of receipt of the bills along with certified copies of monthly service reports, log sheets, work done as per the scope of work mentioned in the tender/ contract duly certified by the concerned in charge. Further, the release of payment will be subjected to satisfactory performance of the STPs complying the prevalent effluent discharge standards based on the assessment of effluent quality by IIT Patna.
11. No addition/ alteration/ deletion in the tender document are allowed.

12. Late tenders/ unsigned quotation may be rejected.
13. No correspondence will be entertained in this regard unless otherwise sought from tenderer by this office.
14. The services required are for one year and contract may be extended on mutually agreed terms condition for maximum period of three years. The contract may be terminated at any stage solely at the option of IITP with an advance notice of one month without assigning any reason.
15. Precaution against any fire hazards or other damages to Plant and equipment shall be arranged by the firm.
16. The firm/ agency/ contractor shall fulfill the requirement of various law enforcing agencies/ local authorities, such as Pollution control Board, Directorate of Electricity Safety etc by taking their approvals as and when required.
17. The firm/ agency/ contractor will be responsible for the safety of their deputed staff during the performance of their duty at site.
18. In case any of staff is not found upto the mark and not able to do work properly, he will have to do work properly, he will have to be changed as per the instruction of IITP and immediately replaced by another qualified staff.
19. In case of any problem with the equipment, the firm/ agency/ contractor shall inform IITP in advance.
20. The Contract/ work Order Shall be governed by the Law of India for the time being in force. The Courts of Patna only shall have jurisdiction to deal with and decide any legal or dispute arising out of this contract.
21. The firm/ agency/ contractor shall keep the equipment well maintained, neat and clean and adhere to the maintenance schedule of various equipment given in the respective manuals. Upon placement of work order they will prepare the maintenance schedule and discuss the same with the Institute's deputed engineer for its implementation. This may be revised from time to time as per the requirement.
22. The tender shall be kept valid for acceptance for a period of 90 days from the date of opening.
23. Any statutory tax as applicable will be deducted from the bill of the contractor/service provider.
24. The firm/ agency shall maintain data log of all mechanical items and chemical dosing if any.
25. The firm/ agency shall operate the filter press as and when required.
26. The firm/ agency shall provide and maintain bacteria culture as and when required.
27. The firm/ Agency shall send engineer to check the Plant once a month over & above the deployed staff and supervisor.
28. After approval from IIT Patna, the firm/ Agency shall provide all spare parts and fix it if needed for pumps, Motors, clarifier, chlorination, electrical panels, fittings/ fixtures as required ensuring proper functioning of the Plant at the cost of IITP but consumables items like Hydraulic oil filter press Cloths/painting of filters and connected pipes to filter /grease if any/lubricant/dosing chemical/Nutrition agent//chlorine/washers/Jute/Gasket/consumable part of valve/suction etc.
29. The firm shall submit the monthly bills duly supported with necessary check list, log sheets, Chalan of PF,ESIC, payment sheet of manpower service reports duly signed by the concerned in

charge, IITP will make payment to the contractor within a reasonable period after receipt of the bills and after deduction of applicable taxes/ TDS etc.

30. Penalty: The firm shall rectify any breakdown within 24 hours failing which penalty for non-performance @0.5% per week of delay subject to a maximum of 10% of the contract price will be imposed and in the event of any damage to the property or life arising out of nonperformance, contractor will be solely responsible.
31. The contractor shall be responsible for proper maintenance of decorum, punctuality, discipline work out put and cleanliness of the Plant and its surroundings.
32. Levy/ taxes payable by contractor – Sale Tax/ VAT/GST or any other tax on materials in respect of this contract shall be payable by the contractor and IITP shall not entertain any claim whatsoever in this respect.
33. The agency/ firm / contractor shall be responsible for fulfillment of all labour laws, Environmental norms, , residence of operators, supervisors, safety and security of their staff/workman posted at STP.
34. **Scope of IITP** shall be limited up to release of timely payment against bill with all enclosures, Maintaining power line upto panel of STP, replacing any damaged equipment as per contract provision which is not repairable, arranging any spares which is not in scope of the contract and for this list shall be forwarded to IITP by the contractor/firm three months in advance, any civil repairing, providing fresh water at one point of STP, using the treated water.
35. Other terms and condition as mentioned in General condition of CPWD shall be applicable on this contract also.
36. Operation and maintenance of STP as per items in BOQ and scope of work and as per this additional condition of contract is in the scope of contract.

Scope of Work

1. The contractor will execute Comprehensive operation and Maintenance of Sewage Treatment Plant at IIT Patna to get the desired effluent Characteristics, which include (But not limited) to the following:

A. Brief detail of work:

- i) Numbers of STP: 2 (Two)
- ii) Capacity of STP: 15 Cum/Hour
- iii) Description and Component of STP: Please refer annexure 1 and 2
- iv) Operation and Maintenance Manual: Please refer annexure 3
- v) Required characteristics of effluent: Please refer table 2 of annexure 1
- vi) List of Minimum Manpower deployment: Please refer annexure 4
- vii) Design, Supply and Installation of STP done by ION Exchange (I) Ltd.

The entire 15 Cum per Hour Sewage Treatment Plant will be operated & maintained by the contractor as per the maintenance manual. The Plant is in operation for last one year and has been installed by ION Exchange under SPCL under CPWD.

B) The treated sewerage should be efficient and meet the effluent characteristics as with 100% use for irrigation/horticulture purpose, re-charging of wells and supply for makeup tank of HVAC/ recycling for use in building.

C. The contractor will operate & maintain all the Electro-mechanical equipment also as per the IITP manual. It includes electrical panel, sewerage transfer pumps, dewatering pumps and all other pumps and accessories. All mechanical equipments duly protected against corrosion as well.

D. The contractor will deploy sufficient skilled manpower for maintaining STP round the clock. Contract also includes at least one monthly visit by a qualified engineer for preventive maintenance and any number of breakdown maintenance visits. The response for the breakdown should not be more than twenty-four hours.

E. Maintenance shall consist of monthly examinations and any necessary adjustments and lubrication of the equipment. The required supplies and parts replaced shall be furnished by the contractor without any additional cost to IITP. However, if replacement of main parts, pipes, pump & equipment, blowers, resins, filter media etc. needed, cost shall be borne by IITP. Requirement of any such items shall be intimated to IITP at least 3 months in advance.

F. Preparation and submission of required test report as recommended/required by Local Pollution Control Board. However test report fee shall be borne by IITP. A record of the maintenance services rendered by the contractor shall be maintained duly counter signed by the C-DOT representative.

G. The contractor shall bear responsibility for the characteristics of the final effluent as per desired parameters and shall do the needful for the same. Testing for the characteristics (BOD/COD/DO /PH/SS etc) shall be as per Local Pollution control Board norms or Quarterly whichever is less.

H. In addition to the indicated frequency of testing as above, test may be got conducted by IITP at any time .

I. Civil structure of STP, tanks, surrounding area, drains, sludge drying beds etc should also be maintained. Contractor will keep the surrounding neat and clean. Contractor will maintain the trees, shrubs, flowers, grass etc to keep the area clean & green.

J. In addition to the above, contractor shall do the work as per instruction issued by the competent authority time to time for proper and smooth running of STP. Any emergency work arisen should be attended promptly.

K) The installation shall operate under all condition of load without any sound or vibration which is objectionable in the opinion of IITP site representative.

In case of rotating machinery sound or vibration noticeable shall be considered objectionable. Such condition shall be corrected by the contractor at his own expense. The contractor shall guaranty that the equipment installed shall maintain the specified noise control level.

The above Comprehensive operation and maintenance shall include the following for desired effluent characteristics:

- i) Daily Operation on three shift basis and 365 basis.
- ii) Daily maintaining the Operation Log book on Hour basis.
- iii) Reporting to Engineer Incharge in case of any breakdown.
- iv) Daily cleaning of Bar Screen, Oil and grease tank, removal of scum, lamella plate cleaning, cleaning of sewage outlet ports and overall cleaning of STP area.
- v) Routine servicing of all pump/Blowers/Motors/electrical Panel/ Filter press etc. as per operation and maintenance manual.
- vi) Restoring any breakdown in any equipment listed above within 24 hours.
- vii) Supply and changing all oils etc as per manual.
- viii) Supply and dosing all chemicals.
- ix) Periodic Tank cleaning as per requirement and O& M manual.
- x) Maintaining all electrical panels, starters, wiring system etc.
- xi) Provide cleaning of Multi grade filter and Activated Charcoal filter including providing its media is in the scope of the agency.

Registrar IIT Patna

Annexure - 1

SPECIFICATION FOR STP ALREADY IN OPERATION

SEWAGE TREATMENT PLANT (STP)

AI CIVIL WORKS:

Design basis for various units of STP:-

a) Main Sewage Receiving Sump cum Lifting Station (MSRSCLS)

The total sewage & sullage generated from the various scattered unit will be collected in this sump. This sump will be provided with a detention time of 30 minutes at peak flow. The wastewater collected in this sump will be pumped to inlet & screen chamber by two submersible pumps of necessary capacity and head.

b) Bar Screen Chamber & Oil & Grease Trap

From the MSRSCLS, the pumped sewage will be sent for screening. There will be 2 nos. Screen Channels (1W + IS), each screen channel comprising semi manual bar screen suitable for design peak flow shall be provided. After screening, the sewage shall be transferred to Equalization tanks by gravity. En-route to the Equalization Tank the screened sewage will be made to pass through an Oil & Grease Trap of conventional design by gravity. The hydraulics will be so designed that gravity conveyance of screened sewage via Oil & Grease Trap is possible.

Bar screen chamber will be designed for the peak flow. Screen chamber is provided with measures to remove the floating matter. Removal of floating matter is essential because it can otherwise choke pipelines/ pumps etc and hinder the normal operation of the sewage treatment plant (STP), Screen chamber consists of vertical bars, normally spaced 1 cm apart and inclined away from the incoming flow. Solids retained by the bars are to be removed manually/semi-manually.

Screens are fixed in rectangular channels that receive the flow from the collection system. The screens should be readily accessible for cleaning. Hydraulically, the flow velocity shall not exceed 1.0 m/s in the channel.

c) Equalization Chamber

This unit is designed for average flow with minimum detention time of 8 hours. The basic purpose of the unit is to ensure homogeneous incoming wastewater as both canteen sullage and raw sanitary sewage will be collected and equalized in this tank. The bottom of the tank has to be provided with a coarse bubble aeration system to avoid septic conditions. The aeration will prevent settling of solids and also to build up the dissolved oxygen level in the wastewater. Aeration ensures complete mixing of the wastewater and the solids are maintained in suspension. Settling of solids could lead to accumulation and stagnation, leading to anaerobic and septic conditions, the result being strong odor problems. Aeration also aids in maintaining a residual dissolved oxygen level in the wastewater, which aids in treatment efficiency.

From Equalization tank the wastewater will be pumped to FAB reactor tanks.

There will be nos (1W + 1S) of Equalization tank transfer pumps (horizontal centrifugal non-clog pump).

d) FAB Reactors

The FAB reactor consists of a tank filled with specially developed media. These media are made of special material of suitable density that can be fluidized using an aeration device through diffusers.

A bio-film develops on the media, which move along the effluent in the reactor. The movement within the reactor is generated by providing aeration with help of diffusers placed at the bottom of the reactor.

This thin film on the media enables the bacteria to act upon the bio-degradable matter in the effluent and reduce BOD/COD content in presence of oxygen from the air used for fluidization.

e) Tube Settler Tank

The mixed liquor suspended solids (MLSS) from the FAB reactor flows into the tube settler tank by gravity. The biomass settles by gravity and the supernatant overflows the weirs to the adjoining Chlorine contact tank.

f) Sludge Holding Tank

The segregated biological sludge from tube settler tank will be led to this sump. Provision will be there to partially recycle back the sludge to the FAB unit to maintain the biomass concentration if required during initial commissioning stage. Wasted sludge will be taken to sludge holding tank for further action and disposal. This tank will have provision of aeration by equalization tank blowers to avoid settling of sludge in this tank. This sludge will be periodically transferred to a centralized Sludge drying bed.

g) Sludge Pumps

Two numbers return sludge pumps (Horizontal centrifugal / sludge pumps) [1 working + 1 standby] are to be provided to recycle the settled sludge from the sludge holding tank into the FAB reactor if required.

The excess sludge if any will be bled off from the return sludge line taken to Sludge holding tank

h) Final Treated Water Tank

This tank is provided to hold the treated water for at least 1 (one) hour. From this tank the treated water will be reused in toilet flushing and green belt development. Two (1W + 1S) centrifugal pumps shall be used for this purpose.

i) Chlorine contact Tank

Chlorination of the treated water will be done to control faecal coliform bacteria. The basic purpose of this unit is to ensure that the faecal coliform count is less than 1000 number/ 100 ml.

Chlorination will be done by dosing hypochlorite solution via dosing tank and dosing pump arrangement.

This tank will have baffles to facilitate mixing of chlorine solution with the treated wastewater.

j) Cutting holes, chases & like through all types of walls/floors and finishing for all services crossing, including sealing, cover plates, making good structure and finishes to an approved standard.

The characteristics of raw sewage have been provided in Table-1. The Treated sewage shall satisfy the requirement as provided in Table-2.

TABLE-1

THE QUALITY OF RAW SEWAGE

• pH	:	7-8
• Flow	:	15m ³ /hr & 5 m ³ /hr
• BOD ₃ 27°C	:	200 - 300 mg/l
• TSS	:	250 - 300 mg/l
• Fecal Coliform	:	10 ⁶ - 10 ⁷ MPN per 100 ml
• Oil & Grease	:	100 mg/l

TABLE-2

THE DESIRED QUALITY OF TREATED SEWAGE

(Following the effluent discharge standards as prescribed by the gazette notification of the Ministry of Environment, Forest and Climate Change, Govt. of India dated 13th October, 2017)

• pH	:	6.5 – 9.0
• Flow	:	15 m ³ / hr & 5 m ³ /hr
• BOD ₃ 27°C	:	< 30 mg/l
• TSS	:	< 100 mg/l
• Fecal Coliform	:	< 1000 MPN per 100 ml

B) ELECTRICAL & MECHANICAL WORKS:-

List of equipment & accessories:-

- a) Main sewage receiving sump transfer pump.
- b) Bar screen.
- c) Air grid equalization tank.
- d) Fluidized aerobic bed (FAB) reactor feed pumps.
- e) FAB reactor containing air grid, media and blower.
- f) PVC tube settler modules.
- g) Hypochlorite dosing tank (LDPE-100 liters) and hypochlorite design tank.
- h) Filter feed pump.
- i) Dual media filter.
- j) Activated carbon filter.
- k) Air grid for sludge holding tank (HDPE).
- l) Interconnecting pipelines and valve.

ANNEXURE -2

List of Equipments installed at STP-2

SR. No.	DESCRIPTION	MAKE	MODEL	CAPACITY	HEAD RANGE	POWER/HP/RPM	QTY/STP
1	MAIN SEWAGE RECEIVING SUMP TRANSFER PUMP SEWAGE TRANSFER	KIRLOSKAR	ETERNA 1500 CW SUBMERSIBLE PUMP	16.2 M ³ /HR	7-20.5 MTRS	415 V AC 3 PH/2 HP/2900RPM	02 NOS
2	BAR SCREEN	ION	SS304	06 mm	-	-	01 NO
3	FAB/FMR FEED PUMP	JHONSON/ION	KGEN-11-4	13-15 M ³ /HR	10 MTRS	415 V AC 3 PH/3 HP/3000 RPM	02 NOS
4	FAB/FMR CONTAINING AIR GRID, MEDIA	ION					01 LOT
5	BLOWER	ERVEREST/ION	M/5175	400 M ³ /HR	0.37 KG/CM ²	415 V AC 3 PH/10HP/ 1500 RPM	02 NOS
6	HYPO-CHLORITE DOZING TANK & PUMP	ION	HDPE	225 LTRS			01 NOS.
	FILTER FEED PUMP TO (MGF)	MILTON RAY/ION	B-13L	17 LPM	3.5 KG/CM ²	230 V AC 1 PH	01 NOS.
		KIRLOSKAR	KDS 225	14.8 M ³ /HR	22.0 MTRS	415 V AC 3PH/2 HP /2840 RPM	02 NOS
8	DUAL MEDIA/MULTIGRADE FILTER	ION	MGF-1000	15M ³ /HR	3.5 KG/CM ²		01 NOS.
9	ACTIVATED CARBON FILTER	ION	ACF-1000	15M ³ /HR			01 NOS.
10	SLUDGE RECIRCULATION	KIRLOSKAR	SP-OM	15.84 M ³ /HR	6.5-13.5 MTRS	415 V AC 3 PH/1 HP/2700 RPM	02 NOS
11	TREATED WATER DISTRIBUTION PUMP	KIRLOSKAR	KDS 225	14.8 M ³ /HR	22.0 MTRS	415 VAC 3 PH/2 HP/2840 RPM	02 NOS
12	BAR SCREEN	ION	MSEP	06 MM	-	-	01 NO
13	MCC PANEL	DEVIKA	16 DRIVES	125 AMPS	415 V AC 3 PH		01 NO
14	FILTER PRESS	W2P	W2P-2421-HM	840 LTRS/CM ²	4-5 KG/CM ²	HYDRAULIC MOTOR OPERATED	01 NOS
15	SCREW PUMP FOR FILTER PRESS	USHA TELEHOIST	EH-236	2M ³ /HR	4-5 KG/CM ²	415 VA AC 3 PH/2HP/300 RPM	02 NOS
16	HYDRAULIC PUMP WITH MOTOR FOR FP					415 V AC 3 PH/2 HP/2900 RPM	01 NO
17	SEWAGE CUM MOTER SET (SLUDGE RECEIVING)	KSB	KRTUPF100-195-34(Portable)	3.4 KW	50 m ³ /hrs 10 mtrs.		01 NOS.
18	SEWAGE SUBMERSIBLE PUMP (EQUITY TANK)	KSB	AMAPORTER 503 ND	1.5 KW	09 MTRS	20M ³ /HRS	01 NOS.
19	SUBMERSIBLE PUMPING SET (TREATED WATER TANK) AT ONLY STP NO. 2	TEXMO	ASM SP 750/1HP	1 HP	06 MTRS	27 M ³ /HRS	01 NOS.
20	CENTRIFUGAL PUMP (TREATED WATER TANK)	KSB KIRLOSKAR	MEGA GB 80-250	10 HP	21 MTRS	70 M ³ /HRS	02 NOS



ANNEXURE - 2

List of Equipments installed at STP - 3

Sl. No.	DESCRIPTION	MAKE	MODEL	CAPACITY	HEAD RANGE	POWER/HP/RPM	QTY/STP
1	MAIN SEWAGE RECEIVING SUMP TRANSFER PUMP SEWAGE TRANSFER	KIRLOSKAR	ETERNA 1500 CW SUBMERSIBLE PUMP	16.2 M ³ /HR	7-20.5 MTRS	415 V AC 3 PH/2 HP/2900RPM	02 NOS
2	BAR SCREEN	ION	SS304	06 mm	-	-	01 NO
3	FAB/FMR FEED PUMP	JHONSON/ION	KGEN-11-4	13-15 M ³ /HR	10 MTRS	415 V AC 3 PH/3 HP/3000 RPM	02 NOS
4	FAB/FMR CONTAINING AIR GRID, MEDIA	ION					01 LOT
5	BLOWER	ERVEREST/ION	M/5175	400 M ³ /HR	0.37 KG/CM ²	415 V AC 3 PH/10HP/ 1500 RPM	02 NOS
6	HYPO-CHLORITE DOZING TANK & PUMP	ION	HDPE	225 LTRS			01 NOS.
		MILTON RAY/ION	B-13L	17 LPM	3.5 KG/CM ²	230 V AC 1 PH	01 NOS.
	FILTER FEED PUMP TO (MGF)	KIRLOSKAR	KDS 225	14.8 M ³ /HR	22.0 MTRS	415 V AC 3PH/2 HP /2840 RPM	02 NOS
8	DUAL MEDIA/MULTIGRADE FILTER	ION	MGF-1000	15M ³ /HR	3.5 KG/CM ²		01 NOS.
9	ACTIVATED CARBON FILTER	ION	ACF-1000	15M ³ /HR			01 NOS.
10	SLUDGE RECIRCULATION	KIRLOSKAR	SP-OM	15.84 M ³ /HR	6.5-13.5 MTRS	415 V AC 3 PH/1 HP/2700 RPM	02 NOS
11	TREATED WATER DISTRIBUTION PUMP	KIRLOSKAR	KDS 225	14.8 M ³ /HR	22.0 MTRS	415 V AC 3 PH/2 HP/2840 RPM	02 NOS
12	BAR SCREEN	ION	MSEP	06 MM	-	-	
13	MCC PANEL	DEVIKA	16 DRIVES	125 AMPS	415 V AC 3 PH		01 NO
14	FILTER PRESS	W2P	W2P-2421-HM	840 LTRS/CM ²	4-5 KG/CM ²	HYDRAULIC MOTOR OPERATED	01 NOS
15	SCREW PUMP FOR FILTER PRESS	USHA TELEHOIST	EH-236	2M ³ /HR	4-5 KG/CM ²	415 VA AC 3 PH/2HP/300 RPM	02 NOS
16	HYDRAULIC PUMP WITH MOTOR FOR FP					415 V AC 3 PH/2 HP/2900 RPM	01 NO
17	SEWAGE CUM MOTER SET (SLUDGE RECEIVING)	KSB	KRTUPF100-195-34(Portable)	3.4 KW	50 m ³ /hrs 10 mtrs.		01 NOS.
18	SEWAGE SUBMERSIBLE PUMP (EQUITY TANK)	KSB	AMAPORTER 503 ND	1.5 KW	09 MTRS	20M ³ /HRS	01 NOS.
19	CENTRIFUGAL PUMP (TREATED WATER TANK)	KSB KIRLOSKAR	MEGA GB 80-250	10 HP	21 MTRS	70 M ³ /HRS	02 NOS

ANNEXURE - 3

TENDER ACCEPTANCE LETTER

(On Company / firm's Letterhead)

To,
The Registrar
I.I.T. Patna,
Bihta, Patna – 801106.

Date:

Sir,

Ref: Tender No. IITP/IWD/RS/04/2020 for “Operation and Maintenance Contract for Sewer treatment Plant, 2 nos. (STP-2 and 3) at IIT Patna at Bihta’

I/we have carefully gone through the Terms & Conditions as mentioned in the above referred Tender document as per your advertisement, given in the abovementioned website(s).

1. I/we declare that all the provisions of this Tender are unconditionally acceptable to my company. I /we further certify that I'm an authorized signatory of my company and am, therefore, competent to make this declaration.
2. I/we hereby certify that I/we have read the entire terms and conditions of the tender documents from Page No. _____ to _____ (including all documents like annexure(s), schedules(s), etc.,) which form part of the contract agreement and I/we shall abide hereby by the terms / conditions /clauses contained therein.
3. The corrigendum(s) issued from time to time by your department /organizations too have also been taken into consideration, while submitting this acceptance letter.
4. I/we certify that all information furnished by the our Firm is true and correct and if at any stage, it has been found that the agency has furnished any wrong declaration / forged documents, the Competent Authority of IIT Patna may terminate contract with immediate effect without assigning any reason thereof and suitable legal action should be taken against the agency which may include blacklisting / debarment from participating in any tender of IIT Patna for the period, approved by the competent authority.

Yours faithfully,

(Signature of the Bidder, with Official Seal)

ANNEXURE - 4

DECLARATION OF ANNUAL TURNOVER (Balance Sheet)
(On Company / firm's Letterhead)

Date:

To,
The Registrar
I.I.T. Patna,
Bihta, Patna – 801106.

Sir,

Ref: Tender No. IITP/IWD/RS/04/2020 for “Operation and Maintenance Contract for Sewer treatment Plant, 2 nos. (STP-2 and 3) at IIT Patna at Bihta’

1) I/we hereby declare that, our firm's Annual Turnover as follows, and I/we have also supported an Audited Accounts for your references:

F. Y. 2016 – 17	
F. Y. 2017– 18	
F. Y. 2018 – 19	

Yours faithfully,

(Signature of the Bidder, with Official Seal)

ANNEXURE - 5
DETAILS OF THE FIRM

Ref: Tender No. IITP/IWD/RS/04/2020 for “Operation and Maintenance Contract for Sewer treatment Plant, 2 nos. (STP-2 and 3) at IIT Patna at Bihta’.”

1.	Name of Firm	
2.	Registered/Postal Address	
3.	Working Office Address in Patna	
4.	Working Email id	
5.	Telephone no/Fax no/Mobile	
6.	Particulars of Registration with various government bodies/organization.	
7.	Details of Similar nature projects completed during past seven years.(Attach separate sheet if needed)	
8.	Were you ever debarred/ blacklisted by any department during the past seven years?	
9.	Name of Directors /Partners with Address	
10.	Permanent Account Number (PAN) No	
11.	GST Registration No. if applicable	
12.	BANK DETAILS:	
a.	Bank Name	
b.	Branch Address	
c.	Account No	
d.	Type of Account (Current/Savings)	
e.	MICR No.	
f.	IFSC Code	

Date: Name of the Authorized Signatory

Place: Stamp & Signature

ANNEXURE - 6

TECHNICAL STAFF DETAIL

Staff Detail	Name	Qualification	Experience
Engineer/Supervisor			
Technician			

ANNEXURE – 7

List of minimum Manpower Deployment at STP-2 & 3 i.e., for 2(Two) numbers of STP

Sl. No.	Manpower	Number/Shift	Shifts	Total No. of Manpower	Remarks
1	Operator for STP 2	1	3	3	
2	Operator for STP 3	1	3	3	
3	Sweeper	1	1	1	
4	Supervisor (IT in Electrical and Experience of STP Maintenance and operation)	1	1	1	

Note: - The above manpower is minimum manpower requirement as per contract for operation. The contractor/firm has to calculate actual manpower (if more than this) for smooth operation, maintenance and restoring the break down.