



Office of the Director

**INDIRA GANDHI INSTITUTE OF MEDICAL SCIENCES,
SHEIKHPURA, PATNA – 800 014 (Bihar, India)**

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Tender Notice No.: 05/IGIMS/Engg. Cell/CW/2023-24

Ref. No.: 258/EC/2023

Date/ 30/ 06 / 2023.

TENDER NOTIFICATION

The Director, Indira Gandhi Institute of Medical Sciences, Sheikhpura, Patna (Bihar) invites Tenders from reputed Indian firms in two bid system namely technical bid and financial bid for:

Comprehensive Annual Maintenance Contract (CAMC) for operation and maintenance of existing 1200 KLD capacity Sewage Treatment Plant & 20 KLD capacity Effluent Treatment Plant at IGIMS, Patna.

IMPORTANT DATES

1.	Pre-Bid Meeting*	On 11 / 07 / 2023 at 3.30 P.M. in the Store and procurement Cell, Administrative Block (Ground Floor) at IGIMS, Patna
2.	Last date for submission of Tender	25/ 07 / 2023 up to 3.00 P.M.
3.	Date of Opening of received Bids (Technical Bid Only)	26/ 07 / 2023 at 4.00 P.M.

*Any queries should be addressed to bme@igims.org on or before 10/07/2023, so that the same can be clarified in pre-bid meeting.

**Prospective bidders are advised to regularly visit www.igims.org for Corrigendum/Amendment etc., if any. It will be notified on this portal only and no separate advertisement will be made.

Prospective bidders may download the Tender document from www.igims.org and submit the bids as per the Tender Document.

Tender Cost: Rs. 2, 500/- (Rs. Two Thousand Five Hundred Only)

Bid Security (EMD): Rs. 1, 00, 000/- (Rs. One Lakh Only)

The Institute GSTN details is as follows:

GST NO.: 10PTNI00155B

Section - I: Invitation for Bid

1. Indira Gandhi Institute of Medical Sciences, Sheikhpura (IGIMS), Patna - 800 014 is the premiere medical institute of the state of Bihar - established by the act of Assembly and functioning under Department of Health, Government of Bihar. Various facilities are being developed at this Institute to cater to needs of patients belonging to the state of Bihar and neighbouring states.
2. Bids are invited on behalf of The Director, Indira Gandhi Institute of Medical Sciences (IGIMS), Sheikhpura, Patna - 800 014 under two bid system from Indian Companies/Firms/Organizations registered and run by Indians. The bidder should be of reputed, well established and financially sound, experienced service providers for **Comprehensive Annual Maintenance Contract (CAMC) for operation and maintenance of existing 1200 KLD capacity Sewage Treatment Plant & 20 KLD capacity Effluent Treatment Plant** as per the details given in the tender document for IGIMS, Patna.
3. **The contract will be initially for a period of 02 Years from the date of agreement/contract, further extendable for one more year on the same rates, terms and conditions, considering the satisfactory completion of initial contract period. However, the total contract period will be for a maximum of three years only.**

Two Bid System: Part – I: Technical Bid (Technical Bid Document) Part – II: Price bid	
In case of any discrepancy in the rates indicated in the Price bid either in figures or words, the rates in words will be considered for evaluation. Note: The technical offer should not contain any price information. If the price quoted is submitted in technical bid the tender will be rejected at the sole discretion of IGIMS, Patna. Initially Technical Bids will be opened and evaluated by the duly constituted committee. Price bids of only Technically qualified bidders will be opened later.	
EMD / BID SECURITY: Bid Security shall be enclosed along with the technical bid document, failing which the bid will be treated as technically disqualified.	
Bid validity (Days):	120 Days
For doubts, clarifications, details contact particulars:	Superintending Engineer, Indira Gandhi Institute of Medical Sciences, Patna (E-Mail: bme@igims.org)
Tender Inviting authority	The Director, Indira Gandhi Institute of Medical Sciences, Sheikhpura (IGIMS), Patna - 800 014.

INSTRUCTION TO BIDDERS (ITB)

A. GENERAL

1. **Scope of Bid**

1.1 Throughout these bidding documents, the terms 'bid' and 'tender' and their derivatives (bidder/ tenderer, bid/tender, bidding/tendering, etc.) are synonymous.

2. **Funds**

2.1 The expenditure on this project will be met as decided by the Competent Authority.

3. **Eligible Bidders**

3.1 This Invitation for *Bids* is open to all bidders.

3.2 All bidders shall provide Qualification Information and other details as per bid document.

3.3 Bidders shall not be under a declaration of ineligibility for delay, failure or corrupt and fraudulent practices by any of the State Govt. or Central Govt. or Public Undertaking or any Autonomous Body.

4. **ELIGIBILITY CRITERIA :**

(A) **Similar Experience** :-

Interested tenderers, who fulfill the following eligibility criteria, shall be only eligible to participate in this Bid process.

The contracting Firm/ Agency should have satisfactorily completed similar work (STP or ETP) as a prime contractor during the last five years, ending March 2023.

(B) **ELIGIBILITY OF BID**

Bidders should submit (upload) Notarized and self attested copy of the following documents to evaluate their eligibility, otherwise bid will not be considered for Evaluation of Technical Bid and bid will be summarily rejected:-

- a) Required Bank Draft in favour of Director, IGIMS ,Patna against fee for Tender Papers (Rs. 2500.00)
- b) Required Earnest money in shape of Demand Draft in favour of Director, IGIMS. (Rs. 1.00 Lacs)
- c) Valid Registration with any Central/State Govt. Department/PSU of India may participate in this tender.
- d) EPF and ESIC No. with up to date challan.
- e) GST registration & up to date clearance certificate.
- f) Copy of PAN card.
- g) For Electrical work, Agency OR his authorized representative should have Electrical License.

(C) **Submission of Bid** :

The bidder should submit the bid in two bid system as :

- a) Technical Bid
- b) Financial/Price Bid
- c)

(D) **EVALUATION OF BID**

Bid shall be evaluated in two stages:

- a) Evaluation of technical bid.
- b) Evaluation of financial bid.

(E) **DOCUMENTS TO ASSIGN WITH ELIGIBILITY CRITERIA BID**

Bidder should submit the following documents in addition to the required documents as per eligibility of bid in support of technical evaluation. Documents shall be attached in the same sequence as noted down below.

- 1) Audited Annual Financial Turnover from Chartered Accountant for the years
 - a- 2019-2020
 - b- 2020-2021
 - c- 2021-2022
- 2) Certificates by Employer for successful completion of works or final payment certificate during last five years, from date of submission of tender, specifying.
 - a) Name of work
 - b) Employer
 - c) Location
 - d) Contract amount
 - e) Date of start
 - f) Date of completion
- 3) List of Works in hand (Existing Commitment) specifying
 - a- Name of work
 - b- Employer
 - c- Location
 - d- Contract amount
 - e- Date of start
 - f- Date of completion.
- 4) Details of financial availability:-
 - a- Undertaking on non-Judicial stamp (Rs1000) in uploaded format for cash investment of 25% of estimated cost for this work.
- 5) Certificates in the form of Affidavit on non Judicial stamp (Rs1000) in uploaded format by the bidder for: -
 - a- Bidder never been debar/rescind for any project which was taken up by bidder
 - b- Bidder had no relative or any person directly or indirectly involved in design, execution, and supervision and testing of this tender.
- 6) Bidding Capacity statement
$$\text{Bidding Capacity, BC} = A \times N \times 3 \text{ } \text{6} \text{ } B$$

Where,

A= Maximum ATO at current price level (with 8% annual indexation)

N = Time of completion of this tendered work in years

B = Value of works in hand (Existing Commitment of Bidder)

(F) **EVALUATION OF FINANCIAL BID**

1. The financial bid of only those bidders shall be opened who will qualify in evaluation of Technical Bid.
2. The Bidder should quote the rates for description incorporated in price bid sheet including all materials, all labour, all taxes, royalty, GST, carriage, tools and plants and contingent expenses.
3. It will be presumed that the Bidder has carefully examined & have satisfied himself completely with: nature of works, extent of liability of the work, conditions of Tender, approved quarries, materials carriage leads, condition of the site of works, means of communication, approach road for access to the works site, availability of site, labor in connection with the completion of work etc. No claim either for cost or for extension of time will be entertained on anyone of these or similar ground.

4. If amount of financial bid of different bidders are same, work shall be allotted by draw of lots.
5. Any information related to tender shall be collected from the office of the related Superintending Engineer on any working day.
6. Tender incomplete in any respect shall not be entertained.
7. Conditional Tender shall not be entertained.
8. Bidders are advised to visit the existing plant of 1200 KLD STP & 20 KLD ETP before quoting their rate.

(G) **CONDITIONS FOR TENDER**

- i. On acceptance of tender, it will be obligatory to deposit Initial Security money @ 5% of the amount of the approved tender, in shape of Demand Draft in favour of Director, IGIMS, sheikhpura, Patna-14.
- ii. If Earnest money already deposited along with the tender is likely to form part of Initial Security Money Deposit, then the Balance Initial Security money shall be deposited to execute Agreement, within 10 (ten) days of issue of letter of acceptance of tender, failing which, the offer shall be rejected and Earnest money forfeited.
- iii. Earnest money of the unsuccessful Bidder will be refunded on request by Bidder.
- iv. Power of attorney of authorized signatory and Constitution of firm shall have to be produced by Contractor on demand.
- v. Letters issued through registered post shall be deemed to have been served to the bidder.
- vi. Notice inviting Tender and conditions for tender shall form part of Agreement.
- vii. Agreement shall be executed subject to availability of fund for the job.
- viii. The Contractor shall arrange necessary accommodation, lighting, drinking water and contingent medical aid for labors at his own cost and Contractor shall comply all labor rules prevalent in the locality.
- ix. The Contractor shall be responsible for any damage or loss to public property due to negligence of his labor or staff and the damages shall be made good at his own cost.
- x. Contractor shall be held responsible for any accident occurring due to negligence at works site and compensation against such accident shall be borne by contractor.
- xi. Deduction @ 5% of the total value of each bill shall be made as Balance Security Deposit, so that, net security deposit at the last stage of payment achieves at 10 % of the total value of work done.
- xii. No claim shall be entertained on account of fluctuation in rates, idle labor, non supply of materials or delays due to any other reasons.
- xiii. All required papers as per eligibility of bid & documents to assign with technical bid must be notarized for this work by Public notary.
- xiv. All required papers in original must be shown by the bidder only to Superintending Engineer, IGIMS on next day at 3.00 PM of opening of technical bid. In case of non production of original documents the bidders will be declared technically non responsive.
- xv. The Contractor shall not be entitled to claim or for compensation, for any loss suffered by him due to (A) Natural calamities, (B) Act of enemies, (C) Transport and procurement difficulties or (D) Circumstances beyond the control of the Department.
- xvi. On Account of Income Tax and GST certain percentage will be deducted from the bill of the contractor as per Government Rule.
- xvii. Neither any interest shall be paid nor will any claim be entertained on account of delayed payment due to non availability of fund.

- xviii. Agreement of work will be executed as per F2 and all documents attached will be part of the agreement
 - xix. The equipment of plant / material if any replaced during execution shall be the property of the contractor. The Bidder is advised to quote the rates considering the cost of replaceable item.
- 4.1 Bidders who meet the minimum qualification criteria will be qualified only if their available bid capacity is more than the total bid value.
- 4.2 Even though the bidders meet the above qualifying criteria, they are subject to be disqualified if they have:
- made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements; and/or
 - have record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures etc; and/or
 - participated in the previous bidding for the same work and had quoted unreasonably high bid prices and could not furnish rational justification to the employer.
5. One Bid per Bidder
- 5.1 Each bidder shall submit only one bid for any work or one package or group. A bidder who submits or participates in more than one Bid for a package or group (other than as a subcontractor or in cases of alternatives that have been permitted or requested) will cause all the proposals with the Bidder's participation to be disqualified.
6. **Cost of Bidding**
- 6.1 The bidder shall bear all costs associated with the preparation and submission of his Bid, and the Employer will in no case be responsible and liable for those costs.
In case of cancellation of tender, cost of bidding document will be charged each times.
7. Site Visit
- 7.1 The Bidder, at the Bidder's own responsibility and risk must 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 costs of visiting the Site shall be at the Bidder's own expense.
- 7.2. Tender documents are not transferable.
8. **Clarification of Bidding Documents**
- 8.1 Pre-bid meeting
- 8.1.1 The bidder or his official representative is invited to attend a pre-bid meeting which will take place at the address, venue, time and date as indicated in NIT.
- 8.1.2 The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.
- 8.1.3 The bidder is requested to submit any questions in writing or by fax to reach the Employer not later than one week before the meeting.
- 8.1.4 Minutes of the meeting, including the text of the questions raised (without identifying the source of enquiry) and the responses given will be transmitted without delay on website.
- 8.1.5 Non-attendance at the pre-bid meeting will not be a cause for disqualification of a bidder.
9. **Bid Prices**
- 9.1 The contractor shall bid for the whole work as described in Bid Document. the Bidder.
- 9.2 The bidder shall adopt the lump sum rate method.
- 9.3 All duties, taxes, GST and other levies payable by the contractor under the contract or for any other cause shall be included in the rates, prices and total Bid Price submitted by the Bidder.

- 9.4 The rate should include the cost of all seen and unseen expenditure. No claim, whatsoever, will be entertained due to non-inclusion of any such event necessary for the completion of the item of work.
10. Currencies of Bid and Payment
- 10.1 The units rates and the prices shall be quoted by the bidder entirely in Indian Rupees. All payments shall be made in Indian Rupees.

11. **Bid Validity**

- 11.1 Bids shall remain valid for a period not less than 120 days after the deadline date for bid submission. A bid valid for a shorter period shall be rejected by the Employer as non-responsive.
- 11.2 In exceptional circumstances, prior to expiry of the original time limit, the Employer may request that the bidders may extend the period of validity for a specified additional period. The request and the bidders' responses shall be made in writing. A bidder may refuse the request without forfeiting his bid security. A bidder agreeing to the request will not be required or permitted to modify his bid.
- 12 Conditional tender will be rejected forthwith.

H. BID OPENING AND EVALUATION

13. Bid Opening

- 13.1 The Employer or their authorized representative will open first the eligibility criterion bid of all the Bidders received (except those received late), in the presence of the Bidders on website of eproc as specified in NIT. In the event of the specified date of Bid opening being declared a holiday for the Employer, the Bids will be opened at the appointed time and location on the next working day. Even in the case of absence of the bidder at the time of opening of bids, department will proceed ahead with the opening.
- 13.2 If any of the tenderers or their agents are not present at the time of opening, the employer will open the tender in their absence and prepare a statement and that will be binding on the absent tenderers.
- 13.3 The envelope containing "Eligibility Criterion Bid" shall be opened. The amount, form and validity of the Earnest money furnished with each bid will be announced. If the bid security furnished does not conform to the amount and validity period as specified in the Invitation for Bid and has not been furnished in the form specified in NIT, the remaining technical bid and the sealed financial bid will be returned to the bidder.
- 13.4 (i) Subject to confirmation of the bid security by the issuing Bank, the bids accompanied with valid security will be taken up for evaluation with respect to the Qualification Information and other information furnished in Bid Condition.
- (ii) After receipt of confirmation of the bid security, the bidder will be asked in writing (usually within 10 days of opening of the Technical Bid) to clarify or modify his technical bid, if necessary, with respect to any rectifiable defects.
- (iii) The bidders will respond in not more than 7 days of issue of the clarification letter.
- (iv) Immediately (usually within 3 to 4 days), on receipt of these clarifications the Evaluation Committee will finalize the list of responsive bidders whose financial bids are eligible for consideration.
- 13.5 The evaluation of eligibility criterion bid will be done and technical bids of those bidders who full fill eligibility criteria will be opened by notifying as indicated in NIT.
- 13.6 The technical bid will be evaluated and if required, a conference in respect of technical bids shall be held on date, time and place to be notified on eproc website. The technically viable bidders will be informed about opening of their financial bids through eproc website as indicated in NIT.
- 13.7 Bidders or their representative may be present at the time of opening of "Financial Bid".
- 13.8 In case bids are invited in more than one package, the order for opening of the "Financial Bid" shall be that in which they appear in the "Invitation For Bid".
- 13.9 The Employer shall prepare minutes of the Bid opening, including the information disclosed to those present in opening.

14. **Process to be Confidential**

- 14.1 Information relating to the examination, clarification, evaluation and comparison of Bids and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not officially concerned with such process until the award to the successful Bidder has been announced. Any effort by a Bidder to influence the Employer's processing of Bids or award decisions may result in the rejection of his Bid.

15. **Clarification of Financial Bids**

- 15.1 To assist in the examination, evaluation and comparison of Bids, the Employer may, at his discretion, ask any Bidder for clarification of his Bid, including breakdowns of unit rates. The request for clarification and the response shall be sought, offered or permitted except as required to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Bids.
- 15.2 No Bidder shall contact the Employer on any matter relating to his bid from the time of the bid opening to the time the contract is awarded. If the Bidder wishes to bring additional information to the notice of the Employer, it should do so in writing.
- 15.3 Any effort by the Bidder to influence the Employer in the Employer's bid evaluation, bid comparison or contract award decisions may result in the rejection of the Bidders' bid.

16. **Examination of Bids and Determination of Responsiveness**

- 16.1 A substantially responsive "Financial Bid" is one which conforms to all the terms, conditions, and specifications of the Bidding documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality or performance of the Works; (b) which limits in any substantial way, inconsistent with the Bidding documents, the Employer's rights or the Bidder's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other Bidders presenting substantially responsive Bids.
- 16.2 If a "Financial Bid" is not substantially responsive, it will be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the non-conforming deviation or reservation.

17. **Correction of Errors**

- 17.1 "Financial Bids" determined to be substantially responsive will be checked by the Employer for any arithmetic errors. Errors will be corrected by the Employer as follows:
- (a) where there is a discrepancy between the rates in figures and in words, the rate in words will govern; and
- (b) where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern.
- 17.2 The amount stated in the "Financial Bid" will be corrected by the Employer in accordance with the above procedure and the bid amount adjusted with the concurrence of the Bidder in the following manner:
- (a) If the Bid price increases as a result of these corrections, the amount as stated in the bid will be the 'bid price' and the increase will be treated as rebate;
- (b) If the bid price decreases as a result of the corrections, the decreased amount will be treated as the 'bid price'
- Such adjusted bid price shall be considered as binding upon the Bidder. If the Bidder does not accept the corrected amount the Bid will be rejected, and the Earnest money may be forfeited.

18. **Evaluation and Comparison of Financial Bids**

- 18.1 The Employer will evaluate and compare only the Bids determined to be substantially responsive.
- 18.2 In evaluating the Bids, the Employer will determine for each Bid the evaluated Bid Price by adjusting the Bid Price as follows:
- (a) making any correction for errors.
- (b) making an appropriate adjustments for any other acceptable variations, deviations.
- 18.3 The Employer reserves the right to accept or reject any variation or deviation. Variations and deviations and other factors, which are in excess of the requirements of the Bidding documents or otherwise result in unsolicited benefits for the Employer shall not be taken into account in Bid evaluation.
- 18.4 If the Bid of the successful Bidder is seriously unbalanced in relation to the Engineer's estimate of the cost of work to be performed under the contract, the Employer may require the Bidder to produce detailed price analyses for any or all items of the Bill of Quantities, to demonstrate the internal

consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, the Employer may require that the amount of the performance security be increased at the expense of the successful Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract.

- 18.5 A bid, in the opinion of employer are unrealistically priced low and which cannot be substantiated satisfactorily by the bidder, may be rejected as non-responsive.

I. AWARD OF CONTRACT

19. Award Criteria

- 19.1 The Employer will award the Contract to the Bidder whose Bid has been determined
- (i) to be substantially responsive to the Bidding documents and who has offered the lowest evaluated Bid Price; and
 - (ii) to be within the available bid capacity adjusted to account for his bid price which is evaluated the lowest in any of the packages opened earlier than the one under consideration.

In no case, the contract shall be awarded to any bidder whose available bid capacity is less than the evaluated bid price, even if the said bid is the lowest evaluated bid. The contract will in such cases be awarded to the next lowest bidder at his evaluated bid price.

20. **Employer's Right to Accept any Bid and to Reject any or all Bids:**
The Employer reserves the right to accept or reject any Bid, and to cancel the Bidding process and reject all Bids, at any time prior to the award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the ground for the Employer's action.

21. Notification of Award and Signing of Agreement

- 21.1 The Bidder whose Bid has been accepted will be notified of the award by the Employer prior to expiration of the Bid validity period.
- 21.2 The notification of award will constitute the formation of the Contract, subject only to the furnishing of the performance security in accordance with the provisions of bids.
- 21.3 The Agreement will incorporate all agreements between the Employer and the successful Bidder. It will be signed by the Employer and the successful Bidder, after the performance security is furnished.

22. Performance Security (P.S.)

- 22.1 Failure of the successful Bidder to comply with the requirements of performance security as notified in bid shall constitute sufficient grounds for cancellation of the award and forfeiture of the Bid Security.

23. Corrupt or Fraudulent Practices

- 23.1 The Employer will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question and will declare the firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract with I.G.I.M.S. Patna and any other agencies, if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for the contractor, or in execution.

MAN POWER REQUIREMENT(For Operation and Maintenance for STP and ETP)

Sl. No.	DESCRIPTION	Education Qualification	Nos. Req./Shift	Shift(s)	Total nos./day
1	Operators For STP	ITI Electrical/Mechanical	1	3	3
2	Operators For ETP	ITI Electrical/Mechanical	1	3	3
3	Reliever duty Operator As required	ITI Electrical/Mechanical	1		As required
4	Supervisor	Diploma/Graduate Engineer Electrical/Mechanical (Who have experience in handling of STP and ETP maintenance work.)	1	General	1
Unskilled Labor/Sweeper	-		1	3	3

Note: All the above Operators & the Supervisor shall have experienced in the Operation & Maintenance of similar Sewage Treatment Plants.

SHIFT DETAILS:

3 shift in per day

General Shift - 8.00 A.M to 04.30 P.M

-AøShift - 6.00 A.M to 02.00 PM

-BøShift - 2.00 P.M to 10.00 PM

(NOTE: Shift timings for the units and reliever operator duty are modifiable time to time to suit efficient Operation & Maintenance of the STP and ETP at the discretion of IGIMS)

AFFIDAVIT

1. I, the undersigned, do hereby certify that all the statements made in the required attachments are true and correct.
2. The undersigned also hereby certifies that neither our firm M/s_____ has never been blacklisted/debarred nor has abandoned any work in any government department, in India nor any contract awarded to us for such works have been rescinded, prior to the date of this bid.
3. The undersigned hereby authorises and request(s) any bank, person, firm or corporation to furnish pertinent information deemed necessary and requested by the Department to verify this statement or regarding my (our) competence and general reputation.
4. The undersigned understand and agrees that further qualifying information may be requested, and agrees to furnish any such information at the request of the Department Project implementing agency.
5. The undersigned also hereby certifies that we had no relative or any person directly or indirectly involved in design, execution, and supervision and testing of this tender.

(Signed by an Authorized Officer of the Firm)

Title of Officer

Name of Firm

DATE

UNDERTAKING

I, the undersigned do hereby undertake that our firm M/s _____
_____ would invest a minimum cash up to 25% of the value of the work during
implementation of the Contract.

(Signed by an Authorized Officer of the Firm)

Title of Officer

Name of Firm

DATE

Special Condition of Contract

For Operation & Maintenance of Treatment Plant (STP and ETP)

1. The contractor should engage Supervisor and shift Operators for the O&M work. The Man power requirement is given in the bid document for operation & treating the sewage to the norms specified by IGIMS and dispose the treated water as directed by the Engineer-in-charge.
2. The contractor should engage additional workers in shifts and they will assist as helpers in the O&M work. They will remove away the screen rejects and process rejects regularly and help generally to keep the plant & surrounding neat and clean. They will take care of the blowers operation and the plants in the 3rd shift everyday.
3. Operation and Maintenance is to be carried out in Two shifts a day for all the activities of the plant maintaining pumps, blowers, pneumatic valves, dosing systems etc. Daily log details have to be maintained for all equipment of the plant and their performance including energy / diesel consumption, feed and permeate water qualities as instructed by IGIMS Engineer incharge. All equipment & valves may have to be operated / controlled manually also.
4. If the system is not operated for more than a shift of 8 hours due to break-down on account of other than Power Supply, non availability of effluent, Spares, etc., recovery will be made on pro rata basis as per the approved and awarded rate for O&M. The work is to be executed on all IGIMS working days including public holidays and Sundays.

Carryout preventive maintenance of the equipment like pumps, blowers valves etc as per the instructions given in the O&M manual. Attend all minor breakdowns. Materials, if any, required for repairs & maintenance of the equipment will be arranged by Contractor. Incase of major breakdown, arrangement for removal of the motor, gearbox, blowers, pumps etc. is to be made by the contractor. The Operator / Supervisor shall report to the IGIMS Engineer In charge about the performance & healthiness of the plant every day. Contract supervisor or authorized person shall be responsible for all official correspondences with IGIMS. The contractor shall depute alternate Supervisor / Mechanic / Operator if the shift Supervisor / Mechanic / Operator is on leave / absent / compensatory off.

5. Required Power and water for the Operation of the system will be arranged and charges involved will be born by the contractor.
6. Required Consumables to achieve proper result like citric acid, Sodium hypochlorite, polymer, lubricants etc., will be supplied by the contractor.
7. Raw and treated water should be tested as per approved norms and prevailing guidelines of pollution control board and other Govt. entity as per direction of E/I of IGIMS. Possible field tests have to be conducted on daily and routine basis and pollution control board approved lab tests have to be conducted atleast once in a month. All test records and results should be maintained and produced to IGIMS for its verification. Analysis should be conducted in any lab approved by Bihar State pollution control board for conducting the above said tests, within the quoted rates.
8. The contractor should maintain all monitoring records w.r.t operation and maintenance, Laboratory analysis, etc.
9. The Contractor should associate for collecting samples by statutory bodies like Central Pollution Control Board or Bihar State Pollution Control Board or others if necessary.
10. The contractor shall ensure payment of Minimum wages, Bonus to the workmen employed by him at the rate at which shall not less than the minimum wage applicable under Law from time to time.

11. PF &ESI Act should cover the workmen as applicable and payment will be made only on verification of the documents for the remittance of ESI and PF for the personnel engaged in the work
12. The contractor should submit the list and quantity of consumables and spares used every month for the verification by IGIMS.
13. The workers should be provided with personal protective equipments such as Gloves, Goggles, safety shoes, Gum boots, face masks, waste cloths, soaps, etc by the Contractor within the quoted rates.
14. The contractor should follow all procedures pertaining to safety and EMS in day to day running of the plant
15. The contractor should keep a First Aid Box with list of Aids and should be refilled as and when required.
16. During this period the contractor should take whole responsibility of the Plant operation including treatment efficiency. Any deviation from the specific performance requirement of any equipment or quality of treated effluent as per norms, the contractor shall immediately take steps to rectify the deficiency without any extra cost to the Authority.
17. All the norms of Pollution control board, Bihar should be followed by the firm.
18. The malba of STP & ETP should be taken out of campus on monthly basis.

TERMS AND CONDITIONS REGARDING COMPLIANCE WITH VARIOUS LABOUR LAWS BY THE CONTRACTORS FOR IGIMS

19. The Contractor shall not employ in connection with the work any person who has not completed 18 years of age.
20. The Contractor shall comply with statutory provisions and rules of central/Bihar State Govt. and any other law or modifications to the above or to the Rules made there under from time to time.

WAGES

21. The tenderer has to ensure payment of Minimum Wages as per Bihar State Minimum Wages as applicable under law from time to time for the employment in General Engineering & Hospital activities. The labourers shall be paid a minimum bonus and over time if any as per rules
22. The Contractor shall fix wage periods in respect of which wages shall be payable. No wage period shall exceed one month.
23. The Contractor shall ensure payment of wages to the contract labour employed by him within three days from the end of wage period in case the wage period is one week or a fortnight and in all other cases before 10th day of the following month
24. All Payment of wages shall be made on working days at the work site and during the working time and on date notified in advance. In case the work is completed before the expiry of the wage period final payment shall be made within 48 hours of the last working day.
25. Where the employment of worker is terminated by or on behalf of the Contractor, the wages earned by him shall be paid before the expiry of the second working day from the day on which his employment is terminated.

REGISTERS AND RECORDS AND COLLECTION OF STATISTICS

24. The following documents / formats shall be maintained by the contractor.
 - a. Register of persons employed by the Contractor
 - b. Employment Card
 - c. Service Certificate
 - d. Muster Roll, Wage Register, Deduction Register, wage slip, Overtime Register, register of Fines, Register of Advances etc.,

WORKING HOURS AND WORKING CONDITIONS

25. No worker shall be required or allowed to work on Sunday unless he has or will have a holiday on anyone of the three days before or after the said day.
26. The Contractor shall inform IGIMS Management in the prescribed form details of the contract workers scheduled to work on Sunday, the way of rest and also indicate the substituted holiday in lieu thereof. This shall be intimated two days in advance before his workmen and booked for work Sunday.
27. The Contractor shall provide all safety devices and personal protective equipment to his workmen at his own cost and shall ensure that his workmen wear / use such devices or equipment provided to them while doing the work and there should not be any relaxation on this.
28. The Contractor shall give four paid National Holidays to his workers, viz., 26th January, 1st May 15th August and 2nd October.
29. The Contractor shall ensure that his workmen vacate the premises after the shift is over.
30. No woman worker shall be required or allowed to work in the plant except between the hours of 6.00 A.M. and 7.00 P.M.
31. The Contractor shall comply with the provisions relating to Welfare and Health facilities as provided in the Contractor Labour (Regulation and Abolition) Act.

NOTICE OF ACCIDENTS

32. Notwithstanding anything contrary to this, in the event of accident the contractor shall be required to fill injury report and submit the Engineer in charge immediately and ensure the compliances of ESI / Workmen's compensation Act, Factories Act and Rules made there under. He shall also maintain a register of accident as per the Act.
33. The Contractor shall get the contract labour engaged by him insured under Workmen's Compensation policy from general should be for the entire period of Contract. The Contract shall comply with the provisions of the Workmen's Compensation Act 1923. (This should be read in conjunction with the provisions of ESI Act)

COVERAGE UNDER THE ESI ACT / PF AND MISCELLANEOUS PROVISIONS ACT

34. The contractor shall ensure that all his workmen are covered under the Employee's State Insurance Act and producer to IGIMS such Registration Number / Enrolment Number before executing the contract work.
35. The Contractor shall regularly pay the amount of contribution. i.e., employer's contributions as well as employee's contribution pursuant to the above scheme applicable at the time.
36. The Contractor shall take note of any amendment that may be brought forth in the above contribution rate and act accordingly.
37. The contractor shall ensure that his workmen are covered under the EPF & Miscellaneous Provisions Act 1952 and accordingly produce to the IGIMS Management the registration / enrolment number.
38. The Contractor shall take note of any amendment in the rate of contribution payable under the scheme from time to time.
39. The Contractor shall with seven days of the close of every month submit to IGIMS a statement showing the amount of contribution payable / paid for employees engaged by him or through him and shall also furnish to IGIMS such information as Principal Employer is required to furnish under the provisions of the ESI Act and PF as well as the schemes made thereunder to the authorities concerned.
40. The Contractor shall abide by all the labour and other laws applicable to contract labour / worker under this contract and shall at all times keep IGIMS indemnified against all losses, claims, prosecutions under any law.
41. In case of non-compliance of any of the provisions of the Acts and in case IGIMS having complied with the same IGIMS will be entitled to recover the same from the contractor / sub-contractor.

42. Non-exercise of any of the powers of rights available to IGIMS hereunder to under any law, shall not in any way operate as waiver thereof.

(Annexure -I)

Details of Existing STP and ETP
Moving Bed Biofilm Reactor (MBBR)

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REPORT ON

1200 KLD STP

At IGIMS PATNA

STP

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01. Design Details
02. Treatment Process
03. Technical Specification of Equipments
04. Flow Chart
05. Diagram

STP

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I. DESIGN BASIS:-

The Sewage Treatment Plant is designed for 1200 KL/Day @ 20 Hours Operation.

Average Raw Effluent Characteristics: -

S.No	Description of the Parameter	Value
1	pH	6.5 – 7.5
2	BOD (Biological Oxygen Demand)	<350mg/lit
3	COD (Chemical Oxygen Demand)	<450mg/lit
4	TSS (Total Suspended Solids)	<500 mg/lit
5	Colour	Black
6	Oil & grease	<10 mg/lit

Treated Effluent Characteristics:

-

S.No	Description of the Parameter	Value
1.	pH	7.0 – 8.5
2.	BOD (Biological Oxygen Demand)	≤20mg/lit
3.	COD (Chemical Oxygen Demand)	≤100mg/lit
4.	TSS (Total Suspended Solids)	≤30mg/lit
5.	Colour	Colourless
6.	Oli & Grease	< 5 mg/lit

Plant Data

Capacity : 1200 KLD
Flow rate : 60 M3/hr
Operating Hours : 20 Hours

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II. Treatment Process

Waste Water (Sewage) generated will be collected in Collection tank & then passed through the Coarse Screen chamber after which it will pass through O & G Trap.

The Effluent from O&G Trap will flow into the Aerator Tank 1 & Tank 2 and will be provided with a drain line with valve to empty the tank as required. After that, water will be lifted by pump and supplied to Bio- Reactor Tank 1 then Tank 2. In Bio- Reactor Tank 1 & Tank 2 FAB Media is filled for bacteria formation. Bio Reactors are essential as it has nutrients that are indispensable to the life of micro-organisms in the process of oxidation.

Aerated sewage will overflow to a Tube Settler tank. In this tank solids settle by gravity and are collected in the sludge Tank. (The solid collected in the hopper portion of the settler of the Clarifier is called the sludge). The biologically treated waste water from the Fluidized Bio Reactors overflows to the Chlorine contact tank for disinfection.

The disinfected water is pumped to the Pressure Sand Filter and subsequently to the Activated Carbon Filter so that treated water is free from solids, odour, colour etc.

The Tertiary treated water overflows and gets collected in the Treated Water tank and from this point the water can be discharged to the disposal site.

The Secondary treated water will be pumped into Chlorine Contact Tank for tertiary treatment. After Filtration it will go to Treated Water Disposal. Treated water can be used for Horticulture/ Gardening purpose.

STP

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II. TECHNICAL SPECIFICATIONS FOR STP SUPPLYING EQUIPMENTS:-

1. Raw Water Pump

DESCRIPTION	
Quantity	2 No.
Flow	60 m ³ /hr
Head	20 m
Motor	12.5 HP
MOC	CI
Type	Centrifugal
Make	KSB

2. Sewage Pump

DESCRIPTION	
Quantity	2 No.
Flow	60 m ³ /hr
Head	20 m
Motor	12.5 HP
Type	Centrifugal
Make	KSB

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3. MBBR Media

DESCRIPTION	
Quantity	1 Lot
Shape	Cylindrical
Diameter	22mm
Height	15mm
MOC	PP
Volume	10 M3

4. Bio Reactor Tank

DESCRIPTION	
Quantity	2 No.
Capacity	60 m3
Dimension	1500 x 5000 mm (D x H)
Thickness	6 MM
MOC	MS
Type	Cylindrical

5. Tube Settler

DESCRIPTION	
Quantity	1 No.
Capacity	60 m3
Dimension	3500 x 2000 x 4500 mm
Thickness	6 MM
MOC	MS

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6. Feed Water Tank

DESCRIPTION	
Quantity	1 No.
Capacity	60 m3
Dimension	4000 x 2500 x 2500 mm
Thickness	6 MM
MOC	MS

7. Feed Pump

DESCRIPTION	
Quantity	2 No. (1W+1S)
Capacity	48 m3/Hr
Model	AMH 24
Make	Texmo
Speed	2900 RPM

8. Feed Water Tank

DESCRIPTION	
Quantity	1 No.
Capacity	60 m3
Dimension	4000 x 2500 x 2500 mm
Thickness	6 MM
MOC	MS

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9. Filter Press

DESCRIPTION	
Quantity	1 No.
Make	Airvac
Batch	24 x 600 x 600 mm
Type	Hydraulic Based

10. Screw Pump

DESCRIPTION	
Quantity	2 No. (1 S+1W)
Flow	2 m ³ /Hr
Speed	1400 RPM
Motor	1.5 HP
Make	Havells

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11. Hypo Dosing System

DESCRIPTION	
Quantity	1 No.
Model	ABPP1
Capacity	0-100 LPH
Pressure	4 Bar
Make	Miniflow Pump
PP –Storage Tank	50 Litres
Motor	3 HP
Speed	1440 RPM

12. Multi grade Filter

DESCRIPTION	
Quantity	1 No.
Diameter	2000 mm
Height	1875 mm
Flow	60 m ³ /hr
Filtering Media	Graded Pebbles/Sand
M.O.C	MS
Minimum Pressure	2.0Kg/cm
Maximum Pressure	3.5Kg/cm
Valve	Butterfly Valve
Make	Ion Exchange (India) Ltd

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13. Activated Carbon Filter

DESCRIPTION	
Quantity	1 No.
Diameter	2000 mm
Height	1875 mm
Flow	60 m ³ /hr
Media	Graded Pebbles/Activated Carbon 900 IV
M.O.C	MS
Minimum Pressure	2.0Kg/cm
Maximum Pressure	3.5Kg/cm
Valve	Butterfly Valve, Diaphragm Valve
Make	Ion Exchange (India) Ltd

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14. Piping

DESCRIPTION	
Interconnected Pipes, Fittings	1 Lot
Make	Astral/Prince
MOC	UPVC/PVC

15. Electrical Works

DESCRIPTION	
Quantity	1 No.
Type	Non-Compartment
Components make	L&T
Electrical Panel will be supplied for the above-mentioned mechanical equipment's.	

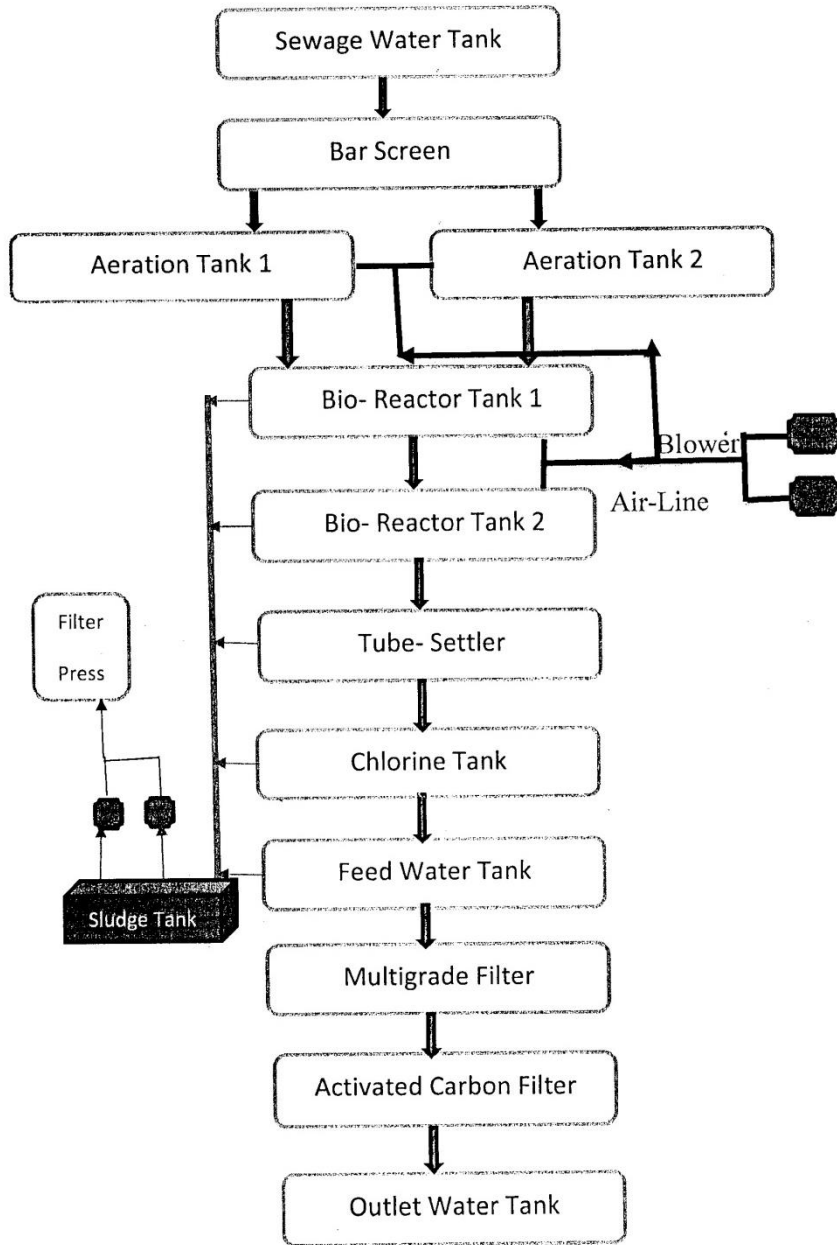
16. Instrumentation

INSTRUMENT	LOCATION	QUANTITY
STP		
Pressure gauges	Filter feed pump discharge	1 Lot
	Filters inlet & outlet	

STP

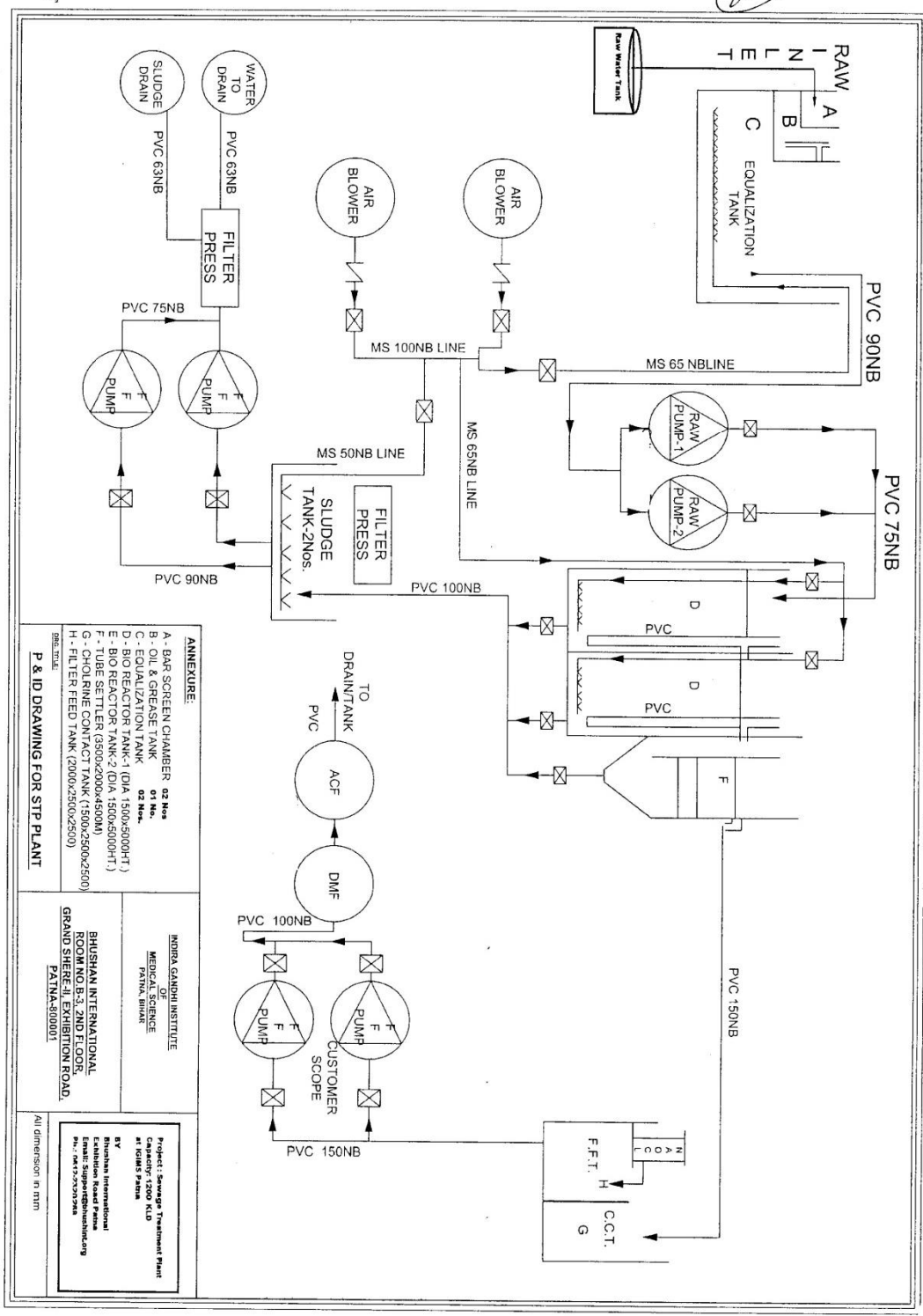
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III. FLOW CHART:



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- ANNEXURE:**
- A - BAR SCREEN CHAMBER 02 Nos
 - B - OIL & GREASE TANK 01 Nos.
 - C - EQUALIZATION TANK 02 Nos.
 - D - BIO REACTOR TANK-1 (DIA 1500x5000HT)
 - E - BIO REACTOR TANK-2 (DIA 1500x5000HT)
 - F - TUBE SETTLER (3500x2000x4500MM)
 - G - CHOLERAINE CONTACT TANK (1500x2500x2500)
 - H - FILTER FEED TANK (2000x2500x2500)

KINDRA GANDHI INSTITUTE
OF SCIENCE
MEDICAL SCIENCE
 PATINA, BHARH

BHUSHAN INTERNATIONAL
 ROOM NO.E-3, 2ND FLOOR,
 GRAND SHEREEJ, EXHIBITION ROAD,
 PATNA-501001

Project: Sewage Treatment Plant
 Prepared by: **INDIA**
 at **KINDRA** Patna

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All dimension in mm

P & ID DRAWING FOR STP PLANT

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REPORT ON

20 KLD ETP

At IGIMS PATNA

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01. Design Details
02. Treatment Process
03. Technical Specification of Equipments
04. Flow Chart
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ANNEXURE – II

TREATMENT PHILOSOPHY & PROCESS DETAILS

Bar Screen:

Raw effluent from the source is usually received into the bar screen chamber by gravity. Screen provided will remove all floating and big size matter such as plastic bottles, polythene bags, glasses, stones, etc.

Oil and Grease Trap (Civil Construction) :

Oil and grease needs to be removed before biological treatment as it otherwise may cause problems for biological treatment. Usually, a small civil construction tank with a baffle wall and slotted oil pipe skimmer is provided. The oil and grease removed by gravity floats to the surface, which is removed by the oil skimmer.

Equalization Tank (Civil Construction) :

Any biological system needs constant feed for bacteria to work efficiently. Hence, it is important to put an equalization tank to collect the excess flow during peak hours and feed effluent in lean hours. A typical equalization tank has a capacity of 8 – 12 hours of average flow rate. The tank is generally of civil construction by us. Provision of air grid is to be made for thoroughly mixing the Effluent to make it of homogenous quality and to keep the suspended matter in suspension and to avoid septic conditions

INDION® UPFLOW ANAEROBIC SLUDGE BLANKET REACTOR (INDION®UASB) [Civil Construction) :

Effluent water from Collection tank pumped to INDION® UASB. In INDION® UASB reactor, effluent will enter the reactor through a well-designed effluent distribution system and shall be distributed equally over the bottom of the reactor. Within the INDION® UASB reactor pollutants are degraded through a series of bio-chemical reactions viz., hydrolysis, acidogenesis, acetogenesis & methanogenesis and produces methane, carbon dioxide and biomass as the by-products. Within the INDION® UASB reactor biomass conglomerate and form granules, this has very good settling properties. The solid generated in the process settles down and add to the sludge blanket. Subsequently, the effluent rises in an upflow mode through an expanded bed of anaerobic active methanogenic sludge and leaves the reactor after three phase separators where solid, liquid and gases are separated. The gas liquid separator is placed on the top of the INDION® UASB reactor. The clarified water flows out from the launder while the gas generated is collected in a series of gas dome, which ultimately sends the gas to gas holder tank or to gas flare system.

Advantages of INDION UASB:

ETP

The major advantage is the production of valuable methane gas which can be used for electricity generation or as bio fuel.

1. Low energy / power consumption and lower footprint requirement.
2. Low skill requirement for operation / supervision.
3. Less sludge production.
4. Production of highly stabilized sludge which can be used as manure.

➤ **Major advantages of *INDION*® UASB design compared to the conventional UASB's:**

- The conventional UASB's are fed from the bottom distribution grid, having holes. The effluent is pumped through this grid and distributed evenly at the bottom. But within few months operation some of the holes get blocked partially or fully. (The common cause in most cases is salt deposition). Thus the feed distribution is completely disturbed affecting the *INDION*® UASB performance. We come to know about this only when we empty the tank and inspect the grid. In *INDION*® UASB design the feed is from feed distribution boxes kept on the top of *INDION*® UASB, which will ensure equal distribution throughout the life of the plant.
- The second advantage is that we also have clarifier outside, which gives better control on the settling of solids. In case of process upset due to any reason lot of biosludge will escape the 3 phase separator and overflow to the Clarifier. Suitable biodegradable polymer can be added before clarifier for settling of sludge, and the sludge can be returned to the *INDION*® UASB.

INDION Fluidized Media Reactor (FMR)

Fluidized Media Reactor (FMR) as the name indicates consists of floating media of various shapes and sizes. The main objective of adding this media is to make available more surface area for bacteria to grow on, thereby maintaining and retaining maximum possible bacterial population in a limited volume. The FMR media material allows biomass concentration of 20 – 40 Kg/m³ material. Thus, FMR consists of combination of biomass in attached as well as suspended form. High concentration of biomass enables reduction of aeration tank and in turn reduction in overall cost. Volume of the media shall vary from 6 to 25 % based on the concentration of organic matter.

Another main feature of the FMR is its compactness. The *INDION* FMR consists of biological system for removal of organic matter (BOD, COD), lamella for clarification and chlorine contact tank for disinfection. As all units are placed inside a single tank, it saves space and also increases operational ease.

In FMR, raw effluent enters at the top of the tank. Air is introduced at the bottom of the tank through fine bubble diffusers. Media will be in suspension because of the turbulence created by the air. The bacteria required for the oxidation of the organic matter is attached to the media and some

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part is suspended in the tank. After oxidation, the bacteria grow in number and need to be separated from the aeration tank liquor. The lamella section inside the FMR helps in clarification and separation of the sludge and clear overflow flows into chlorine contact tank. Lamella plates helps in increasing the settling area and removing the particles effectively in a smaller plan area. In chlorine contact tank, Sodium hypo Chlorite (NaOCl) is added for disinfecting the clarified Effluent. Baffle plates are provided to make better contact. The chlorinated treated Water then flows out of FMR either for further treatment or for disposal.

INDION® Multi Grade Filter:

The effluent, from Chlorine Contact Tank / Filter Feed tank is pumped into INDION® Multi Grade filter (MGF). INDION® Multi Grade filter would be provided complete with filter backwash arrangement to ensure reduction & Suspended solids & turbidity at the outlet of the INDION® MGF. This filtration step reduces the suspended solids, before taking it to downs stream membrane systems.

This unit works on the phenomenon of surface filtration. The unit offered consists essentially of a mild steel pressure vessel. It is externally fitted with necessary pipe work, valves, pressure gauges, and sampling points at the inlet and outlet.

The filtration bed consists of fine sand of specified size over a layer of gravels. Water flows downwards through the filter bed and the suspended solids are retained on the sand surface and between the sand grains immediately below the surface. The filtered water is evenly collected by header lateral type bottom collecting system.

At a pre-determined pressure drop the backwash of filter is initiated to clean the filter bed. The backwash water at high flow rate is pumped through the filter bed in upward direction to facilitate expansion of the filter bed. The particles are kept in suspension and are washed and dirty water is sent to Backwash water collection Tank from the upper side of the vessel.

Once the backwash cycle is completed, filter is taken online for service after a final rinse with service flow rate.

INDION® Activated Carbon Filter:

The effluent from INDION® Multigrade filter is the fed to INDION® Activated Carbon filter (ACF). INDION® Activated Carbon filter would be provided complete with filter backwash arrangement to ensure reduction in excess chlorine, colour, residual recalcitrant & organics at the outlet of the INDION® ACF.

INDION® Activated carbon is a porous material, mainly consisting of elementary carbon in a graphite-like structure. The internal surface area typically amounts to 500 up to 1500 m²/g. Activated carbon's suitability as an adsorbent is based on this large surface area, the chemical nature of the surface and the accessibility for adsorption of a wide range of dissolved organics.

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At a pre-determined pressure drop the backwash of filter is initiated to clean the filter bed. The backwash water at high flow rate is pumped through the filter bed in upward direction to facilitate expansion of the filter bed. The particles are kept in suspension and are washed and dirty water is sent to Inlet chamber from the upper side of the vessel.

Once the backwash cycle is completed, filter is taken online for service after a final rinse with service flow rate. The Filtered water is then collected in Treated Water Tank.

Treated Water Collection Tank:

The treated water collection tank can be of civil construction by us. The treated water can be collected from Activated Carbon Filter.

Sludge:

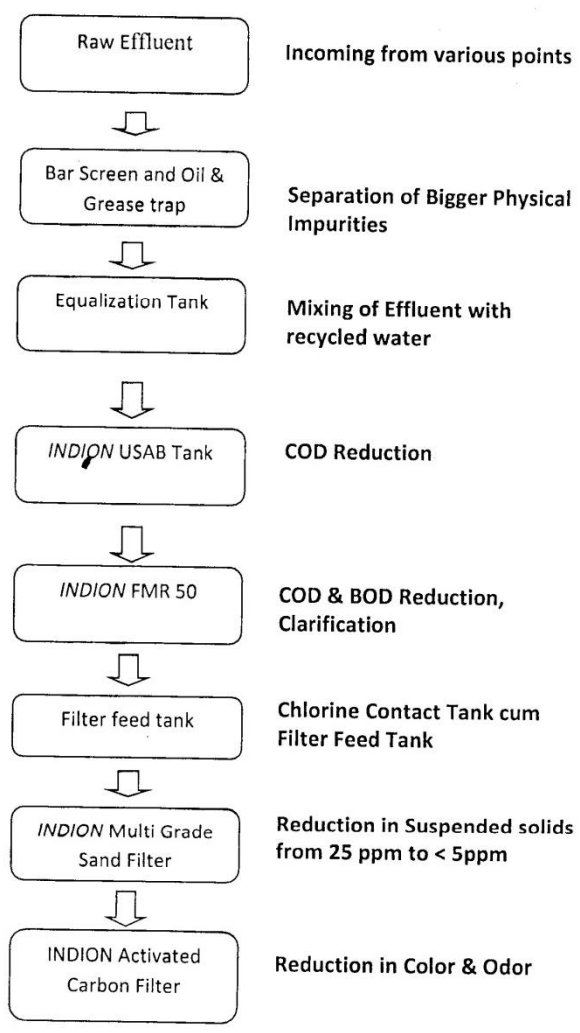
The sludge from the Clarifier to be removed from the bottom of the Clarifier once in a day by us and transferred to sludge drying bed either by gravity or through pump depending on site condition. Before starting the De-sludging, shut off the aeration for 30 minutes and allow the sludge to concentrate at the bottom. ♥

After concentration, the bottom sludge valve can be open to drain the required quantity of sludge. An air scour pipe is provided to dislodge any media choking the drain outlet. Open the air scour valve for short time to remove the clog.

ANNEXURE - III

ETP

BLOCK DIAGRAM



ANNEXURE - IV

TECHNICAL DETAILS AND SCOPE OF SUPPLY

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1. Bar Screen	
MOC	: RCC
Size	: To be placed at inlet of Equalization tank to match the inlet channel have 10 mm screen.
2. Oil & Grease Trap	
MOC	: RCC
Size	: 1 x 1.05 x 2.5 m
3. Equalization tank	
MOC	: RCC Construction
Capacity	: 22.0 m3
Tank Size	: 3.0 x 3.0 x 2.5 mtrs
4. UASB Feed pump	
Type	: Centrifugal Non-submersible type
Make	: KSB
MOC	: CI
Capacity	: 8.3 m3/hr
Head	: 15 MWC
Quantity	: 2 No. (1w+1s)
Motor rating HP/RPM	: 1.5/ 2900
5. INDION UASB	
RCC Tank	: 3.0 x 3.0 x 4.5 mtr.
FRP Inlet Box	: 1 UNIT
Weir Plate For Inlet Box	: 1 lot
FRP Gutter	: 2 (Each of 4M length)
FRP Weir Plate For Gutter	: 2 (each of 4M length)
Baffle Plate	: 2 (each of 4M length)
FRP 3 Phase Separator	: 1 unit – 4M long
FRP Gas Dome	: 2 set
HDPE PIPES	: 1 LOT
5. FMR Tank	
Overall Tank Dimension	: 3.9 x 2.25 mtrs (pre fabricated)
Total Height	: 2.2 m
MOC of Tank	: MS-Lined
Volume of FMR Media	: 1.5 m3
Air required for EQT	: 15.0 Nm3/hr
Air required for FMR	: 58.0 Nm3/hr
Air required Total	: 73 Nm3/hr
Capacity of Air blower	: 75 m3/hr
Head for Blower	: 0.37 Kg/Cm2
Motor HP/RPM of Blower	: 3 HP/ 1500 rpm
Diffuser for EQT	: 1 Lot
Diffuser for FMR	: 1 Lot

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Total Diffusers	:	1 Lot
No of Lamella Plates	:	1 Lot
6. NaOCl dosing system		
Pump Capacity	:	6 lph
Make	:	E-Dose/Milton Roy/Equivalent
MOC of Pump	:	PP
Head of pump	:	3.5 Kg/Cm2
Quantity	:	One
Tank capacity	:	200 lts
MOC of Tank	:	HDPE

Additional Equipment:

Model No.		INDION FMR 50
Capacity	m ³ / day	50.0
MGF Feed Pump	Centrifugal Non-submersible type	
MGF Feed pump cap	m ³ / hr	2.50
Head	12	20
INDION MGF	Inch	16 dia x 54 HOS
INDION ACF	Inch	16 dia x 54 HOS

TERMINATION POINTS

- From the inlet of Effluent Feed Pumps
- From the treated water line at the outlet of Activated Carbon filter
- From the backwash line of Multi-grade Sand Filter & Carbon filter
- From the outlet of Activated carbon filter

Civil Works:

- a) Bar Screen Chamber
- b) Oil & Grease Tank
- c) Equalization Tank: 1 no
- d) UASB Tank : 1 no.
- e) Treated Water Tank: 1 no
- f) Final Filter Water Tank: 1 no
- g) Sludge Holding Tank: 1 no
- h) Pumps & Blower Foundation

ETP

Additional condition of Contract and Scope of work
Comprehensive operation and maintenance of Sewage Treatment Plant
At IGIMS, 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 IGIMS, Patna. Contractor shall Operate and maintain the entire STP for a period of 02 (Two) 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 IGIMS, Patna including effluent test reports and it should be made available to IGIMS 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 be replaced/ rectified to bring it to the original condition immediately.
6. IGIMS, Patna 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, IGIMS, in this regard shall be final and binding on all.
7. Precaution against any fire hazards or other damages to Plant and equipment shall be arranged by the firm.
8. 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.
9. The firm/ agency/ contractor will be responsible for the safety of their deputed staff during the performance of their duty at site.
10. In case of any problem with the equipment, the firm/ agency/ contractor shall inform IGIMS in advance.
11. 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.

12. The tender shall be kept valid for acceptance for a period of 90 days from the date of opening.
13. Any statutory tax as applicable will be deducted from the bill of the contractor/service provider.
14. The firm/ agency shall maintain data log of all mechanical items and chemical dosing if any.
15. The firm/ agency shall operate the filter press as and when required.
16. The firm/ agency shall provide and maintain bacteria culture as and when required.
17. The firm/ Agency shall send engineer to check the Plant once a month over & above the deployed staff and supervisor.
18. After approval from IGIMS 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 IGIMS 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.
19. 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
20. Penalty: The firm shall rectify any breakdown within 24 hours failing which penalty for nonperformance @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.
21. The contractor shall be responsible for proper maintenance of decorum, punctuality, discipline work output and cleanliness of the Plant and its surroundings.
22. Levy/ taxes payable by contractor ó Sale Tax/ VAT/GST or any other tax on materials in respect of this contract shall be payable by the contractor and IGIMS shall not entertain any claim whatsoever in this respect.
23. 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.
24. Other terms and condition as mentioned in General condition of CPWD shall be applicable on this contract also.
25. 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.

Numbers of STP: (One) 1200 KLD Capacity & ETP : (One) 20 KLD Capacity

Description and Component of Existing STP & ETP : Please refer Annexure 1

- A. 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.
- B. The contractor will operate & maintain all the Electro-mechanical equipment also as per the IGIMS 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.
- C. 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 IGIMS. However, if replacement of main parts, pipes, pump & equipment, blowers, resins, filter media etc. needed, cost shall be borne by IGIMS. Requirement of any such items shall be intimated to IGIMS at least 3 months in advance.
- D. Preparation and submission of required test report as recommended/required by Local Pollution Control Board. However test report fee shall be contractor.
- E. 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.
- F. In addition to the indicated frequency of testing as above, test may be got conducted by contractor at any time from reputed lab as directed by IGIMS.
- G. 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.

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.

b	Operation and Maintenance (O&M) of 1200 KLD capacity Sewage Treatment Plant at IGIMS premises at Patna including all materials, chemicals, man power deployment in two shifts to treat the sewage from the plant.	01	2 nd Year			
c	Operation and Maintenance (O&M) of 1200 KLD capacity Sewage Treatment Plant at IGIMS premises at Patna including all materials, chemicals, man power deployment in two shifts to treat the sewage from the plant.	01	3 rd Year			
02	For ETP 01 No. 20 KLD					
a	Repair, Operation and Maintenance (O&M) of 20 KLD capacity Effluent Treatment Plant at IGIMS premises at Patna including all materials, chemicals, man power deployment in two shifts to treat the sewage from the plant.	01	1 st Year			
b	Operation and Maintenance (O&M) of 20 KLD capacity Effluent Treatment Plant at IGIMS premises at Patna including all materials, chemicals, man power deployment in two shifts to treat the sewage from the plant.	01	2 nd Year			
c	Operation and Maintenance (O&M) of 20 KLD capacity Effluent Treatment Plant at IGIMS premises at Patna including all materials, chemicals, man power deployment in two shifts to treat the sewage from the plant.	01	3 rd Year			
	Grand Total Amount (Rs.)					

Sd/-
Director,
I.G.I.M.S. ó Patna.