



**MORMUGAO PORT TRUST  
ENGINEERING (CIVIL) DEPARTMENT**

**FACE SHEET TO ACCOMPANY THE TENDER DOCUMENTS**

- A. 1. Name and full address of the Contractor  
to whom the Tender Documents are issued. :
2. Whether registered with Engineering (Civil)  
Department, if so, class of registration. :
3. If not registered, reference to the letter of the Chief  
Engineer authorising issue of the tender Documents. :
4. Date of issue of Tender Documents. :

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**SIGNATURE OF SR. ASST. SECRETARY**

- B.1. Name of work: **Operation and Maintenance of 1200m<sup>3</sup> capacity STP at  
Headland and 100m<sup>3</sup> capacity STP at New Hospital site at  
Headland for a period of two years.**
2. Cost of each set of Tender Documents : Rs. 2000/-
3. Date and Issue of Tender Documents : From : 10/08/2011  
To 25/08/2011
4. Date of receipt of tender and time : 26/08/2011 at 3.00 pm
5. Amount of E.M.D. : Rs. 27,000/-
6. Date of opening of tender and time : On 26/08/2011 at 15.30 hrs.
- 7 a) Whether E.M.D. received : Yes/No.  
b) if so, in which shape : D.D./Cash Receipt
8. Form of contract : Percentage rate
9. Whether tender received in duplicate : Yes/No
10. Whether rates have been quoted in both : Yes/No.  
the tenders in words and figures.
11. Total No. of Tenders received for the work:

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Sr. Asst. Secretary(W)

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EXECUTIVE ENGINEER



**MORMUGAO PORT TRUST**  
**ENGINEERING (CIVIL) DEPARTMENT**

**Tender No.CE/59/2011**

**Operation and Maintenance of 1200m<sup>3</sup> capacity STP at Headland  
and 100m<sup>3</sup> capacity STP at New Hospital site at Headland for a period of  
two years.**

**Cover No. 1 (Technical Bid)**

1. Tender Notice
2. Form of Tender.
3. Appendix – I.
4. Additional Instructions to Tenderers.
5. Additional General Conditions of Contract.
6. Scope of work
7. Process Description.
8. Form of bank guarantee for security deposit

**Cover No. 2 (Price Bid)**

1. Directions to tenderers for filling in the Schedule of quantities & rates
2. Schedule of Quantities & Rates

MORMUGAO PORT TRUST,  
ENGINEERING CIVIL DEPARTMENT,  
MAIN ADMINISTRATIVE OFFICE BLDG,  
HEADLAND, SADA, GOA.



An ISO 9001-2000 PORT

**MORMUGAO PORT TRUST**  
**ENGINEERING (CIVIL) DEPARTMENT**

**Tender No.CE/59/2011**

**Operation and Maintenance of 1200m<sup>3</sup> capacity STP at Headland  
and 100m<sup>3</sup> capacity STP at New Hospital site at Headland  
for a period of two years.**

**Tender Notice No. CE/N- 51/2011**

Sealed tenders in two cover system are invited on Percentage Rate Basis from the contractors Unregistered and Registered with MPT/ PWD/ CPWD/ Railways/ Central/State Govt., GSIDC, etc. fulfilling the eligibility criteria stipulated as under.

<b>Tender No.</b>	<b>Name of work</b>	<b>Cost of tender document (non refundable)</b>	<b>Estimated cost of work put to tender</b>	<b>Sale of tender documents From/To</b>
	<b>Class of contractor eligible to tender</b>	<b>Earnest money deposit</b>	<b>Period of contract</b>	<b>Date of opening of tender</b>
CE/59/2011	Operation and Maintenance of 1200m <sup>3</sup> capacity STP at Headland and 100m <sup>3</sup> capacity STP at New Hospital site at Headland	` 2,000/-	` 18,00,000/-	10.08.2011 To 25.08.2011 Upto 3.00 p.m.
	Class 'B1' and above	` 27,000/-	Two year	26.08.2011 At 3.30 p.m.

**1. Eligibility Criteria.**

(A) The bidder shall have experience of operation and maintaining sewage Treatment Plant or specializing in similar works Such as operation and maintenance of water treatment plant etc.

(B) The bidder has to submit the following documents of

- I. Solvency for Rs. 1.5 lakhs.
- II. Average annual turnover of Rs. 4 lakhs.
- III. Work experience to the tune of Rs. 7,20,000/- in similar works in the last 7 years.

Note : The above information shall be submitted along with documentary proof i.e. Income tax Returns, Service tax, registration certificate Audited statement of Accounts duly authenticated by Chartered Accountant. Copy of work orders and performance certificate for the works carried out on similar works.

1. The tender set consisting of the Tender Notice, Additional Instructions to Tenderers, Special Conditions of Contract, Schedule of Quantities and Rates and Form of Tender may be obtained from the Office of Chief Engineer, Engineering (Civil) Department, Mormugao Port Trust at Headland, Sada, Goa on payment of Rs. 2,000/- which sum will not be refunded. Additional set can be had on payment of Rs. 2,000/- (Non-refundable), if desired.
2. The interested firms may alternatively download the Tender Documents from the Mormugao Port Trust web site <http://www.mptgoa.com> However, a separate sealed envelope super scribed 'Tender Cost' containing a Demand Draft/ Banker's Cheque drawn in the name of "FA & CAO of the Port of Mormugao" towards the cost of tender document may be placed in the envelope containing the sealed offer submitted in the downloaded Tender Document, failing which the offer of the firm will be left out of consideration. The downloading of the Tender Documents shall be carried out strictly as provided on website. No editing, addition/deletion of matter shall be permitted. If such action is observed at any stage, such offer is liable for outright rejection.

A printed set (Vol-I) issued to the contractors contains instructions to tenderers, General and Special Conditions of Contract, General Specifications and forms an integral part of the tender documents.

3. Tender documents will not be sent by Post or Courier Service.
4. The proposed work mainly comprises of :  
Operation and maintaining of the sewage treatment plant by using skilled personnel / additives / chemicals, round the clock as per the process description and achieving effluent levels within permissible limits.  
  
The work is to be carried out as described in Schedule of Quantities & Rates attached herewith to this tender and as directed.
5. The Earnest Money Deposit (E.M.D.) payable in respect of the tender is Rs. 27,000/- (Rupees Twenty seven thousand only), and **E.M.D** should be lodged in the form of Bankers Cheque or Demand Draft or Pay Order drawn in favour of **Financial Advisor and Chief Accounts Officer, Mormugao Port Trust, payable at Vasco-Da-Gama, Goa** and same is required to be enclosed along with the Tender. In any case, **E.M.D.** in the form of **Cash/ Cheque** will not be accepted.

- a. The **E.M.D.**, cover No. 1 & cover No. 2 shall put in each separate sealed envelope and all the three envelopes should be placed in a single envelope properly sealed. The inner envelopes should be separately marked as EMD, Cover No. 1 & Cover No. 2, as the case may be. The outer envelope shall bear the identifications like (i) Tender No. (ii) Name of work (iii) Bidders name & Address and (iv) Due date and time of bid opening. If the envelopes are not sealed properly, Mormugao Port Trust will assume no responsibility for the misplacement or premature opening of the bids submitted and same is liable for rejection.
- b. Bids if not accompanied with requisite **EMD** as indicate at 5 above and in the manner described at 4(a) above shall be treated as invalid and shall not be opened.
- c. **E.M.D.** of the Tenderers excepting first three lowest tenders will be refunded to Contractors. Contractors are requested to contact the Senior Assistant Secretary, Chief Engineer's Office. Main Administrative Office, Mormugao Port Trust for claiming such refund Along with copy of original receipt issued by this office.
- d. Contractors may submit the following information in order to refund the **EMD'S/Bank Guarantee/ Security Deposit/ Retention Money**, payments of bills etc.
  - a. Name of Bank.
  - b. Place.
  - c. Account No.
  - d. Type of Account
  - e. PAN.
  - f. EPF No.
  - g. ESI

No fresh correspondence in this regard will be this Port Trust.

- e. EMD of the other tenders i.e. any two among the first three lowest Tenders will be refunded to them only after acceptance of work order by successful tenderer and only after lodgement of initial Security Deposit (ISD) by the same Contractor. E.M.D. of successful contractor will be retained towards Initial Security Deposit.
6. **Security Deposit:** 10% of the work done or value of contract, whichever is more.
- a) Amount to the extent of 5% of the value of contract to be paid in Cash or in the form of a Bank Guarantee at the time of acceptance of the tender, as initial Security Deposit.

- b) The remaining 5% of Security Deposit to be deducted from the running account bills at 10% of each running bill till the entire security deposit of 5% of value of contract are recovered. However, the contractor will have the option to convert the Retention Money so deducted from the bills into acceptable Bank Guarantee (s) at any stage(s) of the work.
- c) The entire amount of 10% of the value of the contract may be paid in cash Demand Draft /Pay Order or in the form of Bank Guarantee at the time of acceptance of tender.

Note:

- i) The Bank Guarantee of 5% of the Contract Price as initial Security Deposit will be valid till the completion of the maintenance period plus 2 months.
- ii) The Retention Money of 5% of the Contract Price will be released after successful completion of the work and issue of Completion Certificate Chief Engineer.

- **In case the Tenderer desire to quote premium of cost of work put to tender more than 15%, the Tenderer will have to give the rate analysis for any or all the item of work on demand.**

7. Conditional tenders are liable for rejection

8. Tenders submitted will remain open for acceptance for a period of **180 days** from the date of opening of tenders.

9. Contract period for the subject work is **24 (Twenty four) months** from the date of receipt of pre-acceptance letter/work order or release of site whichever is later.

10. Counter conditions stipulated in completion period by Contractor will not be considered. Tenders with counter condition are likely to be rejected summarily without assigning any reason thereof.

11. Time is the essence of the contract **Liquidated Damages** for delay in completion of work shall be recovered at the rate of **0.5%** of the contract price for week or part thereof delay subject to maximum ceiling of **5%** of the contract price.

12. The tenderers are strongly advised to inspect the site of work and acquaint themselves with site conditions and quantum of work involved etc. before tendering. Such an inspection can be arranged in consultation with the **Assistant Executive Engineer/CD, Tel. No. 2594627.**

13. The tenderers must not quote counter conditions involving extra expenditure. The tenderers should refrain from sending revised or amended offers after the closing date of the tender. The Chief Engineer reserves the right to reject such offers without assigning any reasons thereof.
14. The original tenders to be submitted should be enclosed in as sealed cover and superscribed **“Operation and Maintenance of 1200m<sup>3</sup> capacity STP at Headland and 100m<sup>3</sup> capacity STP at New Hospital site at Headland for a period of two years”** and should be addressed the Chief Engineer, Engineering (Civil) Department, Mormugao Port Trust Headland. Sada, Goa-Pin: 403804.
15. The tenders complete in all respect should be placed in the tender box kept outside the cabin of Sr. Asst. Secretary CE’s Dept. upto **3.00 P.M. on Due date** and opened at 3.30 P.M. on the same date of opening in the presence of such of the tenderers who may wish to be present.
16. The tenderers should specifically note that their offers should reach this office on or before the due date and time. Offers received late will not be considered. **TENDERS SENT BY POST WILL BE REJECTED.**
17. The Chief Engineer and Board of Trustees reserve the right to reject any or all the tenders received without assigning any reasons thereof.
18. Unsigned tenders will not be considered.
19. Sales Tax, Income Tax etc. as applicable from time shall be deducted from the amount payable to the Contractor at source. Under no circumstances taxes so deducted shall be reimbursed to the contractor.
20. The Contractor should comply with the provision of the Building and Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996.
21. The Tenderers should strictly note that they should be not allowed to fill in the tender or seal the tender in Mormugao Port Trust premises.
22. Further details can be had from the office of the undersigned at the New Administrative Office Building of MPT at Headland, Sada.

**Chief Engineer**



**MORMUGAO PORT TRUST**  
**ENGINEERING (CIVIL) DEPARTMENT**

**Tender No.CE/59/2011**

**Operation and Maintenance of 1200m<sup>3</sup> capacity STP at Headland  
and 100m<sup>3</sup> capacity STP at New Hospital site at Headland  
for a period of two years.**

**FORM OF TENDER**

The Chief Engineer,  
Mormugao Port Trust.  
Headland Sada, Goa

I/We \_\_\_\_\_ do hereby offer to execute the work comprised in the annexed Tender Notice “**Operation and Maintenance of 1200m<sup>3</sup> capacity STP at Headland and 100m<sup>3</sup> capacity STP at New Hospital site at Headland for a period of two years.**” in strict accordance with the instructions to Tenderers, General conditions of Contract, Specifications etc. and Addendum to Specifications, Special Conditions of Contract etc. at the percentage rate entered in the attached Schedule of Quantities and Rates.

2. I/We undertake the work included in the Schedule of Quantities and Rates with the Contract period of 24 months from the date of receipt of work order. I/We also agree that this tender will remain open for acceptance until disposed off by the Trustees of Port of Mormugao. I/We have independently considered the question of the amount of loss or damage likely to result to the Trustees from the delay on my/our part in the performance of the contract and I/We agree that the liquidated damages at the rate of 0.5% of the contract price per week or part thereof delay in work subject to a maximum ceiling at 5% of the contract price represents a fair estimate of the loss likely to result from the delay.

3. I/We send herewith a sum of **Rs.27,000/-** (Rupees Twenty seven thousand only) as a deposit or earnest money as proof of my/our willingness to enter into the contract if my/our tender is accepted.

4. In the event of my/our tender being accepted, I/We agree to enter into a contract in the prescribed form with such alterations or additions thereto which may be necessary to give effect to the acceptance of this tender and such contract shall contain and give full effect to the Specifications, Schedule of Quantities and Rates attached to this tender.

5. I/We also, agree if awarded the contract that the earnest money lodged with this tender will be retained by the Trustees towards part of the Security Deposit and to make further deposit by cheque/demand draft/G.P. Notes/Securities of Public Bodies/10 years defence certificates/Units from Unit Trust of India /by way of a Bank Guarantee, within fourteen days or such extension of the period permitted by the Chief Engineer, in writing, after receipt of information that my/our tender has been accepted by the Port Trust.

6. I/We further agree, if awarded the contract, to lodge the Retention Money equivalent to 5% of the contract price of my/our tender by way of deductions from my/our bills at the rate of 10% of the gross value of work certified in each bill till the amount of 5% of the contract price is accumulated.

7. I/we agree to abide by this tender to be valid for the period of 180 days from the date fixed for receiving/opening the same and it shall remain binding upon me / us and may be accepted any time before the expiration of that period.

8. I/we hereby certify that my / our registration certificate under the '**Goa Sales Tax**' on the transfer of property in goods involved in the execution of Works Contract Act.1985 is in force on the date on which the sale of goods specified in this bill/cash Memorandum is made by me/us and tax under the act will be, if payable, be paid before furnishing my/our returns under the act.

9. I/We hereby agree for deduction of 1% of gross value of work certified in each bill from the amount payable to me/us towards Works Contract Tax(WCST) and VAT/Education Cess or any other taxes applicable.

10. I/We have inspected the site and I am/We are fully aware of the work to be carried out while tendering for the contract.

11. I/We request that early payment of 100% of the amount of interim bills be made from time to time in advance of such bills being audited.

12. \*(A) Mine is a proprietary firm and I am the sole proprietor of the firm. My firm is/is not registered with Registrar of firms.

Name: \_\_\_\_\_

Age: \_\_\_\_\_ years

\*(B) Ours is a partnership firm and the names of all major partners are given below:

<u>Name</u>	<u>Age</u>
1. _____	_____ years
2. _____	_____ Years
3. _____	_____ Years
4. _____	_____ Years

We understand and confirm that if our offer is accepted, the contract will be entered into with the above-mentioned partners only and the Trustees will not recognize or deal with any minor partners or their guardians.

\*(C) Ours in a Company with liability and a copy of our Memorandum and Articles of Association will be sent for perusal upon acceptance of our offer.

Proposed contract is intended to be signed by a duly constituted Attorney and original power of Attorney in his favour will be submitted for perusal immediately on acceptance of the tender.

The contract will be completed under the Company's Common Seal.

13. The Bank's Guarantee referred to in Para No.5 above will be from  
\*\* \_\_\_\_\_

14. I/We am/are registered for the purpose of Goa Sales Tax Act and my/our registration Certificate No. is \_\_\_\_\_

15. The name and address of our Banker is \*\* \_\_\_\_\_

16. I/we understand that the Board is not bound to accept the lowest or any tender you may receive and may reject the same (the lowest) or any other tender without assigning any reason therefore.

17. "I have read and understood the General Conditions and Specification of the work which are printed in Volume -I supplied to me by the Department which will form a part of tender and this shall remain binding on me".

18. I /we have enclosed herewith the following documents as required under instructions to tenderers:-

- a) Organization Chart.
- b) List of similar works carried out by me/us.
- c) Bar Chart.
- d) List and description of main plant and equipments proposed to be used on this work.

(Note: a & b are not mandatory for registered Contractors with this department)

NAME AND ADDRESS OF TENDERER:-

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
SIGNATURE OF TENDERER

Witness: - \_\_\_\_\_

Date: \_\_\_\_\_ Day of \_\_\_\_\_ 2011

Witness: - \_\_\_\_\_

Witness: - \_\_\_\_\_

**N.B.: \* Strike out whichever is not applicable.**

**\*\* Here the Name of the Bank should be stated.**

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**MORMUGAO PORT TRUST**  
**ENGINEERING (CIVIL) DEPARTMENT**

**Tender No.CE/59/2011**  
**Operation and Maintenance of 1200m<sup>3</sup> capacity STP at Headland  
and 100m<sup>3</sup> capacity STP at New Hospital site at Headland  
for a period of two years.**

**APPENDIX - I**

The following Clauses shall be read in conjunction with respective clauses of General Conditions of Contract.

CONDITIONS OF CONTRACT

Clause No. and Description

11(1)	Amount of initial security and: time	Five percent of the contract price and period <b>26</b> months
38	Period for commencement from the Chief Engineer's orders to commence.	within 7 days from receipt of Work Order or date of handing the site.
40	Contract period	: 24 months.
43	Amount of liquidated damages.:	Calculated at 0.5% value of the contract per week of seven days, or part thereof subject to a ceiling of 5% value of the Contract.
54(1)	Percentage of retention from each running account bill	: 10%. Also please refer Cl. No. 5 of additional instructions to tenders
54(1)	Limit of Retention Money	5% value of the contract.
11(1)	Total initial Security Deposit and Retention Money.	10% value of the contract.
54(1)	Minimum amount of interim Certificate.	Rs.75,000/-
54(4)	Special Time within which payment to instructions be made after contractor's submission of the bill.	Undisputed bills will be paid within 20 days from date of submission of the bill
No.1		
69	Mobilisation Advance.	Not applicable to this contract.
69	Interest rate on mobilisation	Not applicable to this contract.

69 advance  
Mode of recovery of mobilisation advance Not applicable to this contract

70 Variation in price of labour and materials : Not applicable to this contract

66 Arbitration clause of General conditions : Not applicable to this contract.

Special Instructions clause No. 13, 14, 15, 16  
Minimum amount of third party insurance. : 5% of the tendered amount

Dated this \_\_\_\_\_ day of \_\_\_\_\_ 2011

Signature \_\_\_\_\_ in the capacity of \_\_\_\_\_  
\_\_\_\_\_ duly authorised to sign tender for and on  
behalf of \_\_\_\_\_.

(IN BLOCK LETTERS )

ADDRESS: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Witness: \_\_\_\_\_

\_\_\_\_\_

Occupation: \_\_\_\_\_

\_\_\_\_\_



An ISO 9001:2000 PORT

**MORMUGAO PORT TRUST**  
**ENGINEERING (CIVIL) DEPARTMENT**

**Tender No.CE/59/2011**

**Operation and Maintenance of 1200m<sup>3</sup> capacity STP at Headland  
and 100m<sup>3</sup> capacity STP at New Hospital site at Headland  
for a period of two years.**

**ADDITIONAL INSTRUCTIONS TO TENDERERS**

The instructions to be the tenders shall be instructions to "Tenderers" as modified or added to by the following Additional Instructions to Tenderers which shall be read and construed with the instructions to tenderers as if they were in corporate therewith.

In so far as any of the provisions in Additional Instructions to Tenderers may conflict with or be inconsistent with the instructions to Tenderers the Additional Instructions to Tenderers shall prevail.

1. Sealed tenders are invited on Percentage rate basis for work described in the Tender Notice referred to herein before.
2. Earnest Money:

No tender will be considered which is not accompanied by the Earnest Money Deposit (E.M.D.) for the sum stipulated in the tender notice which is lodged on the understanding that in the event of the tenderer withdrawing his tender before the expiry of 180 days from the last date of submission of the tender document. (Whether or not the submitted tender(s) are opened or otherwise at the time of tenderer withdrawing his tender), the tender shall be cancelled and the Earnest Money (E.M.D) deposited by the tenderer forfeited to the trustees and if the tender is accepted the security Deposit (SD) mentioned in Para 5 hereinafter will be furnished

3. Tenderers must return the complete tender set duly signed wherever required. Any tender not so signed will not be considered. Alterations to the conditions of contract and specifications will not be entertained.
4. SECURITY DEPOSIT

The Security Deposit shall be 10% of the work done or value of contract, whichever is more.

The Successful Tenderer will be required to deposit the following amounts as **Security Deposit** for the due fulfillment of the contract.

- a. **Initial Security Deposit (I.S.D.)** shall be 5% of the contract price payable within **7 (seven) days** from the date of receipt or pre-acceptance letter, in the form of Bank Guarantee from any of the Nationalized Bank in the form annexed or **Demand Draft/ Bankers Cheque/ Pay order addressed to FA&CAO, MPT/ HL payable at Vasco -Da- Gama, Goa.** The Earnest Money (E.M.D), deposited with this tender EMD will be retained towards part of the initial security deposit. The contractor will have the option to pay the entire amount of 5% of the contract price towards I.S.D. in the form of Bank Guarantee. The Bank Guarantee for I.S.D. will be valid till the completion of the maintenance period plus two months.

Plus

- b. Retention Money (R.M) equivalent to 5% of the Contract Price and the sum shall be recovered at the rate of 10% of the gross value of work certified under each bill until an amount of 5% of Contract Price is accumulated. The contractor will have the option to convert the Retention Money so deducted from the bills into acceptable Bank Guarantee(s) for the like sum(s) at any stage (s) of the work.

The entire amount of 10% of the Contract Price as Security Deposit may be paid in Cash/Demand Draft/Pay Order/Bank Guarantee.

The Bank Guarantee to be furnished against above should be from any of the Nationalised Bank having a branch in Vasco – Da- Gama and the Guarantee should be executed by the said Branch.

Unless this deposit is lodged and the Guarantee is furnished within **7 (seven) days** of the receipt of intimation of the acceptance of the tender or such future period as may be allowed by the Chief Engineer in writing, the Earnest Money (E.M.D.) will be liable to forfeiture and 'contract liable to be terminated and the Tenderer will be responsible to the Trustees for the damages thereby incurred by them.

Upon successful completion of the works and after issue of Completion Certificate by the **Chief Engineer and or Board of Trustees** shall upon receipt of a written application, refund to the contractor, the said **Retention Money of 5% (five percent)** of the estimated cost of the works referred to in sub-clause 4(b) above after deducting there from the amount of Liquidated damages incurred if any and other claims outstanding against the contractor or for breach of contract. **The Initial Security Deposit** referred to in sub- clause 4(a) above will be refunded

after the expiry of the free maintenance period and as soon as the conditions of contract have been fulfilled and upon contractor making an application therefore, after adjusting estimated/ actual expenditure by Mormugao Port Trust for rectification of defects and adjusting other amounts due if any for breach of the Conditions of Contract.

Note: The amount of liquidated damage expressed in the Tender Notice to be payable for delay in the performance of the contract has been arrived at on the fair estimate of the amount of loss likely to be sustained by the Trustees as a result (the delay in the performance of the contract).

5. The entire work comprised in this contract is for a period of two years as described in the 'Tender Notice' No counter conditions as regards to completion period shall be quoted by the tenderers.
6. The Chief Engineer and/ or the Trustees reserve the right to reject any tender without assigning any reasons or to accept any tender as a whole or in part and does not bind himself/ themselves to accept the lowest or any tender, No reasons will be assigned for the rejection of any tender.
7. If the Tenderers have not carried out any work for the Mormugao Port Trust in the past they shall submit along with, the tender a list of works carried out by them for Government or Public Bodies with their amount showing against each work indicative of its magnitude and their Bankers reference and their Sales Tax Returns.
8. Tenderers should refrain from sending revised or amended offers after the closing date of the tender.
9. Tenderers are strongly advised to inspect the site so that they are fully aware of the nature of scope of the works to be carried out before tendering for the same.
10. Premia of various insurance policies required to be taken out by the contractor as per the provisions of the contract will not be reimbursed to the contractor.
11. Cost of testing of materials will be borne by the Contractor.
12. Tenderers should note the arrangements described in the tender document for prompt payments of bills.
13. Further particulars can be obtained on application to the office of the Chief Engineer, Mormugao Port Trust A.O. Building, Headland, Sada, during the office hours.

**CHIEF ENGINEER**



**MORMUGAO PORT TRUST**  
**ENGINEERING (CIVIL) DEPARTMENT**

**Tender No.CE/59/2011**

**Operation and Maintenance of 1200m<sup>3</sup> capacity STP at Headland  
and 100m<sup>3</sup> capacity STP at New Hospital site at Headland  
for a period of two years.**

**ADDITIONAL GENERAL CONDITIONS OF CONTRACT**

- 1) The tender is on percentage rate basis. The quantities mentioned in the Scheduled of Quantities and Rates are only approximate and the Trustees are liable to pay for only such quantities of work as are actually executed.
- 2) In the percentage rate quoted by the contractor shall be inclusive of Sales Tax, VAT, General Tax, Octroi, Excise Duty, Service Tax, Income Tax etc. and all other incidental charges that the tenderer may have to bear for the execution on the works.
- 3) The contractor shall insure plant, machinery and workers employed by him during execution of work and submit necessary policies to the Department.
- 4) (a) With out limiting his obligation and responsibilities under Clause 21 of G.C.C. (Vol. I) The contractor shall insure at his cost, in the joint names of the Board and the Contractor against all loss or damage from whatever cause arising (other than the /Excepted Risks) for which he is responsible under the terms of the contract and in such manner that the Board and contractor are covered during the period of operation of the works for any loss or damage occasioned by the contractor in the course of any operation carried out by him for the purpose of complying with his obligations under clause 45 of G. C. C. (Vol. I)
  - (i) The works and the temporary works to the full value of such works executed from time to time.
  - (ii) The materials, machinery / plants and equipment and other things brought on to the site by the contractor to the full value of such materials, machinery plant and other things.

- 4) (b) Such insurance shall be effected with an insurer and if terms approved by the Board and the contractor shall whenever required produce to the Chief Engineer or the Chief Engineer's representatives the policy or policies of insurance and the receipts for the payment of the current premia provided always that without limiting his obligations and responsibilities as aforesaid nothing in the clause contained shall render the contractor liable to insure against the necessity for repair or construction of any work constructed with material or workmanship not in accordance with the requirement of the contract.
- 5) (a) Before commencing the execution of the works, the contractor but without limiting his obligations and responsibilities under clause 22 of G.C.C. (Vol. I) shall insure against any damage, loss or injury which may occur to any property (including that of the Board) or to any person (including any employee of the Board) by or arising of execution of the works or Temporary Works or in the carrying out of the contract otherwise than due to the matters referred to in the provision to clause 22(1) of G.C.C. (Vol. I).
- 5) (b) Such insurance shall be effected with an insurer and in terms approved by the Board and for at least the amount stated in the Tender and the contractor shall whenever required produce to the Chief Engineer or the Chief Engineer's representatives the policy or policies of insurance and the receipts for the payment of the current premia.
- 6) The contractor shall insure against accident, injury etc. to workmen with an insurer approved by the Board and shall continue such insurance during the whole of the time that any persons are employed by him on the works and shall when required produce to the Chief Engineer or the Chief Engineer's representatives such policy of insurance and the receipt for payment of the current premia. Provided always that in respect of any persons employed by any sub-contractor, the contractor's obligation to insure as aforesaid shall be satisfied if the sub-contractor shall have insured against the liability in respect of such persons in such manner that the Board is indemnified under the policy but the contractor shall require such sub-contractor to produce to the Chief Engineer or the Chief Engineer's representatives when required such policy of insurance and the receipt for payment of the current premia.
- 7) If the Contractor shall fail to effect and keep in force the insurance referred to in the above mentioned clauses hereof or any other insurance which he may be required to effect under the terms of the contract then and in any such case the Board may effect and keep in force any such insurance and pay such premium or premia as may be necessary for that purpose and from time to time deduct the amount so paid by the Board with interest as stated in Vol . I as aforesaid from any moneys due or which may become due to the contractor or recover the same as a debt due from the contractor.

## **8) SUPPLY OF WATER:**

The contractor shall as far as practice having regard to the conditions, provide on the site to the satisfaction of the Chief Engineer's Representatives, adequate supply of drinking water and other water for the use of Contractor's Staff and Workmen.

## **9) EPIDEMICS**

In the event of any outbreak illness of an epidemic nature, then contractor shall comply with and carry out such regulations, orders and requirements as may be made by the Government or the Local Medical or Sanitary' Authorities for the purpose of dealing and overcoming the same.

## **10) DISORDERLY CONDUCT ETC:**

The Contractor shall, at all times, take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or among his employees, officers or agents and for the preservation of peace and protection of persons and property on the neighbourhood of the works against the same.

## **11) FOOTWARE, GLOVES, ETC:**

In partial modification of Clause No. 31 of the General Conditions of Contract, the contractor shall at his own expenses provide footwear and gloves for all labour employees on concrete mixing work and all other types of work involving the use of tar and cement, etc. to the satisfaction of the Chief Engineer of his Assistant.

## **12) ACCIDENTS:**

The contractor shall, within 24 hours of the occurrence of any accident at or about the site or in connection with the execution of the work, report such accidents to the Chief Engineer or his Representatives. The contractor shall also report such accidents to the concerned constituted authorities.

13) The tender is on Percentage Rate Basis and the Tenderers are required to fill the Schedule of Quantities and Rates as stated in Directions to Tenderers for filling in the Schedule of Quantities and Rates.

14) **The Taxes involved in the execution of works Contract Act 1935 shall be borne by the contractor and rates quoted by the Tenderers shall be inclusive of the said tax also.**

15) The contractor and his workers/agents shall be required to obtain from MPT and display a Photo Identity Card during entry, stay and exit from the Port Security Areas guarded by CISF personnel.

- 16) All applications for issuance of Photo Identity Cards shall be routed through the Chief Engineer, who shall forward the same to the Port's Traffic Department, whose pass section will issue the Photo Identity Card to the contractor or his agents on payment of necessary fees as prescribed from time to time and the same shall be valid for the duration for the contract or a period of one year, whichever is less.
- 17) Subject to the availability, land for construction of temporary sheds/ stores/ labour hutments, etc. will be given to the contractor in Port areas. The contractor shall clear away all the temporary structures built within a period of fourteen days after completion of the work and leave the whole of the site clean to the satisfaction of the Chief Engineer.
- 18) Lease rent shall be charged to the contractors for the area allotted for construction of their temporary sheds for site office/ store /labour hutment's required in the contract works. Licence fees on Port land for maintenance office buildings and other structures at Mormugao Headland Sada slopes and Baina is **Rs. 261/- rate per 10 sq. m. or part thereof per calendar month or part thereof.**
- 19) No temporary structures / sheds, which are constructed to house the contractor's office/store/labour hutment's, shall be permitted to be retained during the period of maintenance.
- 20) The portion of Security Deposit due for refund in accordance with the conditions of contract, after physical completion of the work, will not be refunded except with the prior permission of the Chief Engineer, unless and until contractor submits the final bill based on joint measurements.
- 21) All the debris / kutchra etc. (Except the items to be handed over to the Department as mentioned in the Schedule of Quantities and Rates) arising out of this work shall become the property of the contractors and they shall make necessary arrangements to dispose it off at no extra cost to Port Trust. The debris / kutchra etc. shall not be dumped in Port Trust estate. If any of Port Trust debris / kutchra etc. is found dumped in MPT estate, **a fine of Rs. 5000/-** per lorry load will be recovered from the contractor.
- 22) In case of excess under any item, the contractor should bring it to the notice of the concerned Chief Engineer well in time to enable him obtain necessary sanction.
- 23) Further to the provisions in the General Conditions of Contract, upon the Chief Engineer certifying that in this opinion, the contractor, after receiving from the Chief Engineer, a written notice,

1. has suspended progress on any portion or items of the works for seven days,  
or
2. has failed to make proper progress on any portion or items of the works for seven days, or
3. has failed to complete any portion or items of the works by the time specified by the Chief Engineer or
4. has failed to remove from the site for seven days, material which have been condemned and rejected, or
5. has failed to pull down within seven days and rebuild within the time stipulated by the Chief Engineer works which have-been condemned and rejected, or
6. has failed to give to the Chief Engineer or his representatives proper facilities for inspecting the works or any part thereof for three days, or
7. has failed to carry out proper tests for three days on any work or materials,

then the Trustees, without restricting, prejudice to their rights under Clause Nos. 57.1 of the General Conditions of Contract and expelling the contractors from the site of works, without determining the contract and while permitting the contractor to carry out or employ another agency to carry out at the risk and cost of the contractor.

- a) the execution of such portions or items of the works which the contractor has suspended or failed to make proper progress or failed to complete within the specified time, and / or
- b) removal of condemned and rejected material from the site, and / or
- c) pulling down and rebuilding of condemned and rejected works, and /or
- d) the provision of proper facilities to the Chief Engineer or his representative for inspecting the works, and / or
- e) testing of any work or materials.

In such cases, additional expenditure incurred, if any by the Trustees over and above that which would have been incurred by them had above works been carried out by the contractors under the terms of this contract shall be paid by the contractor to the Mormugao Port Trust. The Trustees reserves their right to recover their additional expenditure from the moneys payable to the contractor or from deposits or such amounts that may have been lodged by the contractor with the Mormugao Port Trust for due performance of the contract under these presents. The Trustees further reserve their right to recover such additional expenditure from the moneys payable to the contractor for any other contract or transactions of any nature whatsoever existing between the Trustees and the contractors

- 24) All the material to be used for the work shall be as far as possible, in accordance with the relevant specifications. However, the final approval of the material shall be at the sole discretion of the Chief Engineer of his representative depending upon the availability of the material in the market.
- 25) All the materials to be used in the structure shall be conforming to relevant ISI specifications or as specified in the Tender Schedule. Contractor shall undertake laboratory test as specified in the relevant I.S.I. Codes at the discretion of Chief Engineer and only approved materials/approved brand of materials shall be used.

26) **VALUATION OF EXTRA ITEMS OF WORKS & VALUATION OF ADDITIONS AND ALTERATIONS TO THE TENDER ITEMS**

**(A) VALUATION OF EXTRA ITEMS OF WORKS**

The rates of extra items of work not contained in the Schedule of Quantities and Rates, shall be fixed only on the following basis:

- (a) from similar items, if such items exists in the tender, or
- (b) from any comparable item, if such items exists in the tender.

**If (a) and (b) are not available then,**

(c) from MPT's SOR / Rate Analysis and using current costs of labour and materials and with allowance of 10% on direct costs towards the contractor's profit and over head.

**If (a), (b) and (c) are not available then,**

(d) from actual direct cost of labour and materials consumed and with allowance of 10% towards contractor's profit and overhead. (In such cases, rates of labour and materials and hired charge of hired plant shall be supported by vouchers).

Rates of labour and material and hired charges for plant owned by the contractor shall be fixed by the Chief Engineer.

**(B) VALUATION OF ADDITIONS AND ALTERATIONS TO THE TENDER ITEMS:**

In the event of any modification in the work being effected in the items of work covered in the Schedule of Quantities and Rates with the prior approval of the Chief Engineer in such cases, only such modified items of work shall be revalued on the basis of MPT Rate Analysis pertaining to that item of work. If the modification is

effected by the contractor without prior approval of the Chief Engineer, then the Chief Engineer will be at liberty to reject the same. However, in the event of Chief Engineer's acceptance on such work, the same will be revalued on foregoing basis but the rate arrived at will be reduced by 10%.

27) **MODE OF PAYMENT:**

The procedure for preparation and settlement of contractor's bills as under:

(i) The accepted operation and maintenance charges towards two years contract period shall be payable on monthly basis of the tendered amount for 24 months at the end of each month.

(ii) 100% of the bill will be paid within 20 working days from the date of submission of bill by the Contractor.

(iii) The amount of any bill can be adjusted against dues to Mormugao Port Trust on any other dealings with the Mormugao Port Trust.

(iv) **Retention Money** will be recovered through the bills at the rate of 10% of the amount certified in each bill, till an amount equivalent of 5% of the contract Price is accumulated.

28) **FACILITIES FOR WORKERS OF OTHER AGENCIES:**

Contractor shall take care to see that his work does not, in any way, hamper the concurrent progress of works of the other agencies in and around the existing site of work, laying of cables or any other work, which will be awarded during currency of this contract. The contractor, shall accord all facilities to various agencies / contractors such as place for storing their material place for site office, etc. in consultation with the site Engineer and carry out his activities in close co-ordination with all agencies.

29) No Port Trust structure room is available for storing the materials brought, at site by the contractor. The contractor shall make his, own arrangement to construct a temporary storeroom at his risk and cost, at or near the site of work, as directed by the Site Engineer. However, the same will be used for storing materials only and not for residential purpose and the same will be dismantled and removed from the site, immediately on completion/ termination of work. The final bill of the work will not be settled, unless the site is completed cleaned of all the materials.

- 30) The contractor shall have EPF Registration No. of the firm and shall contribute towards Employees Provident Fund (EPF) and submit the copy of the same along with the details in the prescribed format while submitting bills.
- 31) Contractor who does not have ESI registration shall take the Insurance policy under the Indian workmen's Compensation Act 1923 to be taken to cover the workers employed by them on the subject works, against the risks involved in the execution of work. Original policy to be produced for Scrutiny before commencement of work and original policy will be returned after scrutiny.
- 32) The work shall be carried out without disturbing the operation of Port or other agencies working in the area.
- 33) Tenderers are advised to inspect and ascertain themselves the nature and the extent of work involved and also obtain all clarifications they may require before filing in the tender.
- 34) Tenderers are required to sign date the Schedule of quantities and Rates and the form of tender and fill in all the particulars and details called for therein. Unsigned tenders, without the details called for are liable for rejection.
- 35) Rates and prices to be inclusive.

The rates entered in the Schedule of Quantities by the contractor shall include the provision of all supporting special equipment, labour of required skill, supervision, materials, erection, overheads and profits, watch and ward, insurance charges, during execution and every incidental and contingent costs and charges, whatsoever, including income tax, sales tax on works contracts, etc. if any, for compliance with conditions of contract and specification.

36. The tenderers will be deemed to have ascertained themselves to the extent and nature of the works involved, the various constraints and high degree of skill involved in the works.
37. The Tenderers supervisory staff shall be fully experienced in the operation and maintenance of similar designated sewage treatment plant under their supervision.

38. It shall be specifically noted that the contractor is expected to mobilize the required equipment and work force required to complete the entire work included in the contract well within the stipulated period, since any let down delay to commence the work, will adversely lead to operation of sewage treatment plant which further will lead to foul smell in the vicinity.
39. As a statutory requirement, the contractor shall take all measures of safety against fire hazard and electrocution at site.
40. If any conditions are to be stipulated by the tenderer the same should be written, put in a separate sealed cover and submitted superscribing the name of work and name of tenderer. If any conditions stipulated by the tender are found in single cover containing tender documents (Volume I & II) the same will not be considered and treated as withdrawn by the tenderer.
41. The tenderer shall inspect the site and fully study the work-involved vis-à-vis the quantity and specification etc. before tendering for the work.
42. Any damage to the property of port should be made good or compensated by the contractor.
43. After completion of the days work/contract period the contractor shall clean and clear the work site to the satisfaction of the Chief Engineer or his site representative.
44. The sewage treatment plant will be operated in three shifts of 8 hours each continuously throughout the contract period unless any incidental occurrence preventing the smooth functioning of plants.
45. Electricity required for operation of the sewage treatment plant and water for the use of staff will be supplied free of cost to the contractor by Mormugao Port Trust.
46. The contractor shall guarantee quality performance of plant comprising the effluent limits to remain within the permissible limits or as prescribed during the entire tenure of contract period.
47. The contractor has to engage minimum one chemist, one sanitary sweeper and two operators per shift of 8 hrs for 3 shifts for both plants and all of them have to report to the Water supply Section.
48. The raw sewage to effluent supply treatment has to be followed regularly as per the manual or as directed as the effluent of STP (1200 cubic metre) at Headland has to be supplied to a party without any hindrance.

49. The sludge generated from the sewage treatment plant will be disposed off/dumped by contractor at any designated place as indicated by the Port within 2 km distance as part of the contract conditions.
50. The contractor has to execute an agreement with the Port as per tender. The stamp paper and other expenditure incurred by us for preparation of the agreement will be recovered from contractor's bill.
51. Chemicals, grease, oil etc. required for operation at sewage treatment plant shall be arranged by the contractors at their own cost and the same shall be taken into consideration while quoting the rates.
52. Mis-use of electricity, water and premises and Port property is liable for termination of contract.
53. The sewage treatment plant premises is to be kept in a neat and tidy conditions at all times, during the tenure of the contract and shall carryout necessary weeding, cleaning etc. of the entire site premises.
54. Before commencing the work on site, contractor has to take requisite permission from the Labour Enforcement Officer, Labour Commissioner, municipality, other local agencies/ authorities etc. and also required to furnish monthly returns about the number of employees employed for the operations ./ maintenance.
55. The shifts timings shall be followed as directed by Department.
- 56.a. The following sewage characteristics are to be maintained.

Sr. NO.	Parameter	Untreated sewage Characteristics (approximately)	Treated sewage Characteristics (strictly to be maintain)	Remark
1.	Colour & odour	Brown & objectionable	Colourless and odourless	
2.	Suspended solids	400 mg/lit.	< 100 mg/lit.	
3.	PH	8-10	5.5-9.0	
4.	Oil & grease	50 mg/lit.	< 10 mg/lit.	
5.	COD	400 mg/lit.	< 250 mg/lit.	
6.	BOD @ 27 <sup>o</sup> C	250 mg/Lit.	< 5 mg/Lit. <30	For colony (1200m <sup>3</sup> ) STP

56. The contractor has to maintain the log book and other records during operation and submit daily two copies of the statement / record to the concerned section before 10 a.m.

57. The tenderers are advised to read the operation and maintenance manual for respective sewage treatment plants which are enclosed with the tender set.
58. The plant shall be operated by the deployment of persons having proper knowledge and experience in operating this type of plant of matching capacity. The cost of repairing any damage of rectifying malfunctioning which in the opinion of the Chief Engineer is due to improper operational handling of the payment will be recovered from the contractor and the Chief Engineer decisions will be final and binding.
59. The special instructions given above shall prevail over those stipulated elsewhere in the tender documents forming part of the contractor. The volume (printed set) containing the instructions of tenderers, the General Conditions, Special Conditions and Specifications forms an integral part of the tender document and the same shall be submitted along with the volume - I of the tender documents all duly signed by the tenderer.
60. The scope of this contract is for operation and routine maintenance works to be carried out after operation the plant form specified/ directed working hours as specified in or operation manual. The tender shall assess and include of the materials, labour, tools and plants and machinery, equipments for the operation and routine maintenance works as above. The service contract will be a separate agency and cost repairs/ replacement of any spares; due to improper operation bad handling of the plant in the opinion of the Chief Engineer will be recovered form this contract.
61. If the any maintenance work has to the carried out beyond normal working hours and during night time approval in advance for the working has to obtained from the Chief Engineer. Overtime charges of department supervisory staff have to be borne by the tenderer.
62. Maintenance of pumps, footvalves and other plant machinery to be done by the tenderer.
63. Periodic cleaning of the chlorination tank using required bleaching powder etc.
64. In case of breakdown of the Rotating biological disc contactors (RBCs), clarifiers, pumps, motors, gear boxes, any other machines or equipments etc. it shall be repaired by the contractor immediately. All tools, plants, cranes etc. required for the repairs shall be arranged by the contractor. Also incase of any spares required for the repairs/maintenance for the efficient functioning of the plant, the same shall be arranged by the Contractor after taking prior approval of the price from the competent authority. However the cost of such spares will be considered for payment on production of documentary evidence.

65. **Penalty clause.**

Following penalty may impose if the particular item or specified works are not attended.

**For 1200m3 STP at Headland Sada.**

<b>Sr No.</b>	<b>Description of Item</b>	<b>Penalty</b>
1	Regular cleaning of grit chamber (Fore noon & After noon)	` 500/- per day
2	Removal of choke ups from the various piping outlet	` 500/-
3	Stacking of waste material in dust bin and keeping the area clean,	` 1000/-
4	Cleaning of chlorine contact tank - <b>Every week</b>	` 1000/-
5	Cleaning of 200m3 tank near officers club <b>-Every fortnight</b>	` 2000/-
6	Pumping of treated water to the various points such as to the SWPL sites, garden at Headland area, filling of tankers as and when required (Breakdowns not included)	` 1000/-
7	Maintaining the STP garden by planting ornamental plants (supplied by department) and weeding and cleaning, and keeping the surrounding area clean by watering, cleaning, sweeping, cutting the creeper, bushes etc <b>-per day</b>	` 500/-
8	Keeping the fountain pumps always in running condition <b>- per day</b> (Breakdowns not included)	` 300/-
9	Keeping various valves, sluice valves etc on operational condition for smooth operation <b>- per day</b>	` 300/-
10	Regular maintenance/servicing of plant, equipments such as oiling, greasing of various gear boxes, pumps, fountain pumps, motors, maintenance	` 500/-
11	Repairs of all pumps, foot valves installed of various sizes as & when required, maintenance of sluice valves by providing gland packing etc	` 500/-
12	Maintaining the desired parameters of the treated water within the permissible limits (Breakdown period not included)	` 2000/-

**For 100m3 STP near Port Hospital.**

<b>Sr No.</b>	<b>Description of Item</b>	<b>Penalty</b>
1	Regular cleaning of grit chamber (Fore noon & After noon)	` 300/-
2	Removal of choke ups from the various piping outlet	` 300/-
3	Stacking of waste material in dust bin and keeping the area clean	` 500/-
4	Cleaning the raw/ treated sewage tanks – <b>Every quarterly</b>	` 1000/-
5	Daily proper pumping of treated water to the surrounding garden, periodic pumping of sludge... etc <b>-Per day</b>	` 500/-
6	Keeping various valves, sluice valve on operational condition for smooth operation <b>-Per day</b>	` 200/-
7	Regular maintenance/servicing of plant, equipments such as oiling, greasing of various gear boxes, pumps, fountain pumps, motors, maintenance	` 300/-
8	Repairs of all pumps, foot valves installed of various sizes as & when required including removing and refitting, maintenance of various interconnecting pipelines	` 300/-
9	Maintaining the desired parameters of the treated water within the permissible limits	` 1000/-

Note :-

- 1) If any employee not available at site or not deputed at site as stipulated in the B.O.Q. ` 300/- will be penalized per person per shift.
- 2) Contractor has to maintain the register for recording the above works attended by him failing which the same will be treated as not attended and accordingly penalty shall be imposed.
- 3) Contractor shall obtain the signature daily or as practical from the engineer-in-charge of all the records maintained by them.
- 4) Imposing penalty is not relief on the Contractor not to attend the work. Contractor has to arrange to get the work done within a reasonable time failing which the department may enter upon the site and be get the work done by engaging other agencies at the risk & cost of the Contractor.
- 5) Date will be fixed for the period mentioned above after placing the work order. Contractor accordingly arranged to get the work done and failure which penalty as stipulated above shall be imposed on contractor.



An ISO 9001-2000 PORT

**MORMUGAO PORT TRUST**  
**ENGINEERING (CIVIL) DEPARTMENT**

**Tender No.CE/59/2011**

**Operation and Maintenance of 1200m<sup>3</sup> capacity STP at Headland  
and 100m<sup>3</sup> capacity STP at New Hospital site at Headland  
for a period of two years.**

**SCOPE OF WORK**

1. Receiving of entire raw sewage through colony / as is scheduled ... etc.
2. Cleaning of grit chamber any other chambers, lines as is required... etc.
3. Maintaining the flow from one unit to other as is designed or as per the manual ... etc.
4. Purifying of treated water from chlorination tank to the fire fighting tank as per directions ... etc.
5. Cleaning of chlorination tank, clarifies any other unit periodically as directed.
6. Routine weekly maintenance of sewage treatment plant units as per manufacturers manual or as directed.
7. Disposing of sludge as directed.
8. Maintaining the entire plant area neat & tidy at all times including carrying out necessary weeding, cleaning the entire area etc.
9. Repairs of any machinery, plant, equipment etc. in case of malfunction or breakdown.



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and 100m<sup>3</sup> capacity STP at New Hospital site at Headland  
for a period of two years.**

**PROCESS DESCRIPTION**

The system consists of the following unit operations, processes and process interfaces :

- UNIT OPERATION – 1 : GRIT REMOVAL / SCREENING  
*Function : Removal of sand / suspended particles such as clothes, plastic, etc.*
- UNIT PROCESS -1 : ANAEROBIC BIOCHEMICAL TREATMENT BY UPFLOWANAEROBIC SLUDGE BLANKET REACTOR PROCESS  
*Function : Attached growth anaerobic bio chemical oxidation of colloidal & dissolved Organic compounds.*
- UNIT PROCESS -2: AEROBIC BIOCHEMICAL OXIDATION BY THE ROTATINGBLDISK CONTACTOR PROCESS  
*Function: Attached growth Aerobic Biochemical oxidation of colloidal and dissolved organic compounds*
- UNIT OPERATION -2: BIOMASS-LIQUID SEPARATION BY SEDIMENTATION  
*Function : Separation of sloughed biofilm by sedimentation*
- PROCESS INTERFACE -1: FLOW MEASUREMENT BY V-NOTCH  
*Function : flow measurement*
- UNIT OPERATION -2: HYPO CHLORITE DOSING  
*Function : Disinfection and Oxidation of the treated effluent*

**RAW SEWAGE SCREENING**

□ FLOW REGIME : CONTINUOUS

□ MATERIAL OF CONSTRUCTION : MILD STEEL

### **ANAEROBIC REACTOR**

□ TYPE : UP FLOW SLUDGE BLANKET REACTOR

□ MOC: REINFORCED CEMENT CONCRETE

□ REACTOR CONTENT : DENSE CULTURE OF ANAEROBIC BACTERIA

□ SLUDGE HEIGHT : 2 METRE MINIMUM

### **ROTATING BIODISK CONTRACTOR**

□ NO. OF UNITS : THREE

□ BIODISK PACK DIAMETER : 2000MM

□ TYPE OF PROCESS : BIOSURF

□ GEAR MOTOR : SEW EURODRIVE

□ ROTATIONAL SPEED : 4.0 RPM

□ GEAR OIL : GEAR OIL 220

### **SECONDARY CLARIFIER**

□ FLOW DIRECTION : UPFLOW

□ MOC : RCC

□ GEAR BOX : HINDUSTAN DORR OLIVER

□ GEAR OIL : 220

□ MOTOR : 2 HP, 900 RPM

### **HYPOCHLORITE DOSING SYSTEM**

□ TYPE : GRAVITY DOSING

□ TANK CAPACITY : 500 LTR

□ 10% CHLORINE : 5 LTR IN 495 LITRE OF  
WATER

## **OPERATIONAL PROCEDURES**

### **1. SCREENING**

- ❑ RAW SEWAGE PRIOR TO ENTERING THE UASBR PASSES THROUGH THE SCREEN PROVIDED.
- ❑ THE SUSPENDED PARTICLES SUCH AS CLOTHES, PLASTICS ETC ARE TRAPPED ON THE SCREEN.
- ❑ THIS SHOULD BE REMOVED WITH SHOVEL/SPADE FREQUENTLY OR AS PER REQUIREMENT.
- ❑ THE SCREEN SHOULD BE KEPT CLEAN TO AVOID THE CHOKAGE PROBLEM.
- ❑ AFTER SCREENING THE RAW SEWAGE IS FED BY GRAVITY AT THE BOTTOM OF THE UPFLOW ANAEROBIC SLUDGE BLANKET REACTOR.

### **2. UPFLOW ANAEROBIC SLUDGE BLANKET REACTOR**

- ❑ THE UPFLOW ANAEROBIC SLUDGE BLANKET REACTOR (UASBR) CONSISTS OF A STRATIFIED REACTOR WITH FOUR DISTINCT ZONES.
- ❑ THE BOTTOM ZONE IS THE INLET ZONE WHERE THE RAW SEWAGE ENTERS.
- ❑ SEWAGE FLOWS UPWARDS THROUGH A RICH AND DENSE CULTURE AND ANAEROBIC MICROBES (MAINLY BACTERIA) IN THE FORM OF WHAT IS KNOWN AS A GRANULATED BED.
- ❑ AS THE SEWAGE PASSES THROUGH THE BED, THE MICROBIAL POPULATION IN AN OXYGEN DEFICIENT ENVIRONMENT ASSIMILATES ORGANIC MATTER IN THE SEWAGE.
- ❑ SUSPENDED SOLIDS ARE TRAPPED PHYSICALLY WHILE SOLUBLE MATTER IS ABSORBED IN THE GRANULATED BED.
- ❑ SEWAGE FLOW UPWARDS THROUGH THE CLARIFICATION ZONE IN WHICH THE SOLIDS WHICH SETTLE TRAVEL DOWNWARDS AND REINFORCE THE BLANKET.
- ❑ GAS COMPOSING MAINLY OF METHANE AND CO<sub>2</sub> ESCAPES INTO THE ATMOSPHERE FROM THE TOP.

### **3. SECONDARY SETTLER ( CLARIFIERS )**

- ❑ THE TREATED WATER FROM THE RBC IS DISCHARGED AT THE BOTTOM OF CLARIFIER.
- ❑ THE SOLID PARTICLES SETTLES AT THE BOTTOM OF THE CLARIFIER.
- ❑ THE SOLID PARTICLES (SLUDGE) IS COLLECTED IN TO THE HOPPER OF CLARIFIER.
- ❑ THE CLARIFIED WATER FROM THE TOP OF THE CLARIFIERS IS DISCHARGED IN TO THE CHLORINE CONTACT TANK.

### **4. SODIUM HYPOCHLORITE DOSING**

- ❑ ADD 5 TO 10 LITRES OF CHLORINE
- ❑ MAKE UP THE VOLUME WITH CLEAR TAP WATER AND MIX THE CONTENTS.
- ❑ THE CHLORINE SOLUTION IS DOSED AT THE INLET OF THE CHLORINE CONTACT TANK. WHERE SUFFICIENT CONTACT TIME IS MADE AVAILABLE FOR CHLORINE MIXING AND OXIDATION OF TREATED WATER.
- ❑ THIS ENSURES THE COMPLETE DISINFECTION OF THE TREATED SEWAGE.
- ❑ THE WATER FROM THE CHLORINE CONTACT TANK IS DISCHARGED TO SEA AND PART OF IT IS UTILISED FOR GARDENING.

### **SLUDGE MANAGEMENT**

- SLUDGE IS FORMED IN THE CLARIFIER HOPPER OPEN THE SLUDGE.

DRAIN VALVE OF THE CLARIFIER AND COLLECT THE SLUDGE IN WET SUMP.

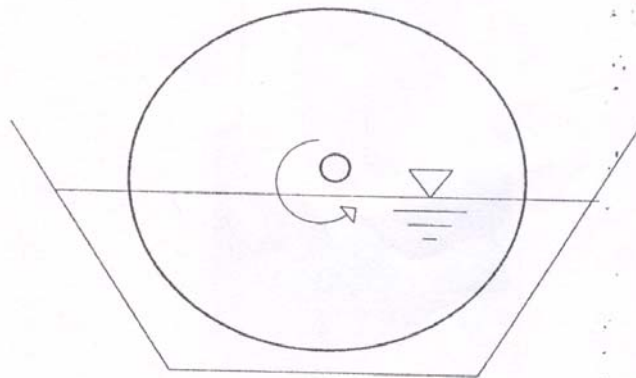
- PUMP THE SLUDGE FROM THE WET SLUDGE SUMP IN TO THE UASBR AFTER EVERY SIX HOURS.
- PART OF THE SLUDGE IS PUMPED THROUGH THE FILTER PRESS FOR DEWATERING.

- THE DEWATERED SLUDGE IS THEN COLLECTED AND USED AS MANURE FOR GARDENING.

## ROTATING BIOLOGICAL CONTACTOR

### BASICS

- RBC's ARE FIXED FILM REACTORS WITH UNIQUE FEATURES
- PARALLEL CIRCULAR DISKS ATTACHED PERPENDICULARLY TO A SHAFT PASSING THROUGH THEIR CENTRE.
- SHAFT SLIGHTLY ABOVE WATER LEVEL.
- MICROORGANISMS GROW ON SURFACE OF DISCS.
- ROTATION OF DISCS BRINGS THE BIOFILM IN CONTACT WITH THE LIQUID ALLOWING THEM TO REMOVE ORGANIC MATTER (SUBSTRATE) FROM IT.
- ROTATION OF DISCS KEEPS MICROBIAL POPULATION IN CONTROL.
- RBC's ARE OFTEN COVERED TO CONSERVE HEAT.



## TROUBLE SHOOTING

<b>POSSIBLE FAULTS</b>	<b>CAUSE</b>	<b>REMEDIS</b>
SCREEN CHOKED	CLOTHES, PLASTIC MAY HAVE CLOG THE SCREEN	REMOVES THE CLOTHES/PLASTIC OR ANY OTHER MATERIAL
GRIT CHANEL OVERFLOWS	USASBR INLET CHOKE	SLIGHTLY OPEN THE UASB BYPASS VALVE AND DRAIN OUT THE SAND OR SOLID PARTICLES GOT ACCUMULATED
WATER FROM UASBR BLACKISH	NOSLUDGE REMOVAL FROM UASBR	OPEN THE SLUDGE VALVE AND REMOVE THE SLUDGE
RBC BEARING NOISY	IMPROPER LUBRICATION	FREQUENTLY APPLY GREASE TO BEARINGS
		IF NOISE STILL PERSIST REPLACE THE BEARING
NOSIE IN RBC	TIE RODS LOOSEN	TIGHTEN THE TIERODS/CONTRACT SUPPLIER
RBC GEAR MOTOR HEATS UP	LESS OIL LEVEL	FILL UP WITH GEAR OIL 220
CLEARIFER OUTLET TURBID	INSUFFICIENT SLUDGE REMOVAL FROM CLARIFIER	FREQUENTLY REMOVE THE SLUDGE AND PUMP THE SLUDGE IN UASBR
SLUDGE FLOATS ON TOP OF CLARIFIER	SAME AS ABOVE	SAME AS ABOVE
ODOUR TO TREATED SEWAGE	INSUFFICIENT CHLORINE DOSING	INCREASE THE CHLORINE PERCENTAGE IN CHLORINE SOLUTION
	INSUFFICIENT SLUDGE REMOVAL	REMOVE THE SLUDGE FREQUENTLY

## LUBRICATION SCHEDULE

<b>EQUIPMENT</b>	<b>LUBRICANT</b>	<b>SCHEDULE</b>
PUMP BEARING	GREASE	ONCE IN TWO MONTHS
RBC BEARINGS	GREASE	WEEKLY BOTH SIDE
RBC GEAR MOTOR OIL	GEAR OIL 220	ONCE IN THREE MONTH
SLUDGE PUMP	GEAR OIL 140	ONCE IN THREE MONTH
GEAR BOX	GEAR OIL 220	ONCE IN THREE MONTH

### *SOME PRECATUIONS TO BE TAKEN*

1. *NEVER STOP THE RBC EVEN IF THERE IS NO RAW EFFLUENT INFLOW.*
2. *NEVER DRAIN OUT THE SLUDGE COMPLETELY FROM THE UASBR.*
3. *ALWAYS APPLY SUFFICIENT FREASE TO RBC BEARINGS. THIS IS MOST IMPORTANT.*
4. *DON'T RUN ANY OF THE PUMP DRY.*
5. *REFER VENDOR MANUAL FOR EQUIPMENT MAINTENANCE*
6. *NEVER START BURNER IN ABSENCE OF AUTORISED PERSON*
7. *STRICTLY FOLLOW THE MAINTENANCE/LUBRICATION SCHEDULE.*

## SPARE LIST

<b>ITEMS</b>	<b>SPECIFICATION</b>	<b>VENDORS/MAKE</b>
<i>GEAR MOTOR FOR RBC</i>	<i>OIL 220</i>	<i>LOCAL/SERVO/HP</i>
<i>RBC BEARINGS</i>	<i>22220K</i>	<i>LOCAL/SKF/ZKL</i>
<i>RBC TIE RODS</i>	<i>2490MM X 20 MM DIA</i>	<i>NEE</i>
<i>LOCK NUT/MACHINED NUTS</i>	<i>M20</i>	<i>LOCAL/ NEE</i>
<i>GREASE</i>		<i>SERVO</i>
<i>RUBBER BUSH FOR RBC</i>	<i>SUITABLE FOR BC5 FLEXIBLE COUPLING</i>	<i>LOCAL</i>

## TREATMENT PHILOSOPHY

The sewage arising from hospital complex is expected to have nautical PH6.5-8.0, BOD 250mg/l. COD 400 mg/l & O & G 50 mg/l me of man concern. For this units, we have proposed primary treatment to remove the unwanted object & coarse grit & oil & grease followed by fixed film technology combined with fine bubble diffuse aeration technique to get highly efficient biological treatment (attached growth system), to meet the discharge standard.

Addition of sodium hypochlorite solution in final treatment water is proposed to maintain necessary residual chlorine to avoid bacterial contamination.

For dewatering of sludge, basket centrifuge is proposed.

## PROCESS DESCRIPTION

The raw sewage flows by gravity to the STP, raw sewage is passed through screen & grit chamber to avoid entering of unwanted objects, coarse grit. After screening sewage is passed through O & G trap for removal of Oil & Grease before entering into sewage collection tank.

The raw sewage is pumped with help of submersible pumps of capacity 4.5 M3/hr to the Package Sewage Treatment Plant, working on the principle of High Rate Aeration with submerge media. Aspirated air is purged in the aeration tank and mixed with bio-mass generated by seeding. The fine bubbles generated by grid produce good mixing & oxygen transfer. The clarifier is in the form of tube settler. The sludge is settled in the tube settler wherein PVC media is used. Since the process involves retention of biomass on media in the aerobic system, no recirculation is required. The excess sludge is taken to the dewatering system. The overflow from the Tube settler is taken to chlorination tank for chlorine dosing.

# UNITS SIZES & MECHANICAL EQUIPMENT

## SUMMARY

### A. UNITS ;

#### 1. BAR SCREEN CHAMBER :

No.	:	One
Size	:	1.0Mx0.5Mx0.3M LD + 1.0 FB
MOC	:	RCC
Function	:	To avoid entry of unwanted objects

#### 2. GRIT CHAMBER :

No.	:	One
Size	:	2.0Mx0.5Mx0.3M LD + 1.1 FB
MOC	:	RCC
Detention time	:	1 min.
Function	:	To avoid entry of unwanted objects

#### 3. O & G TRAP :

No.	:	One
Size	:	3.5 M x 1.5 M x 1.0 M LD + 1.3 FB
MOC	:	RCC
Detention time	:	30 min.
Function	:	To avoid entry of unwanted objects

#### 4. RAW SEWAGE SUMP :

No. of tanks	:	One
Size	:	1.5 M x 1.5 M x 1.0 M LD
Detention time	:	30 min.
Entry of effluent	:	From gravity
Exit of effluent	:	To SAFF reactor through Raw sewage pump
MOC	:	R.C.C.
Function	:	To collect effluent and dampen variations in quality

5. SAFF REACTOR :

No. of tanks	:	One
Size	:	5.2Mx2.4Mx3.6M LD + 0.5 FB
MOC	:	R.C.C.
Entry of effluent	:	From top pumped flows
Exit of effluent	:	From Top
Mixing of tank contents	:	Diffuse air

6. TUBE SETTLER :

No. of tanks	:	One
Size	:	2.4Mx1.7Mx2.0M LD + 0.3 FB
MOC	:	R.C.C.
Entry of effluent	:	From SAFF reactor launder overflow
Exit of effluent	:	To treated sewage sump launder Overflow
Function	:	To settle suspended particle

7. TREATED SEWAGE SUMP:

No. of tanks	:	One
Volume	:	49.02M <sup>3</sup>
MOC	:	HDPE
Function	:	To store effluent water.

8. HYPE PREPARATION TANKS:

No. of tanks	:	One
Capacity	:	100 lit
MOC	:	HDPE
Chemical dosing	:	In treated effluent out let
Function	:	To store hypo solution.

B. MECHANICAL EQUIPMENT

1.	Tag No. AB101A/AB101B	:	Diffuse air blower
	Type	:	Twin lobe blower
	Nos.	:	2
	Capacity	:	50 m <sup>3</sup> /hr
	Discharge pressure	:	0.54 kg/cm <sup>2</sup>
	MOC	:	Casing : CI Rotor : CI

	Make	:	USHA
	Accessories	:	Suitable common base frame for blower & motor, suitable pulleys, V belts, suction air filter, safety relief valve & suction silencer
	Drive motor	:	5.0 HP x 1450 RPM, Electric induction motor TEFC, Sq. Cage, IP-55, Class 'F' insulation 3 ph, 440V, 50 Hz Make : Compton
2.			Diffuser for SAFF reactor
	Nos	:	8
	Type	:	Membrane type fine air diffuser
	MOC	:	EPDM
	Make	:	Grindwell
3.	Tag P-101-A/B	:	Raw sewage Pump
	Nos	:	(1 working + 1 standby)
	Type	:	Submersible
	Capacity	:	10 m <sup>3</sup> /hr
	Total discharge Head	:	10 M
	Drive	:	Motor driven
	Solid Handling Capacity	:	10 mm $\Phi$
	MOC	:	Casing/Stuffing Box : CI . Impeller/Type : CI/ Semi Open . Shaft : CS
	Accessories	:	Suitable piping, Valves, Pressure Gauge at Delivery
	Make	:	Kirloskar
	Drive motor	:	1.0 HP/1440 RPM, IP 55 TEFC, B3, F, IP 55 squirrel cage, 415V, 50Hz with outdoor installation make : Grundlos
4.	Tag	:	Basket centrifuge
	Nos	:	One
	Type	:	Basket type top discharge
	Capacity	:	25 kg/day
	MOC (basket)	:	SS 304
	Make	:	United
	Motor	:	TEFC type squirrel cage through multiple V belts, 1.0 HP/1450 RPM
	Make	:	Kirlosker

# START UP OF THE PLANT

All the units should be clean from debris, waste material, bolts, nuts, wires or any extraneous material otherwise they would spoil the pump.

## 6.1 MECHANICAL & ELECTRICAL CHECKS

- a) The gear box should be filled with gear oil.
- b) The self priming pump should be filled with water to ensure self priming
- c) Measure the No load current of all the motors & check if it is within limits.
- d) All valve & lines should be checked and cleaned before start up.

## 6.2 TRIAL WITH FRESH WATER

The fresh water is passed through the various units and all the tanks are filled up to the overflow levels. This also helps to check the leakages if any. All the valves, pumps and other mechanical items are checked. The overflow levels in the weirs is checked to see that they are uniform throughout

## 6.3 START UP OF BIOLOGICAL SYSTEM (SAFE REACTOR) :

While commissioning the plant it is important to use acclimatized micro organism for greater efficiency. The acclimatized microorganism are called as biological seed in the SAFE reactor. In absence of better seed, naturally available bio-matter cow dung may be added into the SAFE reactor, after removing the extraneous materials like straw, grass, etc. Continuously pass the air through air diffuser so that the mixture of biological seed and water is thoroughly mixed and oxygen from the air is provided continuously. Do not allow any extra water to flow inside the SAFE reactor.

The process of seeding will take about weeks time depending upon the temperature and humidity of the atmosphere.

## 6.4 CHARGING OF UNITS & COMMISSIONING OF ETP.

2. In order to start the plant it will be essential to see the incoming sewer line to the plant starting from screen chamber, which should be clear from debris. Similarly all the tanks should be cleaned and free from any waste material before sewage is taken into the plant.

3. Before starting the pump it is necessary to ensure that there is sewage in the collection tank. The submersible pumps are with inbuilt level controller and it will operate depending water level in the tank

After the raw sewage pump is started, the sewage will start flowing into the SAFF reactor. The raw effluent pump should be started only after ensuring sufficient sewage in the tank. The flow rate of this pump should be adjusted by throttling the valve to the predetermined level of 4.25 m<sup>3</sup>/hr. flow can be monitored by measuring the pressure at the pressure gauge fitted on the pump. The overflow from the SAFF reactor will be passed to the Tube settler. The overflow from the Tube settler will be passed on the collection tank.

The excess sludge from the SAFF reactor and Tube settler will be dewatered in the basket centrifuge.

## 6.5 DO's & DON'T's FOR OPERATION

### 6.5.1. Do's

1. Clean all the units for debris, waste material, nuts, wires or an extraneous material.
  2. Average flow of 100m<sup>3</sup>/day should be maintained.
  3. Standby pump should be operated alternatively on 12 hrs basis.
  4. Standby Blower should be operated alternatively on 12 hrs basis.
1. PARAMETER TO BE MAINTAINED :  
Dissolved Oxygen :2.0-2.5 mg/l

### 6.5.2. Don't's

1. Do not run standby pumps simultaneously.
2. Do not allow the pump to run dry.
3. Do not run standby blowers simultaneously.
4. Do not allow the pH of the incoming sewage to go beyond the design parameters like COD,BOD,O&G.
5. Do not operate the pump if there is no incoming sewage in the sewage sump.
6. Do not allow SAFF system to become septic (always run blower).

## LOG BOOK

Log sheets for data collection format to monitor the proper maintenance of the plant attached.

## OPERATION OF VALVES :

Study the nomenclature of valves & the exact location of these valves in the plant as per drawing from as per P & I Diagram drawing.



**MORMUGAO PORT TRUST**  
**ENGINEERING (CIVIL) DEPARTMENT**

**FORM OF BANK GUARANTEE FOR SECURITY DEPOSIT**

1. In consideration of the Board of Trustees of Mormugao Port Trust (hereinafter called 'The Board') having agreed to exempt from \_\_\_\_\_ (hereinafter called 'The said Contractors') from the demand, under the terms and conditions of an agreement to be entered between the Board \_\_\_\_\_ and \_\_\_\_\_ for \_\_\_\_\_ (hereinafter called 'The said Agreement') of Security Deposits for the due fulfilment by the said Agreement on production of a Bank Guarantee for Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only). We, \_\_\_\_\_ Bank \_\_\_\_\_ (Hereinafter referred to as 'The Bank') do hereby undertake to pay to the Board an amount not exceeding Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only) against any loss or damage caused to or suffered or would be caused to or suffered by the Board by reason of any breach by the said contractor(s) of the terms and conditions contained in the said agreement.

2. We, \_\_\_\_\_ Bank, do hereby undertake to pay the amount due and payable under this guarantee without any demur, merely on a demand from the Board stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the Board by reason of any breach by the said contractor(s) of any of the terms or conditions contained in the said agreement or by reason of the contractor's failure to perform the said agreement. Any such demand made on the Bank shall be conclusive as regard the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only).

3. We, \_\_\_\_\_ Bank, further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to be enforceable till all the dues of the Board under or by virtue of the said agreement have been fully paid and its claim satisfied or discharged or till the Board certified that the terms and conditions of the said agreement have been fully and properly carried out by the said contractor(s) and accordingly discharges the guarantee. Unless a demand or claim under this guarantee is made on us in writing on or within three months from the expiry

date, i.e., from \_\_\_\_\_, we shall be discharged from all the liability under this guarantee thereafter.

4. We, \_\_\_\_\_ Bank, further agree with the Board that the Board shall have the fullest liberty without our consent and without effecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Agreement or to extend time of performance by the said contractor(s) from time to time or to postpone for any time of from time to time any of the powers exercisable by the Board against the said contractor(s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation of extension being granted to the said contractor(s) or for any forbearance act or omission on the part of the Board or any indulgence by the Board to the said contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

5. Notwithstanding anything stated above, our liability under the Guarantee is restricted to Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only). The guarantee shall remain in force until \_\_\_\_\_. Unless a suit or action to enforce claim under the guarantee is filed against us within three months from that date, all rights under the guarantee shall be forfeited and we shall be relieved and discharged from all liabilities thereunder.

6. The Board authorised to enforce claim against the guarantee at the local branch of the Bank in Goa in case such an eventuality of encashment arises.

7. We, \_\_\_\_\_ Bank lastly undertake to revoke this guarantee during its currency except with the previous consent of the Board in writing.

Dated \_\_\_\_\_ day of \_\_\_\_\_ 2011.



An ISO 9001-2000 PORT

**MORMUGAO PORT TRUST**  
**ENGINEERING (CIVIL) DEPARTMENT**

**Tender No.CE/59/2011**

**Operation and Maintenance of 1200m<sup>3</sup> capacity STP at Headland  
and 100m<sup>3</sup> capacity STP at New Hospital site at Headland  
for a period of two years.**

**DIRECTIONS TO TENDERERS FOR FILLING  
THE SCHEDULE OF QUANTITIES & RATES.**

1. Tenderers are required to fill in their percentage rate at the end of the Schedule of Quantities & Rates, in the space provided for the purpose and unless this is done, their tender will not be considered. Only one percentage rate on all Rates of Schedule of Quantities & Rates shall be named.
2. The Percentage Rate inserted shall hold good for all works under this contract, without reference to quantity or location of the work or the variation in the estimated quantity.
3. Quantity of each item of work mentioned in the Schedule, should be noted and the item rate worked out carefully, having regard to the specifications before submitting the tender, as no variation in rates etc. will be allowed on any ground such as mistake or misunderstanding etc. after the tender has been submitted. The percentage rate, above or below the Schedule/Estimated rate, indicated at the end of the Schedule of Quantities & Rates, will apply to each item, of the tender and any excess in the item that may be directed to be executed by the Chief Engineer.
4. Tenderers are requested to note that though the contract is for item rate, they are required to add or deduct the amount due to this percentage, as the case may be and work out the final figures (amount of their tenders), at the end of the Schedule of Quantities & Rates.
5. The item Rate should be legibly written in figures as well as in words, in the space provided for Erasures or corrections in figures or in words, without Tenderers initials, will render the tender liable for rejection.

**CHIEF ENGINEER**



**MORMUGAO PORT TRUST**  
**ENGINEERING (CIVIL) DEPARTMENT**

**Tender No.CE/59/2011**

**Operation and Maintenance of 1200m<sup>3</sup> capacity STP at Headland  
and 100m<sup>3</sup> capacity STP at New Hospital site at Headland  
for a period of two years.**

**SCHEDULE OF QUANTITIES AND RATES**

**PART- I**

**Operation and Maintenance of 1200m<sup>3</sup> capacity STP at Headland**

Sr. No.	Description of work	Approx Qty.	Unit of Qty. in words	Rate in Fig/ words	Amount Rs. Ps.
1.	2.	3.	4.	5. 6.	7.
1.	<p>Operation &amp; maintenance of Sewage treatment plant (1200 m<sup>3</sup> capacity) situated at Headland having the following process equipments</p> <ul style="list-style-type: none"> <li>i Grit Chamber</li> <li>ii Upflow Anaerobic Sludge Blanket Reactor</li> <li>iii Rotating Biological Disk Contactor- 3nos.</li> <li>iv Clarifiers - 2nos.</li> <li>v Chlorine contact tank</li> <li>vi Sludge pumps</li> <li>vii Filter press</li> <li>viii Effluent pipes</li> <li>ix sludge drying beds</li> </ul> <p>and running the plant continuously round the clock for 3 shifts of 8 hrs each including Sundays and holidays as per the process manuals laid down or as directed by the Chief Engineer or his representative. The item also includes</p> <ul style="list-style-type: none"> <li>1. regular cleaning of grit chamber,</li> <li>2. removal of choke ups from the various</li> </ul>	24	month	60,000.00	14,40,000.00

	<p>         piping outlet,          3. stacking of waste material in dust bin and keeping the area clean,          4. cleaning of chlorine contact tank every week,          5. cleaning of 200m<sup>3</sup> tank near officers club every fortnight,          6. daily pumping of treated water round the clock to the various points such as to the SWPL sites, garden at Headland area, filling of tankers as and when required,          7. Maintaining the STP garden by planting ornamental plants and weeding and cleaning, and keeping the surrounding area clean by watering, cleaning, sweeping, cutting the creeper, bushes etc.          8. Keeping the fountain pumps always in running condition,          9. Periodic pumping of sludge to UASBR, clarifiers, filter press, etc. as is required,          10. operation and regulating various valves, sluice valves etc as is required for smooth operation,          11. General maintenance of plant equipments such as oiling, greasing of various gear boxes, pumps, fountain pumps, motors, maintenance,          12. Repairs of all pump foot valves installed of various sizes as &amp; when required, maintenance of sluice valves by providing gland packing etc.,          13. Cleaning of non-return valves as &amp; when required including removing and refitting,          14. Maintenance of various interconnecting pipelines and keeping the plant in totally running condition as directed by the Chief Engineer or his representative and maintains the desired parameters of the treated water within the permissible limits of all the time during the tenure of contract. All labour, tools, plants and material etc. complete.          (Note -1- Minimum 1 operator per shift of 8 hrs each and 0.5 supervisor, 0.5 chemist, 0.5 sanitary sweeper be posted on daily basis).          (1) Refer Clause No.65       </p>				
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2.	Carrying out testing monthly and submitting the water sample results of treated sewage water of the Sewage Treatment Plant of 1200 m <sup>3</sup> capacity through an established recognized accredited laboratory such as Directorate of Health Services, Panaji or any other agency including drawing the sample, transporting it to the lab within required time period, collecting the test results and submitting same to the department in triplicate including paying necessary charges of sample test as applicable etc.. All labour and materials etc. complete.	24	No.	1,000.00	24,000.00
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**PART- II**

**Operation and Maintenance of 100m<sup>3</sup> STP capacity at  
New Hospital site at Headland.**

Sr. No.	Description of work	Approx Qty.	Unit of Qty. in words	Rate in Fig	Amount Rs. Ps.
1.	2.	3.	4.	5. 6.	7.
1.	<p>Operation &amp; maintenance of Sewage treatment plant (100 m<sup>3</sup> capacity) situated near New hospital site at Headland having various process equipments such as screen chamber, grit chamber, raw sewage sump, O&amp;G trap, SAFF reactor, tube settler, treated sewage sump, various pumps, etc.</p> <ul style="list-style-type: none"> <li>i Screen Chamber</li> <li>ii Grit chamber</li> <li>iii Raw sewage pump - 2nos.</li> <li>iv Oil &amp; Grease trap</li> <li>v Submerged Aerobic Fixed Film rea</li> <li>vi Tube settler</li> <li>vii Treated sewage sump</li> <li>vii Various pumps</li> </ul> <p>and running the plant continuously round the clock for 3 shifts of 8 hrs each including Sundays and holidays as per the process manuals laid down or as directed by the Chief Engineer or his representatives, The work also includes: 1.Regular cleaning of grit chamber, 2.Removal of choke ups from the various piping outlet, 3.Stacking of waste material in dust bin and keeping the area clean, 4.Cleaning the raw/ treated sewage tanks quarterly and 5.Daily proper pumping of treated water to the surrounding garden, periodic pumping of sludge... etc. 6.Operating and regulating various valves, sluice valve as is required for smooth operation, 7.General maintenance of plant equipments such as oiling, greasing of various gear boxes, pumps, fountain pumps, motors, maintenance and 8.Repairs of all pump foot valves installed of various sizes as &amp; when</p>	24	Month	13,000.00	31,12,000.00

	<p>required including removing and refitting, maintenance of various interconnecting pipelines and keeping the plant in totally running condition as directed by the Chief Engineer or his representative, and</p> <p>9.Maintaining the desired parameters of the treated water within the permissible limits of all the time during the tenure of contract, maintaining the surrounding gardens by watering, cleaning, sweeping, cutting the creeper, bushes etc All labour, tools, plants and material etc. complete. (Note -1: Minimum 1 operator per shift of 8 hrs each and 0.5 supervisor, 0.5 chemist, 0.5 sanitary sweeper be posted on daily basis). (1) Refer Clause No.65</p>				
2.	<p>Carrying out testing monthly and submitting the water sample results of treated sewage water of the Sewage Treatment Plant of 100 m<sup>3</sup> capacity through an established recognized accredited laboratory such as Directorate of Health Services, Panaji or any other agency including drawing the sample, transporting it to the lab within required time period, collecting the test results and submitting same to the department in triplicate including paying necessary charges of sample test as applicable etc.. All labour and materials etc. complete.</p>	24	No.	1000.00	24,000.00

N.B. Rate to be quoted for above items shall be inclusive of the following:-

- a) Cost of all chemicals, grease, gear oil ...etc.
- b) Maintenance expenses (as detailed manual)
- c) Cost of spare inclusive of taxes and duties, freight, insurance etc.
- d) Wages to workmen.
- e) Any other costs which would be incurred to run, operator and maintain the sewage treatment plant.
- f) Keep the area neat and in clean condition.

Total (A) Rs. **18,00,000.00**

TOTAL AMOUNT OF TENDER INCLUSIVE OF S.T & G.T = "A" = Rs. 18,00,000.00

1. ADD \_\_\_\_\_% (IN FIGURES)

In words \_\_\_\_\_

Over the above amount at "A" i.e Rs. \_\_\_\_\_

OR

2. DEDUCT \_\_\_\_\_% (IN FIGURES)

In words \_\_\_\_\_

From the above amount at "A" i.e. Rs. \_\_\_\_\_

3. Total Quoted Tender Amount inclusive of Sales & General Taxes in Figure -

Words Rupees \_\_\_\_\_ Only.

TENDERERS SHOULD SCORE OUT EITHER "ADD" OR "DEDUCT" AS THE CASE MAY BE"

NOTES:

1. Tenderers should score either "ADD" or "DEDUCT" as the case may be.
2. Tenderers are advised in their own interest to inspect the site before tendering.
3. The quantities given above in the schedule of Quantities and Rates are approximate and are furnished for the guidance of the tenderers.

Witness's: \_\_\_\_\_ Tenderer's: \_\_\_\_\_

Signature: \_\_\_\_\_ Signature: \_\_\_\_\_

Name : \_\_\_\_\_ Name: \_\_\_\_\_

Address: \_\_\_\_\_ Address: \_\_\_\_\_

Tel No: \_\_\_\_\_ Tel No: \_\_\_\_\_

Mobile No: \_\_\_\_\_

Date: \_\_\_\_\_ Date: \_\_\_\_\_