नगरपालिका परिषद् का कार्यालय

OFFICE OF THE MUNICIPAL COUNCIL

पेर्ट ब्लेयर

PORT BLAIR

TENDER DOCUMENT

FOR

CONSTRUCTION OF FAECAL SLUDGE TREATMENT PLANT OF 42 KLD CAPACITY (FSTP) AND NECESSARY WORK FOR SETTING UP PLANT, AT BROOKSHABAD DRY RESOURCE CENTRE OF PBMC.

(Part B: Electro-Mechanical Component and O&M)

NIT NO: 01/EE-III/SWM/MC/2019-20

June, 2019

7 TENDERING PROCEDURES

7.1 ISSUE OF BLANK TENDER FORMS

Blank Tender documents will not be sold by this office. Interested Contractors have to download tender documents from the website. Blank tender form will not be sent by post.

7.2 QUERIES REGARDING THE TENDER

Any queries regarding the tender documentation could be clarified by contacting Superintending Engineer, Port Blair Municipal Council, Indira Bhawan, Aberdeen Bazaar, Port Blair, South Andaman, A&N Islands, email id: sepbmc19@gmail.com, swmpbmc@gmail.com, avipbmc@gmail.com., with a copy to National Institute of Urban Affairs (NIUA) & Ecosan Services Foundation, either via e-mail on doab@niua.org, saurabh.kale@ecosanservices.org, dhawal.patil@ecosanservices.org, on any working day between 10:00 am and 05:00 pm.

IMPORTANT: - All tenderers are cautioned that the tenders containing any deviation from the contractual terms and conditions, specifications or other requirements and conditions will be rejected as non-responsive.

7.3 MANNER OF SUBMISSION OF TENDER AND ITS ACCOMPAINMENTS

Tender shall be submitted in two separate sealed envelopes.

Tenderer shall submit the tender and documents in two sealed envelopes as below: -

7.3.1 Envelope No. 1 (Documents)

The first envelope clearly marked as "ENVELOPE N0 1" shall contain the following documents duly attested by a Class I officer.

a) Term Deposit Receipt for a period of six months of any Nationalized/Scheduled Bank for the amount of earnest money or attested copy of certificate of exemption for payment of earnest money, if applicable.

b) Details of Income Tax circle, or ward, of the district in which the tenderer is assessed to income tax, Tenderer's PAN No. & complete postal address with pin code & telephone no.

c) Details of the other works tendered for and in hand with the value of the work unfinished on the last date of submission of tender (in form no.1). i) Details of works of similar type and magnitude carried out by the Contractor, Work completion certificates should be provided.

d) Details of technical personnel on the pay rolls of tenderer.

e) Attested copy of registered partnership deed if the tenderer is a partnership firm and Power of Attorney.

f) Declaration Form

7.3.2 Envelope No. 2 (Main Tender): (Financial Bid)

The second envelope clearly marked as envelope no. 2 shall contain only the main tender including the common set of deviations and additional facilities (if any) issued by the Employer. After the Pre-tender Conference. A tender submitted without this would be considered as invalid.

The Contractor will have to sign the original copy of the tender papers and the drawing according to which the work is to be carried out. He shall also have to give a declaration to the effect that he has fully studied the plans, specifications, local conditions, availability of labor and materials and that he has quoted his rates with the consideration to all these factors.

The tenderer should quote his offer for Schedule A&B at the appropriate place in the tender document to be submitted only in Envelope no. 2 under the heading TENDER FOR WORKS. He should not quote this offer anywhere directly or indirectly in envelope no.1. The Contractor shall quote for the work as per details given in the main tender. This tender shall be unconditional.

Even though the tenderers meet the above requirement 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 Record of proof performance such as abandoning the works, not properly completing the contract, inordinate delay in completion or work litigation history or financial failures etc.

7.4 SUBMISSION OF TENDER

I. The two sealed envelopes 1 and 2 shall be again put together in one common cover and sealed. This sealed cover shall be marked on the left-hand top corner" **Schedule-A Providing and installation of Electro-mechanical component of FSTP of capacity 42 KLD/day including commissioning trial run. Schedule-B O&M of FSTP for further period of 3 years.**

II. All Xerox copies submitted in connection with tender shall be attested by class I officer. Otherwise their tender will not be considered for further action & envelope No. 2 will not be opened

7.5 EVALUATION OF TENDERS

Tenders shall be evaluated based on the competency and cost effectiveness of the submitted bid. Each tender shall be evaluated based on stipulated technical and financial criteria.

7.5.1 Technical criteria – 10 points each

1. Bidders should have successful experience in operating and maintaining a sewage/Faecal Sludge & Septage treatment plant for more than one year in the last 5 years
2. In the business of designing/ construction of Septage/Sewage Treatment Plant for at least 3 (three) years
3. Designed, constructed and commissioned at least 1 (one) work on Sewage/Faecal Sludge & Septage treatment plant, which are in operational condition and achieved the desired effluent standard before date of publishing the NIT in any location in India

7.5.2 Financial Criteria – 20 points

1. Average annual turnover of preceding 3 (three) years is equal to or more than INR 4 cr. (Indian Rupees)
2. Working limits from the bank.

7.6 OPENING OF TENDERS

On the date specified in the tender notice, following procedure will be adopted for opening of the tender. Tenders will be opened by PBMC A&N will be assessed based on an equal and fair policy.

a) The online technical opening will be held at the office of Secretary, PBMC A&N Urban Local Body on the specified date. The document submitted in hard copies in Envelope 1 (Technical Bid) will be verified with the documents uploaded for online technical bid submission. The bidders whose technical bid documents do not meet the specified qualification criteria would be rejected. Those bidders whose bid documents meet the specified criteria will qualify for the second round, i.e. financial bid opening.
b) The financial bid opening will be done online only. The quoted rates in the financial bid will be arranged automatically to prepare a comparative chart through an online process. The bidder who quotes the lowest rate will be declared as the Contractor and may be called for negotiation if required.
c) The bidder should be apply/compulsory for both the parts i.e. Schedule A & B. the rates for single parts will automatically reject his offer in special case the PBMC have rights to reject or accept on conditional basis.

7.7 ACCEPTANCE OF TENDER

a) The acceptance of tender may be communicated to the Contractor by telephone/mail/letter etc.

b) The tenderer whose tender is accepted will have to give an undertaking in writing to the effect that he/they will pay the laborers engaged on the work, the wages as per Minimum Wages Act, 1948, applied to the zone in which the work lies and act accordingly.

c) The Contractor shall comply with the provisions of the payment of Wages Act, 1936, Minimum Wages Act, 1948, Employees' Liability Act, 1938, Workmen's Compensation Act, 1961, The Contract Labor (Regulation and Abolition) Act; 1970, and any modification thereof or any law relating thereto, and rules made there under from time to time.

d) The Contractor will have to sign the original copy of the tender papers and the drawings according to which the work is to be carried out. These drawings shall be made available after the successful tendered has been selected. The Contractor shall also have to give a declaration to the effect that he has fully studied the plans, specifications, local conditions, and availability of labor and materials and that he has quoted his rates with due consideration to all these factors.

7.8 SECURITY DEPOSIT

a) The successful tenderer shall have to pay 50% of initial security deposit in cash or in shape of or Term Deposit Receipt of Nationalized / Scheduled Banks in favor of the EMPLOYER or and complete the contract documents failing which his earnest money will be forfeited by the employer (PBMC). The balance 50% of security deposit will be recovered from the R.A. bills at 10 % of the bill amount. In any case the total SD will be recovered before 50 % of the work will be completed.

b) All compensation or other sums payable by the Contractor under the terms of this contract or any other contract or on any account may be deducted from this Security Deposit or from any sums which may be due to him or may become due to him by Employer on any account and in the event of the security being reduced by reason of any such above noted deductions, the Contractor shall within 10 days of receipt of notice of demand from the EMPLOYER in charge make good the deficit.

c) There shall be no liability on the Employer (PBMC A&N) to pay any interest on the Security Deposited by or recovered from the Contractor.

d) The Security Deposit shall be refunded after completion of Defect liability period prescribed for this contract in accordance with the provisions in clause of the contract.

7.9 Details on e-tendering

a. The tender would be received in e- tendering process which is available on web site - http://db.and.nic.in/tendersonline/index.php.
b. It is necessary to give the undertaking as follows by the Bidder, that it will not make any changes in Bidding Documents downloaded from website. If it is done the Bid of such Bidder will be rejected and the Bidder who made such changes is liable for action as per prescribed rules. Bidding Documents published on the website are considered as authentic and legal documents in case of any complaint about the tender.
c. It is necessary to give an undertaking as follows: "We have seen detailed tender document and understand the nature and scope of work. We have visited the Site and we are well aware of the condition of the Site. We have quoted our offer by considering all these things. We are ready to sign the tender before depositing the Security Deposit and taking work order if our tender is accepted."
d. In order to participate in the tenders floated using the Electronic Tender Management System (ETMS), all Bidders are required to get enrolled on the ETMS portal http://db.and.nic.in/tendersonline/index.php.
e. The bids submitted online should be signed electronically with a digital signature certificate to establish the identity of the Bidder bidding online. The tenderer has to obtain the digital signature certificate. For information required for digital signature certificate he may contact ETMS help desk.
f. For submitting the bids online, the Bidders are required to make online payment using the electronic payments gateway service Bid Submission Fee. The different modes of electronic payments accepted on the ETMS is available and can be viewed online on the ETMS website http://db.and.nic.in/tendersonline/index.php.
g. The activities of tender purchase/download, preparation of bid (Submit Bid Online), submission of EMD and other documents will be governed by the time schedules given under "Key Dates"
h. The Bidders have to submit (upload, scan, copies/fill) their offer/credentials online
i. as required in the tender in the online templates in relevant envelopes.

BLANK FORMS

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

FORM NO.1

LIST OF THE WORKS TENDERED FOR AND IN HAND AS ON THE DATE OF SUBMISSION OF THE TENDER

Name of the Tenderer:

……

Sr. No:	Name of Work	Place & Country	Work in Hand		Anticipated date of completion	Work tendered for			Remarks
			Tendered Cost	Cost of Remaining Work		Estimated Cost	Date when decision is expected	Stipulated date of period of completion	
1	2	3	4	5	6	7	8	9	10
SPECIMEN FORM									

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

SAMPLE FORM

DECLARATION TO BE FILLED IN BY THE CONTRACTOR /FIRM

Under clause no 3.3.1(f)

(This document should be on Original Stamp Paper of Rs, 100- not on Xerox Copy)

(To be submitted in ENVELOPE NO.1)

Name of Work: - _____

_____

1. I / We, have the required machinery i.e. ……etc. owned by me / us which can be spare for this work immediately after awarding the work within a reasonable time. The documentary evidence i.e. (i) copies of purchase bill in Envelope no.1.

   OR

   I / We, intend to hire the required machinery ---……etc. from _____who has promised to spare the said machinery for this work immediately after awarding the work, within a reasonable time the legal agreement of hire deed duly executed in front of magistrate / any other registration authority by government of Maharashtra is given in Envelope no.1.

2. Any dispute arising with the owner of the land shall be amicably settled by me / us and it should not have any encumbrance on the work.
3. I / We. Shall observe the local authorities' rules as would be applicable to all activities I; pertaining to the work.

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

4. I / WE shall be fully responsible to construct and maintain necessary approach road up to the plant from the road and shall not claim any compensation whatsoever for this purpose.
5. The Employer does not take any responsibility to acquire, maintain and utilize the land if for the above purpose.
6. I / WE am / are aware of the fact that I / WE, myself / ourselves shall have to make all; arrangements, without any extra cost to Government to obtain the facilities if required such as Electric connection, Water supply, Telephone etc. and such other amenities as may be desired by the concerned authorities of the other Department also.
7. I / WE am / are aware that the erected facilities shall be freely available for inspection to any authorities / representatives of ESF at any time without prior notice.
8. I / WE am / are aware that / We have to commence this work under supervision of ESF or authorized / representative of ESF within maximum period of 7 days from the date of issue of work order, failing which I/We shall be liable for the Security Deposit forfeiture
9. I / We have carefully gone through the conditions enlisted herewith and I / We shall abide by the same the above-mentioned conditions are fully binding over me / us, I / We, am / are also aware that m case I / We shall not agree to these conditions Envelope No 2 of my / our tender will not be opened and I shall have no objection upon it.

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

Name of Work: Schedule A- Providing and installation of Electro-mechanical component of FSTP of capacity 42 KLD/day including commissioning trial run. Schedule B- O&M of (FSTP) for further period of 3 years.

DECLARATION OF CONTRACTORS

I/We hereby declare that I/we have made myself/ourselves thoroughly conversant with the sub-soil conditions, the local conditions regarding all materials (such as stone, murum, sand, etc.) and labor of which I/we have based my/our rates for this work. The specifications, conditions, bore results and lead of materials to be used on this work have been carefully studied and understood by me/us before submitting this tender. !/We undertake to use only the best materials approved by the EMPLOYER, or his duly authorized assistant, before starting the work and to abide by his decision.

I/We hereby further declare that my/our tender is unconditional in every manner of whatsoever in nature.

I/We hereby undertake to pay the laborers' engaged on the work as per Minimum Wages Act, 1948 applicable to the zone concerned.

TO BE FILLED BY THE CONTRACTOR

I/We have quoted my/our offer rates in words as well as in figures. I/We further undertake to enter into contract with **PORT BLAIR MUNICIPAL COUNCIL, A&N**

Name and Signature of Contractor(s) / Power of attorney holder

With complete address.

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

8 CONDITIONS OF CONTRACT

Contracting authority: PORT BLAIR MUNCIPAL COUNCIL, A&N ISLANDS

Clause 1: Compensation for Delay

The time allowed for carrying out the work as entered in the tender shall be strictly observed by the Contractor and shall be reckoned from the date on which the order to commence work is given to the Contractor. The work shall throughout the stipulated period of the contract be proceeded with, with all due diligence (time being deemed to be the essence of the contract on the part of the Contractor) and the Contractor shall pay compensation an amount equal to Rs.1000 per day to the EMPLOYER. The programme for completion of work is to be submitted / attached in form of bar chart. The Contractor should complete the work as per phase period given below, which is to be arrived from the bar chart.

1/4" of the work in _____** 1/4th of the time

1/2 of the work in _____** 1/2 of the time

3/4thof the work in _____** 3/4th of the time

Full work to be completed in **03 calendar months** (Including monsoon)

Clause 2: Action when the progress of any particular portion of the work is unsatisfactory

If the progress of any particular portion of the work is unsatisfactory, the Employer shall not be withstanding that the general progress of the work, be entitled to take action after giving the Contractor 5 days' notice in writing. The Contractor will not claim for compensation, for any loss sustained by him owing to such action.

Clause 3: Final Certificate

On the completion of the work the Contractor shall be furnished with a Final certificate. Certificate by the Employer - of such completion, but no such certificate shall be given nor shall the, work be considered to be completed until the Contractor has to clear the site nor until the work shall have been measured by the EMPLOYER.

Clause 4: Payment Process

the Contractor should submit the bill towards PBMC A&N, which in turn verified by the PBMC A&N technical staff then payment will be drawn to the Contractor's account. The stages of the payment is given as below.

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

Schedule A: Providing and installation of Electro-mechanical component of FSTP of capacity 42 KLD/day including commissioning trial run.		
Sr. No	**Item Description**	**Payment Applicable**
1	Supply/Erection/Installation of MBBR plant as per the specification given in the annexture-1	30%
2	Supply/Erection/Installation of Rotary Drier as per the specification given in the annexture-1	
3	Supply/Erection/Installation of Belt Press as per the specification given in the annexture-1	
4	Supply/Erection/Installation of Pumps as per the specification given in the annexture-1	
5	Supply/Erection/Installation of generators of adequate capacity and specification given in the annexture-1	15%
6	Supply/erection/ installation of Piping, Mechanical, Electrical & Instrumentation works along with spares as specified etc. complete as per technical design specification and on testing, commissioning and satisfactory trial runs etc. as approved by Engineer-In-Charge	30%
7	Supply of Desludging truck having load carrying capacity of 4KL as per the specification enclosed here in annexture-1 (1Nos)	
8	Supply of Water tanker of water storage capacity of 5KL as per the specification enclosed here in annexture-1 (2Nos)	
9	Providing and installation of GPS system for the Desludging vehicles (4Nos) The specification is mentioned in the annexture-1	15%
10	Supply/Installation/Commissioning of CCTV system for FSTP pant at proper location given by the engineer in charge or higher authority person from PBMC	
11	On successful completion of trial run of septage treatment unit etc. as approved by Engineer-In-Charge	10%
Schedule B- O&M of FSTP for further period of 3 years.		

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

The total price quoted for Schedule-B by the bidder will be divided in 36 equal monthly instalments. The contract value quoted by the Bidder will include cost of O&M of Faecal Sludge & Septage treatment plant and allied works and all other costs including labour, material and others, as needed. No claims for additional payment will be entertained. The payment would be made as follows:

a. Monthly payment will be made to the Contractor against submission of invoice and performance report as per **clause 7** (Reporting) under **Test to be carried out in O&M** In case the output standards of the treated septage and effluent do not meet prevalent discharge standards of State Government and as amended from time to time, 20% (twenty percent) of the running bill will be deducted. In case of failure to achieve the output standards more than 5 times, the entire amount payable will be withheld. In Case of non-compliance PBMC council will take action as per **Clause 25 of Section-e Conditions of Contract.**
b. PBMC council will open an escrow account in a nationalized bank to ensure timely monthly payment to contractor. This account will have a deposit equal to at least three months of payment.

Clause 5: Bill to be submitted monthly

The Contractor shall on submitting a monthly bill therefore, be entitled to receive payment proportionate to the part of the work than approved and passed by the Employer (PBMC A&N). as mentioned in the clause no 4

Clause 6: Bills to be on Printed form

The Contractor shall submit bills on printed forms, which will be furnished subsequent to selection of the contractor. The charges to be made in the bills shall always be entered at the rates specified in the tender at the rates hereinafter provided for such work.

Clause 7: Works to be executed in accordance with specifications, drawings orders etc.

The Contractor shall execute the whole and every part of the work in the most substantial and workmanlike manner, and both as regards materials and every other respect in strict accordance with specifications.

Clause 10: The Contractor shall provide suitable scaffolds and working platforms, for the safety of work.

Clause 11: Measure for prevention of fire.

The Contractor shall not set fire to any standing jungle, trees, brushwood or grass without a written permission from the Employer.

Clause 12: Liability of Contractor for any damage done in or outside work area

Compensation for all damages done intentionally or unintentionally by Contractor's labor whether in or beyond the limits of Government property including any damage caused by the spreading of fire mentioned in Clause 11 shall be estimated by the AMC or such other officer as he may appoint and the estimate of such expert person subject to the decision of the -Employer on appeal shall be final and the Contractor shall be bound to pay the amount of the assessed compensation on demand, failing which, the same will be recovered from the Contractors bill.

Clause 13: Medical Aid to labor

The Contractor shall be responsible for and shall pay the expenses of providing medical aid to any workman who may suffer a bodily injury as a result of an accident. If such expenses are incurred by the EMPLOYER the same shall be recoverable from the Contractor forthwith and be deducted without prejudice to any other remedy of Government from any amount due or that may become due to the Contractor.

Clause 14: Safety Equipment's

The Contractor shall provide all necessary personal safety equipment and first aid apparatus available for the use of the persons employed on the site and shall maintain the same in condition suitable for immediate use at any time and shall comply with the following regulations in connection therewith.

a) The workers shall be required to use the equipment's so provided by the Contractor and the Contractor shall take adequate steps to ensure proper use of the equipment by those concerned.
b) When work is carried on in proximity to any place where there is a risk of drowning all necessary equipment shall be provided and kept ready for use and all necessary steps shall be taken for the prompt rescue of any person in danger.

c) Adequate provision shall be made for prompt first aid treatment of all injuries likely to be sustained during the course of the work.

Clause 15: Labor Act

The Contractor shall duly comply with the provisions of The Apprentices Act, 1961" (III of 1961), the rules made there under and the orders that may be issued from time to time under the said Act and the said Rules and on his failure or neglect to do so he shall be subjected to all the liabilities and penalties provided by the said Act and said Rules.

Clause 16: Claim for compensation for delay in starting the work

No compensation shall be allowed for any delay caused in the starting of the work on account of acquisition of land or, in the case of clearance works; on account of any delay in accordance to sanction of estimates

Clause 17 Dispute Resolution

Any dispute arising between PBMC Urban Local Body and Contractor regarding the Contract terms and conditions would be aimed to be resolved through mutual discussions. If the discussions fail to produce a resolution, the dispute shall be subject to the court in PBMC jurisdiction.

Clause No 18: Electric Power & Water Supply

Arrangement for obtaining Electric Power connection and water supply will have to be made by the Bidder at his own cost.

Clause No 19: Damage by Floods or Accidents

The Bidder shall take all precautions against damage by floods or tides or from accidents etc. No compensation will be allowed to the Bidder on this account or for correcting and repairing any such damage to the work during construction. The Bidder shall be liable to make good at his cost any plant or material belonging to the Government lost or damaged by floods or from any other cause while in his charge.

Clause No 20: Defect Liability Period

The Defect liability period of the project work is of 12 months after the completion of all project works.

Clause No 21: Extension of time

If the Bidder shall desire an extension of time, he shall apply in writing to the Engineer-In-Charge before the expiry of 30 (thirty) days from the date on which he was hindered or on

which the cause for asking for extension occurred. If the Engineer-In-Charge or the Secretary, as the case may be, is of the opinion, that there were reasonable grounds for granting an extension, then he may grant such extension as he thinks necessary or proper. The decision of the Engineer-In-Charge in this matter shall be final.

Clause No 22: Progress report

The Bidder shall submit the progress report on weekly basis to the PBMC regularly, the progress report format of weekly report to be finalized in co-ordination with the PBMC or consultant appointed by them.

Clause No 23: Stock Register

Material stock register to be maintained by the bidder and it should be keep updated, if PBMC wants to verify it at any point of time it should be submitted to them immediately.

Clause No 24: First Aid Apparatus

The Bidder shall provide all necessary safety equipment and first aid apparatus available for the use of the persons employed on the Site and shall maintain the same in condition suitable for immediate use at any time and shall comply with the following regulations in connection therewith.

a) The workers shall be required to use the equipment so provided by the Bidder and shall take adequate steps to ensure proper use of the equipment by those concerned.
b) Adequate provision shall be made for prompt first-aid treatment of all injuries likely to be sustained during the course of the work.

Clause No 25: Termination

a) The Employer may terminate the contract if the other party causes a fundamental branch of the contract.
b) Fundamental branches of contract include, but shall not be limited to the following
   I. The contractor stop work for 28 days & stoppage has not been authorized by the engineer.
   II. The contractor has become bankrupt or goes into liquidation other than for a reconstruction or amalgamation;

III. The engineer gives notice that failure to correct a particular defect is a fundamental branch of contact & the contractor fails to correct it within a reasonable period of time determined by the engineer.

IV. The contractor does not maintain a security which is required;

c) Notwithstanding the above, the Employer may term the contract for convenience.

d) If the contract is terminated the contractor shall stop work immediately, make the site safe & secure & leave the site as soon as reasonably possible.

e) Termination at will:

If PBMC needs to terminate the Contract for causes unrelated to those given above, it will be treated as 'termination at will' and the following clauses will apply:

I. A notice of termination shall be required to be given [three months] before such termination at will.

II. The payment for the completed Work and the Security Deposit deposited with the PBMC will be given back to Contractor**.** However, any amounts due to the PBMC from the Contractor shall be set off against Security Deposit and in the event such amount is in excess of the Security Deposit/ **Performance Guarantee**, the excess amount shall be treated as an amount due towards the PBMC.

Clause No 26**: **Payment upon Termination:

a) If the contractor is terminated because of a fundamental branch of contract by the contractor, the engineer shall issue a certificate for the value of the work done less advance payment received up to the date of the issue of the certificate, less than other recoveries due in terms of the contract, less taxes due to deducted at sources as per applicable law.

b) If the contract is terminated at the Employer's convenience, the engineer shall issue a certificate for the value of the work done, the responsible cost of removal of equipment, repatriation of the contractor's personal employed solely on the works & the contractor's costs of protecting & securing the work & less advance payments received up to the date of the certificate, less other recoveries due in terms of the contract & less taxes due to be deducted at source as per applicable law.

Clause No 27: The Bidder shall submit periodically progress reports of Work to the Secretary, PBMC Municipal Council, PBMC.

Clause No 28: The materials not conforming to the required standard or Specification shall be removed at once from the Site of Work by the Bidder at his own cost. All the electrical and mechanical component shall conform to the relevant I.S (Indian Standard) codes specifications.

Clause No 29: The Bidder shall construct at its own cost shed/ sheds for storing materials as per the direction of the Secretary, PBMC. Such constructed sheds shall be removed on completion of Work.

Clause No 30: The Bidder shall make its own arrangements for the safe custody of the materials brought by it on Site of Work.

Clause No 31: The charges for conveying of materials from the place of purchase by the Bidder to the Site of Work and the actual spot on Work Site shall be entirely borne by the Bidder. No claims on this account shall be entertained.

Clause No 32: Separate register for Site Visit/ Instruction which are given by Secretary or Architect or Engineer of PBMC Municipal Council, shall be maintained by the Bidder

Clause No 33: The Bidder shall provide regular technical person on Site.

Clause No 34: Bidder will not be entitled for price variation claim.

Clause No 35: Arbitration is allowed as per dispute resolution clauses.

Clause No 36: The Municipal Council shall not be responsible for the loss in mechanical parts, equipment's and electrical item during transit to Work Site.

Clause No 37: **O&M Period**: For the O&M Period, the Bidder shall be paid the total price quoted for the Operations Services by way of 36 (thirty-six) equal monthly instalments.

Clause No 38: Completion:

As soon as the Build Services have, in the opinion of the Bidder, been completed in accordance with the scope of work and Technical Standards specifications, excluding minor items not materially affecting the operation or safety of the Faecal Sludge & Septage treatment plant and has satisfactorily passed all necessary tests on Commissioning, the Bidder shall so notify the PBMC in writing (the "Notice of Completion") and provide the as-built - Documents.

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

The PBMC shall, no later than 30 (thirty) days after receipt of the Bidder's notice either issue a Completion Certificate stating that the Faecal Sludge & Septage treatment plant has reached completion as of the date of the Bidder's notice or notify the Bidder in writing of any defects or deficiencies or both.

If the PBMC is not satisfied that the Build Services are complete, the PBMC shall notify the Bidder in writing of any defects or deficiencies no later than 7 (seven) days after receipt of the Notice of Completion.

If the PBMC notifies the Bidder of any defects or deficiencies or both, the Bidder shall then correct such defects or deficiencies, and shall repeat the procedure.

If the PBMC is satisfied that the Design-Build Services have reached completion, the PBMC shall, no later than 7 (seven) days after receipt of the Bidder's repeated Notice of Completion, issue a Completion Certificate stating that the Design-Build Services have reached Completion as of the date of the Bidder's repeated Notice of Completion.

If the PBMC fails to issue the Completion Certificate and fails to inform the Bidder of any defects or deficiencies 14 (fourteen) days after receipt of the Notice of Completion or 7 (seven) days after receipt of the Bidder's repeated Notice of Completion, then the Build Services shall be deemed to have reached Completion as of the date of the Notice of Completion or repeated

Clause No: 39 Commissioning and Operational Acceptance

Commissioning

Commissioning of the Faecal Sludge & Septage treatment plant shall be commenced by the Bidder immediately after issue of the Completion Certificate by the Engineer-In-Charge.

Tests on Commissioning

The necessary test shall be conducted by the Bidder during Commissioning of the Faecal Sludge & Septage treatment plant and all allied works to ascertain whether the Faecal Sludge & Septage treatment plant or the relevant part can attain the technical standards as required in the Contract. The Bidder's and Engineer-in-Charge's advisory personnel shall attend the Tests on Commissioning, and shall advise and assist the PBMC. The PBMC shall promptly provide the Bidder with such information as the Bidder may reasonably require in

relation to the conduct and results of the Tests on Commissioning, and any repeats thereof.

If for reasons not attributable to the Bidder, the Tests on Commissioning of the Faecal Sludge & Septage treatment plant cannot be successfully completed within 21 (twenty-one) days after the period from the date of completion specified or any other period agreed upon by the PBMC and the Bidder, the Bidder shall be deemed to have not fulfilled its obligations with respect to the tests on commissioning

Operational Acceptance

I. Operational acceptance shall occur in respect of the Faecal Sludge & Septage treatment plant when the Tests on Commissioning have been successfully completed.

II. At any time after the successful completion of the Tests on Commissioning, the Bidder may give a notice to the PBMC requesting the issue of an operational acceptance certificate ("**Operational Acceptance Certificate**") in respect of the Faecal Sludge & Septage treatment plant.

III. The PBMC shall, after consultation with the experts, and no later than 7 (seven) days after receipt of the Bidder's notice, issue an Operational Acceptance Certificate.

IV. If within 7 (seven) days after receipt of the Bidder's notice, the PBMC fails to

V. issue the Operational Acceptance Certificate or fails to inform the Bidder in writing of the justifiable reasons why the PBMC has not issued the Operational Acceptance Certificate, the Faecal Sludge & Septage treatment plant shall be deemed to have been accepted as of the date of the Bidder's said notice.

Clause No 40: Insurance policy – State Govt. resolution dated 19-8-98

Bidders shall take out necessary Insurance Policy/ policies so as to provide adequate insurance cover for execution of the awarded Contract work from the director of Insurance XYZ State–51 only. Its postal address for correspondence is "_____" (Tel. No. xxxxxxx/ xxxxxxx). The successful bidder shall procure the insurance for the following:

e-cum servicing arrangements approved by the director of In

a) Loss of or damage to the civil and mechanical and electrical equipment supplied/ installed including the materials such as pipes, valves, specials etc. brought on site;

A-
D-
C-
O-

b) Loss of or damage to Bidder's equipment including his vehicles;
c) Loss of or damage to property (except the work, plant material and equipment) in connection with the Bidder;
d) Loss of or damage to property (except the work, plant material and equipment) in connection with the Bidder; and
e) Personal injury or death due to vehicles of the Bidder and / or due to any accident that may arise at or around Site to the Bidder's personnel or to the PBMC/MJP staff or to any other person connected with MJP /PBMC Bidder.
f) Policies and certificates for insurance shall be delivered by the Bidder to the Engineer for the Engineer's approval before the date of actual starting of Work. All such insurance shall provide for compensation to be payable in the types of proportions of currencies required to rectify the loss of damage incurred.
g) If the Bidder does not produce any of the required polices and certificates, the Engineer may affect the insurance for which the Bidder was responsible
h) The minimum insurance cover for loss and damage to physical property, injury and death shall be 10% (ten percent) of the Contract cost per occurrence with number of occurrences as 4 (four). After each occurrence the Bidder shall pay additional premium necessary so as to keep the insurance policy valid always till the defect liability period is over.
i) No payment will be released to the Bidder until the insurance coverage with the Government insurance fund, State is provided and unless the proof of insurance coverage is produced by the Bidder to the Engineer-in-charge
j) Contractors all risk (Bidder's all risk policy) insurance will have to be taken before start of the Work.

Clause No 41: Commissioning and trial run of Faecal Sludge & Septage treatment plant

a) The plant shall then be on trial operation of 30 days during which period all necessary adjustments shall be made while operating, over the full load-range enabling the plant to be made ready for performance and guarantee tests. The contractor shall provide necessary staff. The trial operation shall be considered successful, provided that each item of the equipment can operate continuously at the specified characteristics, for the period of Trial Operation.

b) Bidder shall be responsible for carrying out all the necessary pre-commissioning tests. On completion of inspection, checking and after the pre-commissioning tests are satisfactorily, over, the complete plant shall be placed on initial operation during which period the complete equipment shall be operated integral with sub-systems and supporting equipment as a complete plant.

c) Any special equipment, tools and tackles required for the successful completion of the performance and guarantee tests the contractor will provide this free of cost.

d) The contractor during the performance and guarantee tests shall provide the guaranteed performance figures of the equipment. Should the results of these tests show any decrease from the guarantee values, the contractor shall modify the equipment as required to enable them to meet the guarantees. In such case, performance and guarantee tests shall be repeated within one week from the date the equipment is ready for re-test and costs for modifications including labor, materials and the cost of additional testing to prove that the equipment meets the guarantees, shall be borne by the contractor.

9 OPREATIONAL SERVICES

9.1 Introduction

The bidder shall ensure the operation and maintenance of the FSTP in compliance to the CPHEEO Manual on "Sewerage & Sewage Treatment", published by the Central Public Health Environmental Engineering Organization (CPHEEO), Ministry of Urban Development, Government of India, New Delhi and the prescription laid down hereunder.

9.2 Scope of Work

- The Bidder shall operate and maintain the Faecal Sludge & Septage treatment plant, and all other allied works under this contract, for a period of 3(three) years and provide the following services ("**Operations Services**"). Salient features of Operations Services are:

- After construction of the Faecal Sludge & Septage treatment plant, the Bidder shall operate and maintain FSTP plant as per specifications and maintain the quality of the treated effluent as prescribed in the Design-Build Documents.
- The Bidder will monitor the performance of the Faecal Sludge & Septage treatment plant; conduct the analysis of the inlet septage and effluent/septage quality after treatment. Bidder shall initiate and take adequate actions to ensure smooth and satisfactory performance / running of the plants on a 24 hours / round the clock basis.
- The Bidder shall prepare and implement an effective plant maintenance programme in consultation with the PBMC. It is an absolutely Bidder's responsibility to look after all sorts of maintenance whether preventive, minor, major or break-down.
- The Bidder will determine operating parameters, and generally optimize the process, and working of the treatment plant.
- The Bidder should plan & procure all spares and all consumables including chemicals, grease, lubricating oil, cleaning agents, laboratory reagents etc.
- The Bidder will be responsible for keeping up-to-date record of documents including history card for equipment and maintaining every day log book relating to various analyses performed.
- The Bidder at his/her own cost shall maintain and update logbook, in which details of operational parameters are recorded at regular interval as decided mutually.
- The FSTP will accept septage load from suction trucks from time to time in a day from 06:00 am to 11:00 pm, beyond which it should not accept septage load. Also, it should accept load only from the authorized contractor of PBMC only.
- The Bidder will prepare and submit a daily report of plant performance and will assist the PBMC in preparing the necessary documents for their purpose and records.
- The Bidder will be responsible to carry out day to day periodic maintenance, necessary to ensure to smooth and efficient performance / running of all equipment / instruments comprising the Faecal Sludge & Septage treatment plant and maintaining the record of the same.

- The Bidder shall have to issue identity cards with photographs to all the staff employed for operation and maintenance. The list of the same shall be submitted to the PBMC mentioning qualification & experience.
- The Bidder will also be responsible to carry out day to day maintenance inside the Faecal Sludge & Septage treatment plant premises.
- The Bidder will employ required staff for operation and maintenance of the Plant as per the list submitted by bidder in their proposal during 3 years of O&M period. The staff of Bidder will always remain in contact with the Junior Engineer, Assistance Engineer/Electrical Supervisor, in charge of the Plant deployed by the PBMC and follow their instruction.
- Unsatisfactory and inefficient running of the plant and unnecessary and excessive usage of spare, consumable, etc. supported by the reasons which are under control of Bidder will be highly objected. In such cases PBMC's decision will be final and binding to the Bidder.
- It is required that at least once in every one month a technical expert other than the Monthly Staff of the Bidder will visit the plant and will suggest if required, to improve the efficiency and working of the plant etc. No separate payment will be made for such visits. The visit must be recorded and outcome of the visit/minutes of the meeting should be signed by PBMC authorities without which the visit shall not be considered.
- Bidder will comply with all safety rules and regulations and all inter disciplinary as followed by the PBMC.
- The PBMC will not be responsible for any accident /injury to the staff of the Bidder. Further the PBMC will not provide any insurance or medical facility to the staff of Bidder. The responsibility lies with the Bidder.
- All Central/State Government / Semi-Government / Local Body's Rules and Regulations pertaining to this contract shall be followed and observed by the Bidder without any extra cost to the PBMC.

- No accommodation / guesthouse / transportation facility will be provided by PBMC to the Bidder. Operation & maintenance staff will not be allowed any accommodation facility inside the plant premises.
- The Bidder should employ all the staff within 7(seven) days of successful commissioning.
- The Bidder will provide the necessary tools and tackles required for day-to-day maintenance.
- The scope of work also includes cleaning of complete plant area including floor, toilet block railing, door, windows, light fixtures and ceiling etc. The entire premises of the plant area shall also be cleaned and maintain by the Bidder regularly.
- This work is inclusive of but not limited to operation, maintenance, housekeeping, cleaning, removing sludge by its own carrier arrangement & disposes it off as per PBMC's instructions.
- BOT Tender Document for Faecal Sludge & Septage Treatment Plant at City PBMC, XYZ
- Preparing data recording, correspondence work to PBMC and Government departments, etc. All this work should be done as per standard practices and by following labour, factory, electrical, and all other old and new law and order, Indian standards etc. as applied of Local, State and Central Government of India.
- Right is reserved by PBMC for suspension, dismissal, termination of any officer / staff employed by Bidder. He shall have taken prior permission to employ or to terminate his personnel.
- No watch and ward, safety insurance, security, storage, housing accommodation etc. will be provided by PBMC. This will be responsibility of Bidder.
- Consumable items like rubber bush, graphite packing, rubber sheet, nut-bolts, material require for cleaning and housekeeping etc. are to be brought by the Bidder.
- Electricity charges including diesel in case of power failure required for operation & maintenance of the Plant shall have to be borne by the Bidder. The Bidder should provide

- all other consumables like polyelectrolyte, chlorine, oil & grease etc. All the formalities to all Government authorities for factory, electrical, etc. for obtaining no objection certificate, water consent, hazardous waste concern, approval etc. shall be done by the Bidder.
- Monitoring should be done as per guidelines provided by PBMC. Bidder has to maintain all the parameters of effluent within stipulated limit or he will be penalized for not maintaining the prevalent discharge standards of State Government and as amended from time to time. All expenditure incurred for the same like, suit fee, court fee, case fee, or the penalty as decided by Engineer of PBMC and penalty charged by relevant government authority will be charged to Bidder and deducted from his bills, security Deposit etc.
- Bidder shall have to test the effluent / influent at his own cost at the government approved laboratory as per schedule mentioned in bid document. The same be verified by and checked by PBMC whenever required.
- No equipment shall remain ideal or un-attended or damaged for the period of 3 (three) days. If any equipment is not repaired, rectified and or replaced within 3 (three) days, the Bidder will be penalized with no limit at the rate of INR 2000/- (Indian rupees two thousand) per day delay per each individual equipment of the plant.
- If the Faecal Sludge & Septage treatment plant remains non-functional for more than 3 consecutive days, the Bidder will be penalized at the rate of INR 10000/- (Indian rupees ten thousand) per day delay beyond 3 days.
- The payment of O&M charges will be made as per the tender conditions. The other terms and condition described in these complete tender documents, wherever applicable shall remain unchanged. In case of any discrepancy the decision of PBMC will remain final & binding on the Bidder.
- During O&M Period, Bidder has to supply all the spares, at his cost during preventive, major- minor breakdown, replacement and maintenance work. No extra payment will be made for such maintenance on any ground. The payment for the same will be made strictly as per tender document irrespective of the number of break down /

minor, major repairs replacements. During the O&M Period, the Bidder will have to enter into annual maintenance agreement with manufacturers of all major mechanical equipment.

- Maintenance of garden, lawns, plants, bushes, plantation of new plants, lawns etc. and feeding, gardening, cleaning etc. is in the scope of the Bidder. No separate payment will be made for the same.
- The Bidder during his O&M Period will have to follow all the guidelines set by relevant government authority of XYZ state for operation & maintenance of Faecal Sludge & Septage treatment plant.
- Operation and maintenance of all General facilities and utility services including all other components of work done under this Contract.
- The Bidder shall also dispose of the sludge, screenings, grit and any other material, as per specifications and to the satisfaction of the PBMC. It is to be noted that all costs during the O&M Period, including the cost of power and chemicals are to be borne by the Bidder.
- Within his quoted cost, the Bidder is to ensure that guarantees are maintained during the O&M Period for quality of treated effluent, treated septage, consumption of chemicals and for automation.
- The Bidder shall provide on job training to the local body staff as per specifications.
- At the end of every year of operation & maintenance period, an assessment of the condition of the plant has to be done by the Bidder through third party inspection at his own cost and based on that assessment the Bidder shall, at no extra cost to the PBMC, repair and re-condition all the mechanical equipment in the concluding year of the O&M contract to a condition so that they are in running condition with regular preventive and recommended maintenance as per manufacturer's recommendations or as per CPHEEO manual.
- Variability of Throughput: If the quantity of treated septage from the Plant increased in the existing system without impacting the annual fixed costs to the Bidder, the Bidder shall comply with such requirements.

9.3TESTS TO BE CARRIED OUT DURING O&M PERIOD

- Sampling and testing to be carried out as per CPHEEO guideline. Tests are to be carried out under the supervision of qualified staff and as per instructions of the Engineer-in-Charge. The responsible employee of the contractor will indicate the details of sample locations timings on the sample template.
- The Bidder should get analysed / checked the untreated as well as treated septage and effluent samples and tested in approved government laboratory at his own cost. The MPCB Vigilance testing charges for samples directly collected by MPCB are also to be borne by the Bidder.
- During routine monitoring, samples of influent, effluent are analysed based on the Analysis Schedule given in the following Table for the given parameters.

Sr. No	Description of Sample	Frequency	Location of Sampling	Type of Sample	Test parameters
1	Influent septage	Two times in a month	Before screening	Grab	Temp, pH, BOD, COD, TSS, VSS, Alkalinity, Sulphate, Faecal Coliform, Total Coliform
2	Treated Effluent Wastewater	Two times in a month	After Treatment unit	Grab	Temp, pH, BOD, COD, TSS, VSS, Alkalinity, Sulphate, Faecal Coliform, Total Coliform
3	Treated Septage/Sludge	Two times in a month	After treatment unit	Grab	Moisture content, NPK Value
4	Treated Septage/Sludge	One sample in every Six months	After treatment unit	Grab	Helminth Eggs

Test parameters of treated quality shall be within the prescribed limits as issued by A&N Pollution Control Committee for STP/FSTPs.

A. Staff

The Bidder shall mention the number and nature of personnel required for O&M in his bid. Non-employment of those personnel during O&M as per the Bid will lead to imposition of penalty as mentioned in Contract data.

B. SAFETY /SECURITY

The Bidder shall take all safety precautions under various Acts/Rules under central/State Govt. from time to time and he shall be responsible for safety of its staff and the consequences thereof. The Bidder shall deploy round the clock security personnel at entrance of Plant's premises and in the compound for the safety of the Plant and premises for the safety of the Plant, equipment and personnel during this period.

C. Responsibility for damages

The Bidder shall ensure that the staff employed takes all necessary precautions while carrying out the work either in shift duties or any general shift as per Indian Electricity Rules/Factory Act/CPHEEO Manual, or manufacturer's special instruction for safety / gas handling. The staff should use gas masks, oxygen apparatus, gum boots, safety belts and safety lamps, etc. while carrying out the work in bar screens, sumps etc.

D. REPORTING

The Bidder at its own cost will prepare and print daily and monthly reports (in approved PBMC format) of pumping/treatment and project performance and submit to the PBMC and will assist the department in preparing the necessary documents for their purpose and record as per proforma given from time to time. The reports shall contain, inter-alia, the following:

Raw Septage quantity and quality and effluent quality as per the monitoring format and other tests as specified in this section shall be submitted to Engineer-in Charge. Treated quality of septage and effluent as per monitoring format and shall be submitted to Engineer-in-charge. The plant manager shall verify the daily record as well as the calculations and shall be responsible to generate further data using these.

- A description of the maintenance work carried out in the reporting period.

- A report on major failures, if any, their causes and remedial actions taken.
- Sludge quality and quantity (daily basis) in the reporting period.
- Power and chemicals consumed in the reporting period.
- An inventory of the chemicals and spare parts available at the end of the reporting period.
- O&M staff deployed by the Bidder during the reporting period.
- Any major repair works, if any.
- Bidder is required to maintain separate register/computerized records at all sites of following information:
    i. Pumping register
    ii. Quantity of septage/ sewage treatment and performance register
    iii. Working hours register
    iv. Electric break down register
    v. Maintenance register
    vi. Staff attendance register

E. Site Order Book

Site order book shall be kept by the Engineer-In-Charge at the Plant site. Orders entered in this book by the PBMC or his authorized representative shall be held to have been formally communicated to the Bidder. The Engineer-In-Charge or his authorized representative shall sign each order as it is entered and will hand over the duplicate to the Bidder or his agent, who shall sign the original in acknowledgment of having received the order.

F. Technical Audit

The PBMC has the right to conduct a technical audit of the Plant and to perform any analysis or inspection he deems necessary. The Bidder shall at his cost provide all assistance the PBMC required to complete these inspections. Such audits may cover all or any of the obligations of the Bidder, including without limitation,

- Verification of the system capacity and save for normal wear and tear during the O&M Period.
- Verification of the performance standards and useful life of the individual assets of the Facility, save for normal wear and tear during the O&M Period.
- Verification of the capacity of the Plant to meet output standards during the residual life of the Plant and save for normal deterioration expected during such residual life.
- Sampling, testing and verification of the output standards for treated septage / effluent.

G. Operation and Maintenance Manual

The Bidder shall prepare a detailed program (referred to as O&M Manual) covering the operation and maintenance of the treatment plants as a whole.

The O&M Manual shall include the daily, weekly, monthly, quarterly, half yearly and annual checks and remedies if necessary to be performed for effective operation of the plant, elaborate detail, all operating and maintenance procedures and policies which are required, advisable and /or necessary for the FSTP facility to achieve full compliance with the operational guarantees and to achieve maintenance and repair standard for the Facility which will ensure compliance with the maintenance specifications. The O&M manual shall include *interalia* full explanation of all plant procedures and processes.

Without limiting the generality of the foregoing, the O&M Manual shall include descriptions, procedures and shall comply with the requirements, set forth in the provisions of the Bid Documents.

The draft of the O&M Manual shall be subject to the review and approval of PBMC, which shall have the right to make any changes and revisions to the O&M Manual as it may deem appropriate. The Bidder shall revise such draft O&M Manual prior to the commencement of the O&M period.

At the end of the construction period, the Bidder shall revise the draft O&M Manual to reflect any updates, changes or revisions it deems appropriate, inter-alia based on its experience and as necessary to reflect any modifications or adjustments to the plant.

Without limiting the above, the Bidder shall annually fully review, revise, update and modify the draft O&M Manual as may be necessary or appropriate. Any revision to the draft O&M Manual shall be subject to the review and approval of PBMC.

PBMC shall have the right to require revisions to the draft O&M Manual as it may deem appropriate. The Bidder shall prepare and submit to PBMC, for its review and approval, 30days prior to the proposed date of commencement of O&M, a revised draft O&M Manual which reflects all changes, revisions and modifications. The Bidder shall prepare the O&M Manual, as approved by the PBMC, prior to the start of O&M.

H. TRANSITION PLAN – Taking Over

The transition plan shall include,

a) plans to transfer the Faecal Sludge & Septage treatment plant to the subsequent operator as designated by the PBMC;

b) transition plans with respect to the Operator's personnel including a plan for transition of the Operator's personnel to a subsequent operator;

c) a proposed process for the transfer of all Contract records to the PBMC;

d) plans to transfer operations and maintenance functions to the subsequent operator; and

e) a program to train staff of the PBMC in all aspects of the operation and maintenance of the Plant and the facilities.

I. Taking Over after completing of O&M Period of 3 Years

a) The Plant will be taken over by PBMC on satisfactory completion of the O&M Period of the plant provided that

b) The plant /equipment are in good, smooth running condition.

c) The result of the treated effluent/septage quality for last 3 (three) months of operation of the plant is within the limits specified.

d) In case of major repairs /replacement of equipment, the performance guarantee for such unit/equipment is extended by 6 (six) months from the date of putting back in to

satisfactory operation of such unit/equipment in case such putting back is at the end of completion of O&M period.

e) All records of operation and maintenance are handed over to PBMC in proper condition.

f) The third-party Inspection of the plant viz: Civil units, mechanical units/equipment, electrical units/equipment, instruments & all other Major& minor units/machines has to be carried out & the defects unsatisfactory working performances of the equipment/ machines are to be corrected by the Bidder at his own cost. The necessary third-party inspection agency shall be appointed and payment shall be borne by the Bidder.

g) The Bidder should repaint the plant including all civil structures, mechanical, electrical equipment's/ units /structures as per the tender specifications.

In case taking over is delayed on account of Bidder's failure, the O&M period will be extended further till it meets the requirement without any extra cost to PBMC. The Bidder will also be penalized for such delays.

10 TECHNICAL SPECIFICATIONS

Technical specifications for Faecal Sludge & Septage treatment plant to be read in conjunction with scope of work, design criteria and other technical details:

10.1 LIST OF IMPORTANT INDIAN STANDARDS:

The following list includes various Indian Standards which are IMPORTANT and are referred to in the general specifications and used in construction works. These standards are to be strictly adhered to unless otherwise is applicable in the relevant context. These standards are to be followed both in respect of materials and construction of civil engineering works included in the tenders.

Though the list of Indian Standards includes the year of Publication of the standard, it may not in all cases be the latest. It is obligatory that only the latest edition of the standard is referred to and followed, along with all amendments and revisions issued with respect to the standard under consideration. This list is not exhaustive but contains only the standards that are very frequently used on the construction works. If a standard exists for a particular item of material or equipment or code of practice the same shall be followed whether the same is included in this list, specifications, other parts of the tender documents or not.

All standards which the Bidder intends to use but which are not part of the above Standards or other listed Reference Standards, shall be submitted to the Engineer for consent before any design against that standard proceeds

10.2 MECHANICAL SPECIFICATIONS

The contract includes design, manufacture, testing at works, supply and delivery at site, unloading, storing till the time of erection, installation, testing and commissioning of mechanical equipment as per codes mentioned in the following sections. It shall be designed, assembled and tested to the satisfaction of the Executive Engineer and shall conform to the relevant standards published by the Indian Standards Institution, wherever available, in order that specific aspects under the Indian Conditions are taken care of.

10.3 Reference to specifications/ code of practice

BIS No	Description
1536	Centrifugally Cast (Spun) Iron pressure pipes for Water, gas and sewage including fittings.
8329	Specifications for Centrifugally Cast (Spun) D.I. Pipes for Water, Gas and Sewage.
9523	D.I. Fittings for pipes for water, gas & sewage
12820	Dimensional requirements of rubber gaskets for Mechanical joints and push on joints for the use With C.I. D.I. Pipes
13382	C.I. Specials for Mechanical and push on flexible joints for pressure pipe lines for water, gas & sewage
7181	Horizontally cast-iron double flanged pipes for water, Gas and sewage
1538 (Part 1 to 24)	Cast iron fittings for pressure pipes for water, gas And sewage
5382	Rubber rings for jointing C.I. Pipes, R.C.C. Pipes & AC. Pipes
5382	Rubber rings for jointing P.S.C. pipes
6587	Hemp yarn
638	Rubber Insertion to be used in jointing CIDF pipes
1363	Bolts & Nuts to be used in jointing CIDF Pipes
1363	Unplasticized PVC Pipes for potable water supplies
7834 (Part 1 to 8)	Injection moulded PVC socket fittings with Solvent cement
joints for water supplies.	
10124 (Part 1 to 13)	Fabricated PVC fittings for potable water supplies
12235 (Part 1 to 11)	Methods of test for un-plasticized PVC pipes for potable water supplies
780	Sluice valves for water works purposes (50 to 300 mm Dia. size)
2906	Sluice valves for water works purposes (300 to 1200 mm Dia. size)
3950	Surface boxes for sluice valves
1726	Manhole covers for sluice valves
783	Laying of Concrete pipes
3114	Laying of Cast-Iron Pipes
126 of APSS & 783	Laying of PSC Pipes
12288	Laying of C I Pipes
7634 (Part 3)	Laying and jointing of Unplasticized PVC pipes
IS: 651	Stoneware pipes
IS: 4111 Part I & II	Code of Practice for Ancillary Stoneware's in sewerage system
IS: 12592 Part I & II	Precast Manhole covers and frames
IS: 456	Code of Practice for plain and reinforcement concrete

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

1791	Batch type concrete mixer
4616	Sheep foot roller
3764	Safety code for excavation works
3696 (Part I) 3696 (Part-II)	Safety code for scaffolds and ladders Part-I Scaffolds Part II- Ladders
5121	Safety code for piling and other deep foundations
7293	Safety code for working with construction machinery
CPHEEO Manual	Government of India Manual on Water Supply and Treatment Government of India Manual on Sewerage and Sewage treatment
4091	Gravel for packing
1785 (Part I and II)	Hard drawn Steel Wire
226	Structural Steel
1139	Hard rolled mils steel for concrete
1566	Hard drawn Steel Wire
American Society for Testing of Materials	
2494 Part I	British Standard
814	Welding Electrodes
225	Steel Sheets
7322	Guniting
3589 and 2041	Welded Joints
223	Tensile Test
Mechanical and Electrical Works	
3043	Earthing
1180	Transformer

10.4 ELECTRICAL SPECIFICATIONS

Introduction:

This section of the specification sets out the standard for items of electrical system to be executed by the Bidder. This section describes the basic system that has to be adopted for the electrical power distribution of Faecal Sludge & Septage treatment plant. The selection of power distribution system equipment ratings and layout of the electrical equipment shall consider ease of installation, maintenance and modular addition of equipment for future expansion. All the components of the electrical system shall withstand the environmental conditions of the local region as described hereafter.

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

The equipment shall be complete in all respects and device not included in the specifications but essential from code, regulation, statutory requirement, standard practice or operational flexibility point of view shall be included by the Bidder.

Standards

The equipment standards applicable for the design and installation of the electrical, control, monitoring systems are the relevant Indian standards. Cognizance shall also be taken of International standards i.e. International Electro Technical Commission (IEC) where Indian standard is not available or not clear about the subject.

It shall be designed, assembled and tested to the satisfaction of the Executive Engineer and shall conform to the relevant standards published by the Indian Standards Institution, wherever available, in order that specific aspects under the Indian Conditions are taken care of. Use the latest issue of Standards. Make available at least one copy of Standards for reference during construction.

The applicable standards established by the Bureau of Indian Standards govern the materials and workmanship employed in the manufacture of all equipment/items are:

IS191	Copper –Specification
IS319	Free Cutting Leaded Brass Bars, Rods and Section Specification
IS325	Three phase induction motors
IS 335	New insulating oils
IS374	Electric ceiling type fans and regulators
IS 379	Anhydrous sodium sulphate, pharmaceutical
IS 513	Cold reduced low carbon steel sheets and strips.
IS 694	PVC Insulated cables for working voltage up to and including 1100 V
IS 722	Specification for AC Electricity Meters
IS 732	Code of practice for electrical wiring installations
IS 1079	Hot Rolled Carbon Steel Sheet and Strip Specification
IS1169	Electric pedestal type fans and regulators
IS1248	Direct acting indicating analogue electrical measuring instruments and their accessories
1255	Code of practice for installation and maintenance of power cables up to and including 33kV rating.
IS 1271	Thermal evaluation and classification of electrical insulation.

IS 1293	Plugs and socket-outlets of rated voltage up to and Including250 volts and rated current up to 16 amperes – Specification.
IS 1544	Cotton calico
IS 1554	PVC insulated (heavy duty) electric cables
IS 1868	Anodic Coatings on Aluminium and its Alloys–Specification.
IS 1897	Copper strip for electrical purposes – Specification.
IS 1944	Code of practice for lighting of public thoroughfare: Part 5 Lighting for grade separated junctions, bridges and elevated roads.
IS 2026	Power transformers
IS 2062	Hot Rolled low, medium and high tensile structural steel IS 2099 Bushings for alternating voltages above 1 000 Volts
IS 2148	Electrical apparatus for explosive gas atmospheres –Flameproof enclosures
IS 2190	Selection, Installation and Maintenance of First-aid Fire Extinguishers —code of practice.
IS 2206	Flameproof electric lighting fittings
IS 2253	Designation for types of construction and mounting arrangement of rotating electrical machines
IS2309	Code of practice for protection of buildings and allied structures against lightning.
IS 2419	Dimensions for panel mounted indicating and recording electrical instruments
IS2544	Porcelain post insulators for systems with nominal voltage greater than 1000 V.
IS 2546	Specification for galvanized mild steel fire bucket.
IS 2551	Danger notice plates
IS 2629	Recommended Practice for Hot-Dip Galvanizing of Iron and Steel
IS 2633	Methods for testing uniformity of coating of zinc coated articles
IS 2667	Fittings for rigid steel conduits for electrical wiring
IS 2705	Current transformers
IS 2925	Specification for Industrial Safety Helmets
IS 2993	A.C. motor capacitors
IS 3043	Code of practice for earthing
IS 3070	Lighting arresters for alternating current systems
IS 3156	Voltage transformers
IS 3231	Electrical relays for power system protection
IS 3347	Dimensions for porcelain transformer bushings for use in lightly polluted atmospheres.
IS 3400	Methods of test for vulcanized rubbers IS 3419-Fittings for rigid non-metallic conduits
IS 3427	A.C. Metal Enclosed Switchgear and Control gear for Rated Voltages Above

	1 kV and Up to and Including 52 kV.
IS 3480	Flexible steel conduits for electrical wiring
IS 3646	Code of practice for interior illumination
IS 3837	Accessories for rigid steel conduits for electrical wiring
IS 3842	Application guide for electrical relays forac systems
IS 3854	Switches for domestic and similar purposes.
IS 3975	Mild steel wires, formed wires and tapes for armoring of cables
IS 4759	Hot-dip zinc coatings on structural steel and other allied products
IS 4770	Rubber Gloves – Electrical Purposes –Specification.
IS4795	Holders for Indicator Lamps for Electronic and Telecommunication Equipment.
IS 5571	Guide for selection of electrical equipment for hazardous areas
IS 5572	Classification of hazardous areas (other than mines) having flammable gases and vapours for electrical installation
IS 5578	Guide for marking of insulated conductors
IS 5621	Hollow insulators for use in electrical equipment
IS 5819	Recommended short-circuit ratings of high voltage PVC cables.
IS 5831	PVC insulation and sheath of electric cables
IS 6229	Method for Measurement of Real-ear Protection of Hearing Protectors and Physical Attenuation of Earmuffs
IS 6600	Guide for loading of oil immersed transformers
IS 6665	Code of practice for industrial lighting
IS 7098	Crosslinked polyethylene insulated PVC sheathed cables
IS 7752	Guide for improvement of power factor in consumer installation
IS 8130	Conductors for insulated electric cables and flexible cords
IS 8224	Electric lighting fittings for division 2areas
IS 8468	On-load tap changers
IS 8478	Application guide for on-load tap changers
IS 8752	Towing hook for use between trailers of up to 5 tonnes gross mass and transport tractor
IS 8789	Values of performance characteristics for three phase induction motors
IS 8828	Electrical Accessories - Circuit Breakers for Over Current Protection for Household and Similar Installations
IS 9283	Motors for submersible pump sets
IS 9334	Electric motor operated actuators
IS 9537	Conduits for electrical installations
IS 9583	Emergency lighting units
IS 9677	Guide for limits of temperature-rise of the windings of electrical equipment when tested by different methods
IS 9678	Methods of measuring temperature rise of electrical equipment.

IS 9921	Alternating current dis connectors (isolators) and earthing switches for voltages above 1000 V
IS 9974	High pressure sodium vapour lamps
IS 10118	Code of practice for selection, installation and maintenance of switchgear and control gear
IS 10322	Luminaires
IS 10418	Drums for electric cables
IS 10601	Dimensions of terminals of high voltage switchgear and control gear
IS 10810	Methods of test for cables
IS 11037	Electronic type fan regulators
IS 11171	Specification for Dry-Type Power Transformers
IS 11353	Guide for uniform system of marking and identification of conductors and apparatus
IS 12065	Permissible limits of noise level for rotating electrical machines
IS 12615	Energy efficient induction motors- three phase squirrel cage
IS 13340	Power Capacitors of Self-healing Type for AC Power Systems having Rated Voltage up to 650 V – Specification
IS 13341	Requirements for ageing test, self-healing test and destruction test on shunt capacitors of the self-healing type for ac power systems having a rated voltage up to and including 650 V
IS 13346	Electrical apparatus for explosive gas atmospheres-General requirements
IS 13369	Stationary lead acid batteries (with tubular positive plates) in monobloc containers
IS 13383	Methods of Photometry of Luminaires.
IS 13440	Code of safety for methyl chloride
IS 13703	Low Voltage Fuses for voltages not exceeding 1000V AC or 1500 V DC.
IS 13779	AC Static Watt-hour Meters, Class1 &2
IS 13849	Specification for portable fire extinguisher dry powder type (constant pressure).
IS 13875	Digital measuring instruments for measuring and control.
IS 13925	Shunt capacitors for ac power systems having a rated voltage above 1000 V.
IS 13947	Low-voltage switchgear and control gear
IS 14697	AC Static transformer operated Watt hour and VAR Hour Meters
IS 14981	Live working-Earthing or earthing and short-circuiting equipment using lances as a short-circuiting device-lance working
IS 14927	Cable trunking and ducting systems for electrical installations
IS 14993	Saddles, pole clamps (stick clamps) and accessories for live working
IS 15086	Surge arresters
IS 15652	Insulating mats for electrical purposes – Specification.

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

Other applicable standards established by the International Electro technical commission (IEC), NFC etc. govern the materials and workmanship employed in the manufacture of all equipment/items are:

IEC 60076	Power transformers – Part 11: Dry-type transformers.
IEC60335	Household and similar electrical appliances - Safety - Part1: General requirements
IEC60669	Switches for household and similar fixed-electrical installations -Part 1: General requirements
IEC 60751	Industrial platinum resistance thermometers and platinum temperature sensors
IEC 60789	Medical electrical equipment – Characteristics and test conditions of radionuclide imaging devices – Anger type gamma cameras
IEC 60896	Stationary lead-acid batteries – Part 22: Valve regulated types – Requirements.
IEC 60947	Low-voltage switchgear and control gear – Part 1: General rules.
IEC 61537	Cable management - Cable tray systems and cable ladder systems.
IEC61643	Low-voltage surge protective devices – Part 12: Surge protective devices connected to low-voltage power distribution systems – Selection and application principles.
IEC61921	Power capacitors – Low-voltage power factor correction banks.
IEC62305	Protection against lightning - Part 4: Electrical and electronic systems within structures.
IEC 62271	High-voltage switchgear and control gear - Part 101: Synthetic testing

The Diesel Generating Set with all its components shall comply with latest applicable standards, regulations and safety codes in the locality where this equipment will be installed. The equipment shall conform to the following standards with latest amendments.

Standard No.	**Title**
IS: l460	Automotive diesel fuel Specification
IS: 2253	Designation for types of construction and mounting arrangement of Rotating Electrical Machines
IS: 4889	Methods of determination of efficiency of rotating electrical machines
IS: 6362	Designation of methods of cooling of rotating electrical machines
IS 8223	Dimensions and output series for rotating electrical machines
IS 12065	Permissible limits of noise level for rotating electrical machines

IS 12075	Mechanical Vibration of Rotating Electrical Machines for rotating electrical machines
IS 14568	Dimensions and output series for rotating electrical machines Part-2
IS/IEC 60034	rotating electrical machines
BS 5000	Specifications for Rotating Electrical Machines of particular types or for particular applications
BS 5514	Reciprocating Internal combustion engines- performance Specification for over speeding protection
BS ISO 3046	Reciprocating Internal combustion engines- performance speed governing
BS ISO 8528	Reciprocating Internal combustion engine driven alternating current generating sets

10.5 LETTER OF ACCEPTANCE

Acceptance Letter

---- On letterhead paper of the Employer ----

<<<<DATE>>>>

To:

<<<<NAME & ADDRESS of the contactor>>>>>>

Subject:

<<<<NOTIFICATION OF AWARD CONTRACT NO<<<<

This is to notify you that your Bid dated . . .. DATE . . .. For execution of the . . . . NAME OF THE CONTRACT AND IDENTIFICATION NUMBER, as given in the Appendix to Bid . . . . for the Accepted Contract Amount of the equivalent of . . . . . AMOUNT IN NUMBERS AND WORDS AND NAME OF CURRENCY . . . . . ., as corrected and modified in accordance with the Instructions to Bidders is hereby accepted by our Agency.

Attachment: Contract Agreement

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

10.6 CONTRACT AGREEMENT

THIS AGREEMENT made the . . . . . day of . . . ., ..., between . . . . . NAME OF THE EMPLOYER. . ... (here in after "the Employer"), of the one part, and . . .. NAME OF THE CONTRACTOR. . . ... (here in after "the Contractor"), of the other part:

WHEREAS the *Employer* desires that the Works known as . . .. NAME OF THE CONTRACT. . .. should be executed by the Contractor, and has accepted a Bid by the Contractor for the execution and completion of these Works and the remedying of any defects therein,

The Employer and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.

2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other Contract documents.

    a) The Letter of Acceptance

    b) The Bid

    c) The Particular Conditions

    d) The Specification

    e) The Drawings; and

    f) The completed Schedules,

3. In consideration of the payments to be made by the Employer to the Contractor as indicated in this Agreement, the Contractor hereby covenants with the Employer to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.

4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of . . .. India. on the day, month and year indicated above.

Signed by.....	Signed by.....
For and on behalf of the Employer	for and on behalf the Contractor
in the presence of:	In the presence of:
Witness, Name, Signature, ADDRESS, Date	Witness, Name, Signature, Address, Date

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

10.7 RECAPTULATION SHEET

Name of Work: CONSTRUCTION OF FAECAL SLUDGE TREATMENT PLANT OF 42 KLD CAPACITY (FSTP) AND NECESSARY WORK FOR SETTING UP PLANT, AT BROOKSHABAD DRY RESOURCE CENTRE OF PBMC.						
RECAPTULATION SHEET						
Sr. No	**Description**	**Estimated Cost**		**Quoted Total Amount**		**% above or below**
		Rs. In Figure	**Rs.in words**	**Rs. In Figure**	**Rs.in words**	
1	Supply/Erection/Installation of MBBR plant as per the specification given in the annexture-1					
2	Supply/Erection/Installation of Rotary Drier as per the specification given in the annexture-1					
3	Supply/Erection/Installation of Belt Press as per the specification given in the annexture-1					
4	Supply/Erection/Installation of Pumps as per the specification given in the annexture-1					
5	Supply/Erection/Installation of generators of adequate capacity and specification given in the annexture-1					
6	Supply/erection/ installation of Piping,					

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

	Mechanical, Electrical & Instrumentation works along with spares as specified etc. complete as per technical design specification and on testing, commissioning and satisfactory trial runs etc. as approved by Engineer-In-Charge					
7	Supply of Desludging truck having load carrying capacity of 4KL as per the specification enclosed here in annexture-1 (1Nos)					
8	Supply of Water tanker of water storage capacity of 5KL as per the specification enclosed here in annexture-1 (2Nos)					
9	Providing and installation of GPS system for the Desludging vehicles (4Nos) The specification is mentioned in the annexture-1					
10	Supply/Installation/Commissioning of CCTV system for FSTP pant at proper location given by the engineer in charge or higher authority person from PBMC					
	Total Cost					
Note: The above quoted final cost is inclusive of Govt taxes. The payment for the taxes to de deducted from the submitted RA Bill. In case of tax exemption relevant document proof to be enclosed along with the bill or submitted earlier i.e. during the submission of tendering document.						

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

ANNEXURES

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

ANNEXTURE 1: WORK DETAILS

Form No: 1 – Name of work, details of work of similar type and magnitude carried out by the tenderer							
Sr. No	**Name of Work**	**Cost of Work**	**Date of starting work**	**Stipulated date of Completion**	**Actual date of Completion**	**Time in which completed**	**Remarks**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

Form No 2 Details of other works tenderer has in hand at the time of submission of tender									
Sr. No	**Name of work**	**Place of work**	**Work in Hand**			**Work Tendered for**			
			Tender cost	**Cost of remaining work**	**Anticipated date of completion**	**Estimated cost and date**	**Expected date of decision**	**Stipulated period of completion**	**Remarks**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

Form No 3 - Details of plants and Machinery immediately with the tenderer for the use of this work							
Sr. No	**Name of Equipment**	**No, of unit's plants**	**kind and make**	**capacity**	**Age condition**	**Present location and condition**	**Remarks**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

Form No 4 - Details of Technical personnel with the tenderer						
Sr. No	**Name of Person**	**Qualification**	**Location of work (field or office)**	**Experience execution of similar type works in detail**	**Period for which person is working with the tenderer**	**Remarks**
1	**2**	**3**	**4**	**5**	**6**	**7**

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

Form No: 5 Year wise statement showing cost of completed works						
Sr. No	**Name of work**	**Year for construction**	**Year wise cost of executed work**			**Remarks**
			2014-15	**2015-16**	**2016-17**	
1	**2**	**3**	**4**	**5**	**6**	**7**

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

ANNEXTURE-2 MODEL FORM FOR O&M

FORM 1 - DAILY FORMAT			
Septage quantity received at Treatment plant			
Name of Urban Local Body:			Date:
Sr. No.	Truck number plate details	Capacity of septage sucking machine (Cum)	Volume of septage collected at treatment plant (Cum)
	Total daily septage received at treatment plant (cum)		

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

FORM 2 - MONTHLY FORMAT		
Name of Local Body:		**Submission Date:**
Date	**Total number of trips**	**Volume of septage collected at treatment plant (Cum)**
Monthly Average		

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

FORM 3 - MONTHLY FORMAT OF QUALITY TEST					
Wastewater Quality: Mandatory tests					
Name of Urban Local Body: Port Blair Municipal Council, A&N			Submission date:		
Name of Laboratory					
Parameters to be tested: 1) Temp 2) pH 3) BOD 4) COD 5) TSS 6) VSS 7) Alkalinity 8) Sulphate 9) Faecal Coliform 10) Total Coliform 11) Moisture content 12) NPK Value 13) Helminth Eggs					
Sr. No.	**Sample date**	**Location of sample**	**Type of sampling (grab / composite)**	**Tested parameters (from 1 to 13)**	**Passed Parameters as per standards (from 1 to 13)**

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

FORM 4 - SCHEDULE OF REPLACEMENT OF KEY COMPONENT					
Sr No	**Name of equipment/ component/ parts/ tool**	**Unit**	**Estimated cost**	**Replacement year/ Duration**	**Patented component (Yes/ No) If Yes, remark**

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

ANNEXTURE 3 – LAND AVAILABILITY DETAILS

Details of availability of land for Faecal Sludge & Septage treatment plant							
Sr. No	**Location**	**Survey No**	**Gat No**	**Land Area in (sq.-m)**	**Type of land Agriculture/Non-agriculture**	**Present use**	**Ownership of land**

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

ANNEXTURE 4 - COST BREAK-UP FORM FOR O&M

O&M FSTP and allied works etc. complete for a period of 3 (three) years		
Sr No	**Description of Components**	**Percentage cost break up (%)**
1	Percentage cost for salary for O&M of FSTP to total price bid quoted for Schedule B	
2	Percentage cost for electricity charges for O&M of FSTP to total price bid quoted for Schedule B	
3	Percentage cost for repair and maintenance charges for O&M of FSTP to total price bid quoted for Schedule B	
4	Percentage cost for Miscellaneous/ others charges for O&M of FSTP to total price bid quoted for Schedule B	

NOTE: Any cost escalation after execution against the quoted rates in Schedule B, will be borne by the Contractor/Firm.

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

SCHEDULE OF ITEMS

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

BELT PRESS FOR THE FSTP AT PORT BLAIR							
Sr. No	**Quantity**	**Item Description**	**Item Code No**	**Unit**	**Unit rate**		**Amount**
					In INR	**In Words**	
1	1	Providing and Laying and Commissioning the Belt Press as per the Dimension and Specification enclosed here. Including all etc. Complete.	Non Schedule Item/ Market Rate	No			

ROTARY DRIER FOR THE FSTP AT PORT BLAIR							
Sr. No	**Quantity**	**Item Description**	**Item Code No**	**Unit**	**Unit rate**		**Amount**
					In INR	**In Words**	
1	**1**	Providing and Laying and Commissioning the Rotary Drier as per the Dimension and Specification enclosed here. Including all etc. Complete.	Non Schedule Item/ Market Rate	No			

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

GENERATOR ALONG WITH GENERATOR ROOM FOR FSTP AT PORT BLAIR							
AS PER CPWD RATE 2016							
Sr. No	**Quantity**	**Item Description**	**Item Code No**	**Unit**	**Unit rate**		**Amount**
					In INR	**In Words**	
1	**1**	Providing and Installation and commissioning of the Generator as per the specification enclosed here. It also includes the cost of room of adequate size. The size of the room is 4M * 2.5M * 2.5M (H)	Non Schedule Item/ Market Rate	No			

PUMP FOR FSTP AT PORT BLAIR							
AS PER CPWD RATE 2015-16							
Sr. No	**Quantity**	**Item Description**	**Item Code No**	**Unit**	**Unit rate**		**Amount**
					In INR	**In Words**	
1	**1**	Providing and Installation and commissioning of the PUMPS at proper location including all works etc. complete. The details of pump specification are enclosed here.	Non Schedule Item/ Market Rate	No			

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

CCTV SYSTEM FSTP AT PORT BLAIR							
Sr. No	**Quantity**	**Item Description**	**Item Code No**	**Unit**	**Unit rate**		**Amount**
					In INR	**In Words**	
1	**1**	Supply/Installation/Commissioning of CCTV system for FSTP pant at proper location given by the engineer in charge or higher authority person from PBMC	Non Schedule Item/ Market Rate	No.			

SOLAR POWER SYSTEM FOR OFFICE BUILDING OF FSTP AT PORT BLAIR							
Sr. No	**Quantity**	**Item Description**	**Item Code No**	**Unit**	**Unit rate**		**Amount**
					In INR	**In Words**	
1	**1**	Supply/Erection/Installation of **Solar Power System** (complete in all respect) for the Office Building of 2 Kwh capacity.	Non Schedule Item/ Market Rate	Nos.			

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

MBBR/SBR/or Other SUITABLE PLANT SYSTEM FOR FSTP AT PORT BLAIR							
Sr. No	**Quantity**	**Item Description**	**Item Code No**	**Unit**	**Unit rate**		**Amount**
					In INR	**In Words**	
1	**1**	Supply/Erection/Installation of MBBR/SBR/or Other suitable plant as per the specification for MBBR given in the annexure-1, which may be followed for other technology in a similar manner.	Non Schedule Item/ Market Rate	Nos.			

DESLUDGING TRUCK FOR FSTP AT PORT BLAIR							
Sr. No	**Quantity**	**Item Description**	**Item Code No**	**Unit**	**Unit rate**		**Amount**
					In INR	**In Words**	
1	**1**	Supply of Desludging truck having load carrying capacity of 4KL as per the specification enclosed here in annexture-1 (1Nos)	Non Schedule Item/ Market Rate	Nos.			

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

WATER TANKER FOR FSTP AT PORT BLAIR							
Sr. No	**Quantity**	**Item Description**	**Item Code No**	**Unit**	**Unit rate**		**Amount**
					In INR	**In Words**	
1	**01**	Supply of Water tanker of water storage capacity of 5KL as per the specification enclosed here in annexture-1 (2Nos)	Non Schedule Item/ Market Rate	Nos.			

GPS SYSTEM FOR VEHICLES OF PBMC, PORT BLAIR							
Sr. No	**Quantity**	**Item Description**	**Item Code No**	**Unit**	**Unit rate**		**Amount**
					In INR	**In Words**	
1	**1**	Providing and installation of GPS system for the Desludging vehicles (4Nos) The specification is mentioned in the annexture-1	Non Schedule Item/ Market Rate	Nos.			

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

ANNEXTURE:5 SPECIFICATION OF E&M COMPONENT

1. Belt Press 2. Rotary Drier 3. MBBR 4. Vaccum Truck (Desludge Truck) 5. Solar Power.6. Generator 7. CCTV 8. Water tanker 9. Pumps

SPECIFICATION OF BELT PRESS

Table 1:Specifications of the belt press

N°	Details of equipment	Unit	Value/Description
1	Dimensions	mm	3350 x 1350 x 1700
2	Dry weight	kg	1020
3	Belt width	mm	600
4	Installed power	kW	2.75
5	Wash water flow rate		4.5 m3/h @ 6 bar
6	Pneumatic air		0.1m3/h @ 7 bar
7	Belt tracking system		Pneumatic
8	Belt tensioning system		Pneumatic
9	Back was water pump		Double Impeller Centrifugal

N°	Component	Description
Drum thickener		
1	Belt	Polyester
2	Screw flight	SS 304
3	Screw shaft	SS 304
4	Wash water header	SS 304
5	Filtrate tank	SS 304
6	Sludge discharge chute	SS 304
7	Hardware	SS 304
Belt Press		
1	Belt	Polyester
2	Frame and structure	SS 304
3	Filtrate collection tank	SS 304
4	Belt guide gasket	Neoprene
5	Washing nozzles	SS 304
6	Scraper blade	Teflon
7	Hardware	SS 304
Rollers		

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

N°	Component	Quantity	Dimension	Make/Coating
1	Belt tensioning roller	1	275 mm	SS 304
2	Belt alignment roller	1	173 mm	MS; suitable non-corrosive coating
3	Perforated drum	1	600 mm	SS 304
4	Belt transmission roller	3	173 mm	MS; suitable non-corrosive coating
5	Tubes	3	60 mm	SS 304
N°	**Component**	**Description**		
Electrical drives				
1	Drum thickener	0.25 kW; IP55, 415v, 50hz		
2	Belt press	0.25 kW; IP55, 415v, 50hz		
3	Wash water pump	2.20 kW; IP55, 415v, 50hz		
Instrumentation				
1	Pneumatic group	2 no. FRL with gauge, 1 no. solenoid valve, 1 no. pressure switch, 2 no. air bellows, 1 no. pneumatic cylinder		
2	Electrical group	1 no. inductive sensor, control panel- PLC operated with display and alarm included.		

Figure 1: Diagram of belt press (for representation purpose only; not to the scale)

SPECIFICATION OF ROTARY DRIER

Table 2: Specification of Rotary Drier

N°	Component	Description
Rotary dryer		
1	Batch volume	500 litres
2	Capacity	250-300 kg @ 0.6 gm/cm^3 bulk density

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

3	Make	Contact parts and drum in SS 304
4	Drum size	600 mm diameter and 1200 mm length
5	Electrical	36kW
6	Operational temperature	130 to 160 °C
7	Maximum temperature	200 °C
8	Voltage	415 v AC 3 phase
9	Insulation	100 mm 96 kg/m Cu Rockwool
10	Motor	AC geared 3 HP
11	Control panel	Automatic temperature controlled by PID controller, heater control, speed control by AC frequency drive, Safety controller, ammeter indicating light emergency stop, completed wired electrical cum instrumentation
12	Loading	SS 304 top Silo 200 litres
13	Discharge	Ss 304 bottom discharge

Figure 2: Picture of rotary dryer (for representation purpose only; not to the scale)

ELECTRO-MECHANICAL REQUIREMENT OF MBBR

Table 3: Electro-mechanical requirement of MBBR

N°	Details of equipment	Unit	Value/Description
Sewage pump: Equalization tank to MBBR reactor			
1	Type		2 nos. (1W + 1S) Horizontal centrifugal, self-priming, non-clog

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

2	Solid handling	mm	7
3	Capacity	m^3/h	2
4	Head	M	10
5	Make		CI body and impeller
Filter feed pump: Intermediate storage tank to pressurized filters			
1	Type		2 nos. (1W + 1S) Horizontal mono-block, closed impeller, gland packing
2	Capacity	m^3/h	2
3	Head	M	26
4	Make		CI body and impeller
Electrical panel			
1	Type		LT, cubical type, non-compartmentalized
2	Protection		Indoor type, IP42
3	Mounting		Floor / wall
4	Cable entry		Top / bottom
5	Incomer switch		Incoming power control switches SFU
6	Starters		Individual MCB and starter
7	Operations		Level switch-based operation of pumps
8	Cable		Power and control copper / Aluminium cable
9	Cable tray and conduit		Suitable make
Instrumentation			
1	Pressure gauge		On pump discharge header and blower discharge header
2	Level switch		For on-off of pumps

Specifications of aeration equipment

Table 4: Specification of Aeration Equipment

N°	Details of equipment	Unit	Value/Description
Air blower			
	Type		2 nos. (1W + 1S) Twin lobe rotary
	Operating pressure	kg/cm^2	0.50
	Operating discharge	m^3/h	80
	Make		Casting CI, Shaft EN19

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

	Air for agitation in tanks		Equalization and Intermediate storage tank
	Air for activated sludge process		MBBR reactor
	Motor		Suitable for blower
	Type		IP55, foot mounted, IE2
	Acoustic hood		Suitable size
	Noise level at 3 m		85 +/- 5%
Fine bubble diffusers			
	Type		Fine bubble diffuser, non-clog type
	Make		EPDM
	Location		MBBR reactor
	Assembly		Retrievable

Requirements of pressurized filters

Table 5: Requirement of pressurized filters

N°	Details of equipment	Unit	Value/Description
Dual Media Filter			
1	Make		MS with internal EP and external enamel paint
2	Diameter	mm	500
3	Height on straight	mm	1000
4	Capacity	m^3/h	2
5	Working pressure	kg/cm^2	2.4
6	Shell thickness	mm	6
7	Type of media		Pebbles, gravels, sand & anthracite
Activated carbon Filter			
1	Make		MS with internal EP and external enamel paint
2	Diameter	mm	600
3	Height on straight	mm	1000
4	Capacity	m^3/h	2.0
5	Working pressure	kg/cm^2	2.4
6	Shell thickness	mm	6
7	Type of media		Pebbles, gravels, sand & activated carbon

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

8	Activated carbon		900 IV
Chlorine dosing			
1	Pump capacity	Lph	0-6
2	Lid tank	L	50

Figure 3: Picture of a MBBR wastewater treatment plant (for representation purpose only; not to the scale)

TECHNICAL SPECIFICATIONS OF VACUUM TRUCK

Table 6: Technical Specifications of Vacuum Truck

N°	Specifications	Units	Values
1	**Sludge Collection Tanks**		
	Type	Cylindrical design manufactured from IS 2062 structural grade steel	
	Volumetric capacity	litres	4,000
	Features	a) Cylindrical designs ensure complete and fast offloading of the material b) Fully open-able type rear dished end	
2	**Vacuum Pump (Exhauster / compressor)**		
	Type	Air-cooled, asbestos free, heat-resistant, rotary sliding vane type	
	Operating vacuum	%	80

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

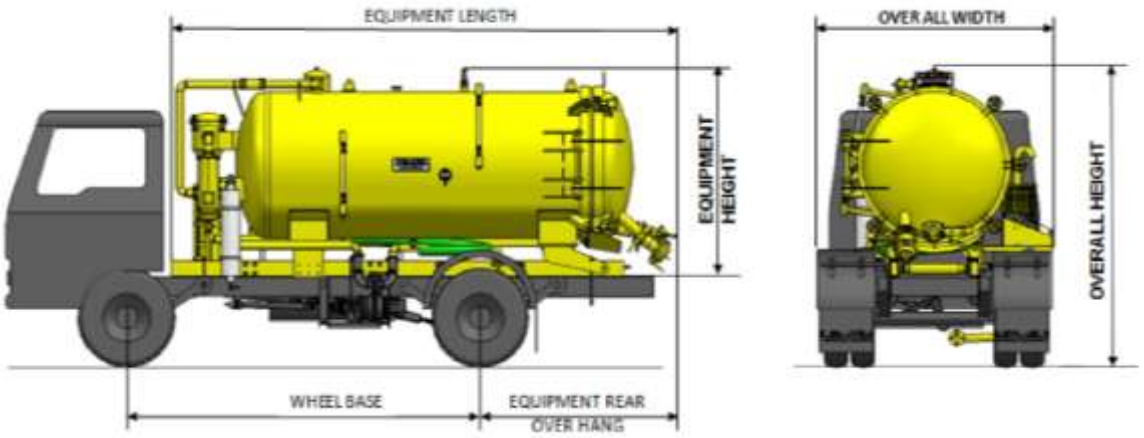
	Max blank-off vacuum	%	92
	Max pressure	Bar	1.5
	Free Air Displacement (FAD)	LPM	6,500
	Drive	**Vehicle's auxiliary PTO and Articulated shaft with belt and pulley drive configuration**	
3	**Equipment Features**		
	Safety	a) Vacuum and pressure relief valves, b) Check valve, c) Pump safety filter, d) Primary Shut-off, e) Cyclone cum Secondary Shut-off, f) Exhaust silencer cum oil separator	
	Standard supply	VHose end Suction Nozzle and Strainer	
	Optional Supply	a) Combined clean water and sludge tank with wash down system, b) Suction Derrick Arm, Hydraulic / Spring Loaded c) Continuous duty, Water cooled, Rotary Sliding Vane, Vacuum Pump, d) Tri-lobe, Exhauster / compressor – oil free, Zero wear and zero maintenance pumps	

Table 7: Technical Specification of Vacuum Truck Chassis

N°	**Particulars**	**Specifications**
1	**Performance**	
	Engine	Tata 3.8 SGI NA Engine
	Emission Norms	BS-IV
	Displacement (cc)	3800
	Max Power	83.8bhp @ 2500rpm
	Max Torque	270Nm @ 1500-1800rpm
	Transmission	Manual
	Clutch	Single Plate dry Friction Type (280 mm)
	Gearbox	5-Speed
	Fuel Tank (Litres)	430
	Gradeability (%)	18
	Turning Radius (mm)	6750

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

	Max Speed (km/h)	84
2	**Design and Build**	
	Body Option	Half Body
	Chassis Type	Chassis with Cabin
	Cabin Type	Day Cabin
	Axle Configuration	4x2
	Front Tyre	8.25 x 16-16 PR
	Rear Tyre	8.25 x 16-16 PR
	Wheelbase (mm)	3800
	Ground Clearance (mm)	217
	GVW / GCW (Kgs)	10550
3	**Comfort**	
	Steering	Manual Steering
	Seat type	Standard
4	**Safety**	
	Brakes	Air Brakes
	Front Suspension	Semi elliptical Leaf spring
	Rear Suspension	Semi elliptical Leaf spring
5	**Others**	
	Length mm (ft.)	5050(16.56)
	Width mm (ft.)	2042(6.7)



A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

SOLAR POWER SYSTEM

Photovoltaic (PV) modules make electricity from sunlight, and are simple, effective, and durable. They sit in the sun and, with no moving parts, can run your appliances, charge your batteries. To use the energy from the array, one needs other components, such as inverters, charge controllers and batteries, which make up a solar-electric *system*. The components required are dependent on the system type designed. These systems require a battery bank to store the solar electricity for use during night time or cloudy weather, a charge controller to protect the battery bank from overcharge, an inverter to convert the DC PV array power to AC for use with AC household appliances, and all the required disconnects, monitoring, and associated electrical safety gear.

- Fabricated panels consisting of four solar panels of capacity 320 W, thus the capacity of one fabricated panel I 1 kW,
- Online inverter of 1.5kW,
- Internal wiring with junction boxes DCDB / SCDB.

TECHNICAL SPECIFICATION OF THE DIESEL POWER GENERATOR

DG Set Model	**Rating (kVA)**	**Canopy Size (LxWxH)**	**Starting System**	**Weight (Kg)**
--	62.5	2800x1100x1595	12V DC	1420
No. of Cylinders	**Bore (mm)**	**Stroke (mm)**	**Total Displacement (cc)**	**Lube oil Sump Capacity (Ltrs)**
4	96	112	3240	10
Fuel Tank Capacity (Ltrs)	**Engine Model**	**Engine Make**	**Engine Power (bhp)**	**Rated Speed**
150	4R1040TA G1	Kirloskar Green/ KOEL	83	1500
Aspiration	**Cooling System**	**Type**	**Frequency**	**Voltage**
TA	WATER	Brushless, H Class Insulation	50	230/415

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

SCHEMATIC REPRESENTATION OF CCTV SYSTEM

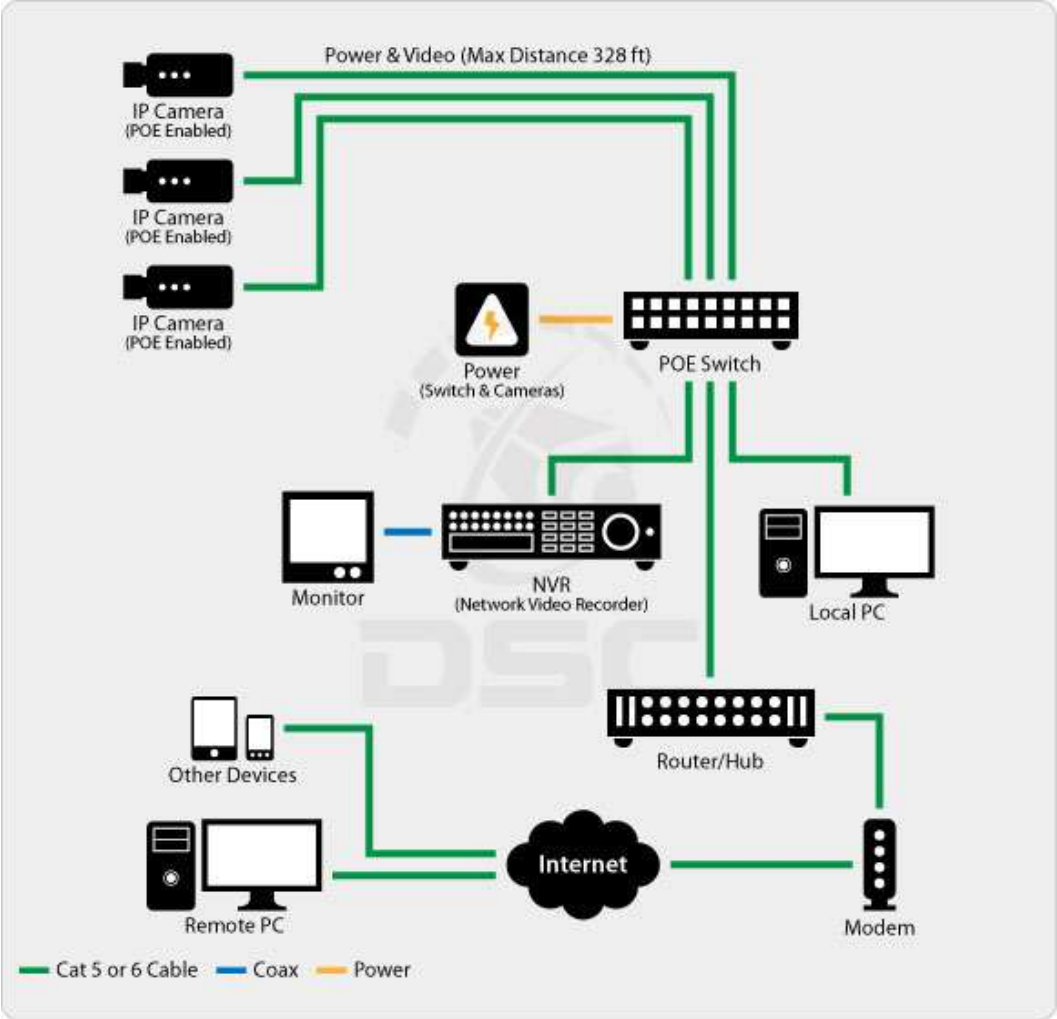


Figure 4: Schematic Representation of CCTV System

GENERAL SPECIFICATIONS OF WATER TANKER TRUCKS (5 KL CAPACITY)

Wheelbase (mm)	3335	**Capacity (Liters)**	5KL
GVW (Kg)	6180 /8720 / 10250/12990	**Body Material Options**	Mild Steel/Stainless Steel
Max. Engine Output	BSIII Mech- 75 Kw @3000 rpm BSIV CRDi- 75 Kw @2800 rpm	**Fuel Tank (Liters)**	90

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder

Max. Torque	BSIII Mech - 315Nm@1500-1750 rpm; BS-IV CRDi - 296Nm@ 1500 ± 50 rpm	**Brakes**	Hydraulic Vacuum assisted/Air Brake
No of Tyres	4+1	**Tyres Size**	7.50" X 16" -16 PR / 8.25" X 16/20" - 16 PR
Displacement (cc)	3455	**Steering**	Mechanical /Power Steering (Optional)
Drive Type	Left Hand Drive	**Customize Option**	With Filtration System

Figure 5: Schematic Representation of Water Tanker

SPECIFICATIONS OF PUMPS TO BE INSTALLED AT ANAEROBIC DIGESTER

Table 8: Specifications of Pumps to be Installed at Anaerobic Digester

N°	Details of equipment	Unit	Value/Description
Sludge pump: From anaerobic digestor to feeder of belt press			
1	Type		2 nos. (1W + 1S) Horizontal centrifugal, self-priming, non-clog
2	Solid handling	mm	7
3	Capacity	m^3/h	< 1
4	Head	m	10
5	Make		CI body and impeller

A-
D-
C-
O- D'Man Superintending Engineer Contractor/ Bidder