MIRA- BHAINDAR MUNICIPAL CORPORATION

(WATER SUPPLY DEPARTMENT)

RE-TENDER NOTICE NO. 12 (2026-27)

For

Operation & Maintenance of SBR STP- 6C & 8 in Mira Bhyander Municipal corporation area.

Executive Engineer
Water supply dept.
ChatrapatiShivajiMaharajmarg,
Bhaindar (w) Ph. 2819 2828
Mira -BhaindarMunicipal Corporation

SAVE EVERY DROP OF WATER

Issued to:.....

MIRA - BHAINDAR MUNICIPAL CORPORATION
WATER SUPPLY DEPARTMENT

Name of Work :- **Operation & Maintenance of SBR STP- 6C & 8 in Mira Bhyander Municipal corporation area.**

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RE-TENDER NOTICE

मिरा-भाईंदर महानगरपालिका

स्व. इंदिरा गांधी भवन, मुख्य कार्यालय, छत्रपती शिवाजी महाराज मार्ग,
भाईंदर (प.), ता.ठाणे-401101 दुरध्वनी क्रं.28192828

पाणी पुरवठा व मलनि:सारण विभाग

// फेर-निविदा सुचना क्र. 12 (2026-27) //

मिरा-भाईंदर महानगरपालिका हद्दीतील खालील कामांकरीता मोहोरबंद दर e-Tendering पद्धतीने मागविण्यात येत आहेत. सदर कामाचे कोरे निविदा फॉर्म **दि.12/10/2026 ते दि.19/10/2026** रोजी 12.00 वाजेपर्यंत महानगरपालिकेच्या e-Tendering संकेतस्थळ https://mahatenders.gov.in येथे उपलब्ध होतील. निविदाधारकाने निविदा फॉर्म फी व इसारा रक्कम ऑनलाईन रिसीप्ट सिस्टीमव्दारे भरणा करावी. अन्यथा निविदा ग्राहय समजण्यात येणार नाही. तसेच कामाची निविदा पूर्व बैठक **दि.15/10/2026** रोजी ठिक 12.00 वाजता मा.शहर अभियंता, मिरा-भाईंदर महानगरपालिका यांचे दालनात राहिल. कामाचा अनुभव व अटीशर्ती निविदा फॉर्म मध्ये नमुद केल्याप्रमाणे असावीत.

सदर कामी मागविलेल्या मोहोरबंद निविदा **दि.21/10/2026** रोजी दुपारी 12.00 वाजेपर्यंत वरील संकेतस्थळावर स्विकारण्यात येतील व दि.22/10/2026 रोजी दुपारी 12.30 वाजता उपस्थित ठेकेदार व त्यांचे प्रतिनिधी यांच्या उपस्थितीत / अनुउपस्थितीत उघडण्यात येतील.

कोणतेही कारण न देता कोणतीही ऑनलाईन निविदा स्वीकारणे अथवा सर्वच निविदा नाकारणे याबाबतचा अंतिम अधिकार मा. आयुक्त, मिरा-भाईंदर महानगरपालिका यांनी राखून ठेवला आहे.

अ.क्र	कामाचे नाव	अंदाजित खर्च (जी.एस.टी वगळून)	इसारा रक्कम	निविदेचा प्रकार	निविदा फॉर्म फी	मुदत
1	मिरा-भाईंदर महानगरपालिका क्षेत्रातील SBR मलनिसारण केंद्र क्र.6 सी व 8 यांची वार्षिक देखभाल व दुरुस्ती करणे.	रु.1,85,46,927/-	रु.1,85,469/-	बी-1	रु.1000/- + रु.180/- GST = रु.1180/-	12 महिने

टीप :- लिफाफा क्र.1 मधील तांत्रिक कागदपत्रे (Hard Copy) निविदा भरल्यानंतर 72 तासांच्या आत पाणी पुरवठा व मलनिसारण विभागात सादर करण्यात यावी.

(दिपक खांबित)
शहर अभियंता
मिरा-भाईंदर महानगरपालिका

जा.क्र.मनपा/पा.पु.व मलनि/12/2026-27
दि.09/10/2026

MIRA BHAINDAR MUNICIPAL CORPORATION

Indira Gandhi Bhavan, Chhatrapati Shivaji Maharaj Marg,
Bhaindar (W) 401101, Tal. Dist - Thane, 28192828

Water Supply & Sewerage Department

// RE-TENDER NOTICE No. 12 (2026-27) //

Mira Bhaindar Municipal Corporation invites sealed tenders for following works in MBMC area in the form of e-Tendering. The tender form and other relevant documents will be available for download on MBMC's e-Tendering website as https://mahatenders.gov.in from **Dt.12/10/2026 TO 19/10/2026** till 12.00 pm. Tender Form Fee & EMD should be submitted through online receipt system.Failing which the tender will be disqualified. There is no any concession to qualified unemployed Engineer for EMD/ Security Depsit. Tender Form Fee & EMD should be submitted through online receipt system Prequalification criteria and other terms and conditions are mention in tender form the pre-tender conformance will be held on **dt 15/10/2026** at 12.00 hrs in the office of the Hon City Engineer MBMC.

The last date for submission of tenders completed in all respects on **Dt. 21/10/2026** up to 12.00 pm on the above mentioned website. Mira Bhaindar Municipal Corporation. The tenders shall be opened in the presence/absence of the bidders or their representatives on the **Dt.22/10/2026** at 12.30 pm at the Tender cell of Mira Bhaindar Municipal Corporation.

Hon.Commissioner of Mira Bhaindar Municipal Corporation has reserve right to accept or reject any or all bids without assigning any reasons.

Sr. No	Name of Work	Estimate Cost (In Rs.) (Excluding GST)	Earnest Money Deposit (EMD) (In Rs.)	Type of Tender	Cost of Tender documents (In Rs.)	Period of Completion
1	Operation & Maintenance of SBR STP-6C & 8 in Mira Bhaindar Municipal Corporation area.	Rs.1,85,46,927/-	Rs.1,85,469/-	B-1	Rs.1000/- + Rs.180/- GST = Rs.1180/-	12 Month

Note :- Hard Copy of Envelope No.1 of the same tender shall be submitted in office of Executive Engineer Water Supply Department within 72 hours after submission of online tender.

(Deepak Khambit)
City Engineer
Mira Bhaindar Municipal Corporation

No :- MNP/WS & Sew/12/2026-27
Date :- 09/10/2026.

Contractor/Agency No. of Correction Executive Engineer

DETAIL RE-TENDER NOTICE

MIRA - BHAINDAR MUNICIPAL CORPORATION

DETAILED RE-TENDER NOTICE

Name of Work :- Operation & Maintenance of SBR STP- 6C & 8 in Mira Bhyander Municipal corporation area.

TENDER PROGRAMME..

1) The tender document are available at https://mahatenders.gov.in from 12/10/2026 to 19/10/2026.

2) The prequalification criteria , Terms and conditions are available on website.

3) The digital signature is mandatory. The bidder will have to purchase it from any government digital certificate authority.

4) For any other queries, bidder can contact Help Line No. 0120-4200462, 0120-4001002.

5) Blank Tender document can be download from above mentioned website. The tender document cost Rs.1,180/-(Rs One Thousand one hundred eighty Only) (Non-Refundable) shall be paid by online.

6) Earnest Money Deposit of Rs.1,85,469/- (Rs. One lac eighty five thousand four hundred seventy nine Only) should be paid in the form of DD/PAYORDER/CASH-online.

7) Security Deposit **:**Initial Security deposit of 3 % in the form of D.D./ Pay order or Bank guarantee in the name of Commissioner, Mira Bhaindar Municipal Corporation drawn on any Scheduled Bank and balance 2 % will be deducted from R.A. bills.

Balance 2% Security Deposit of estimated cost or contract value whichever is higher will be recovered at the rate of 5% of bill amount through each R.A. Bill to the extent that total required security deposit.

a) Additional Security Deposit: If the tender is proposed to be accepted at the rate quoted less than estimated cost put to tender, security deposit over and above 5.00% at the rate below shall have to be paid by the tenderer.
i) For offer up-to 10% below: 3% intial+2% through R.A.Bill.
ii) For offer from 10% and up to 15% below: 5% intial+2% through R.A.Bill.
iii) For offer more than 15% below: 7% intial+2% through R.A.Bill.

b) Stamp Duty - Stamp duty at 2.00% of total security deposit or at the rate in force on the date of agreement, in addition to Rs.100/- stamp paper.

c) There shall be no liability on the Mira Bhaindar Municipal Corporation, 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 provision in clause 1 and 20 of he contract.

8) The bidder has to submit the tender Documents and Financial Bid online only.

9) The tender will be Submission last dt.21/10/2026 day at 12.30 pm online only.

10) The tendered rates should be inclusive of all statutory duties and taxes GST levied by GOI & GOM in all respect

11) Validity of the Offer :

120 days from the date of opening of the tender.

12) Detail Tender Schedule

Sr. No.	Activities	Date & Time
1.	Tender publishing date	12/10/2026
2.	Document download start date	12/10/2026 at 12 noon
3.	Document download end date	19/10/2026 at 12 noon
4.	Pre-bid meeting date	15/10/2026 at 12 noon
5.	Bid submission start date	12/10/2026 at 12 noon
6.	Bid submission close date	21/10/2026 at 12 noon
7.	Bid opening date (Technical Bid)	22/10/2026 at 12.30 pm

13) ELIGILIBILITY OF CONTRACTOR

Technical Proposal. :

Technical Proposal work shall contain following documents.

1)	Form Fee Receipt (Online Form fee Receipt - **Scan Copy)**			
2)	Earnest Money Deposit Receipt (Online Earnest Money Deposit Receipt **(Scan Copy)**)			
3)	Balance Sheet of Last 3 Years. (C.A. certified copy of Balance sheet **(Scan Copy).** **(In Year of 2022-23, 2023-24, 2024-25)**			
4)	Vaild GST Registration Certificate. (Vaild GST Registration Certificate **(Scan Copy)**)			
5)	A	Maximum Turnover of Bidder in last 05 years	-	It should be minimum upto 75% of the annual amount of the cost of due contract (Annual Cost = Total Cost of Work / Period of work in years.)
	(C.A. Certified copy of last 5 year annual turnover. **(Scan Copy)** **(In Year of 2021-22, 2022-23, 2023-24, 2024-25, 2025-26)**			
6)	Following works experience in Govt. / Semi Govt. organization			
	B	The minimum cost of the work of similar nature and value completed by the contractors in the last 5 years	-	Three similar completed works, of which work wise costing should not be less than the amount equal to 40% of the estimated cost. In same work following work should be done by bidder. **OR** Two similar completed works, of which work wise

				costing should not be less than the amount equal to 50% of the estimated cost. In same work following work should be done by bidder. **OR** One similar completed work costing should not be less than the amount equal to 80% of the estimated cost. In same work following work should be done by bidder.

Similar Work shall mean Operation and Maintenance of STP and its work completion certificate / work Done certificate

40 % 03 Works

50 % 02 Works

80% 01 Works

(In Year of 2021-22, 2022-23, 2023-24, 2024-25, 2025-26)

Note: The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 10% per annum

7)	Bidder should have carried out following minimum quantities of Items of work 1. Experience in O&M of Sewage Treatment Plants (STP): The Bidder shall have successfully executed or be currently executing a Single Contract comprising Operation and Maintenance of Sewage Treatment Plants based on SBR Technology, having a cumulative treatment capacity of not less than 12 MLD within the last 5 years ending on the last day of the month previous to the one in which the tenders are invited (Minimum One year shoud be completed for ongoing work)

8)		Bid capacity of Bidders (Bid Capacity) Bidder should have qualified for Bid Capacity	-	(A x N x 2) - B where A = Maximum Annual Turnover during last 5 years (at current rate) N = Number of years prescribed for completion of the project/work B = Value of works in hand (during period of the due work)

(Tenderer's submission of bid capacity certificate certified by C.A (Scan Copy))

9)	The Bidder Should Submit / Upload The Service Support Letter On The Letter Head Of Original Equipment Manufacturer Of Following Key & Critical Equipment's 1.Submersible Sewage Pumps namely Aqua machineries Pvt. Ltd.

10)	Affidavit on stamp paper of Rs.500/- stating authenticity of the documents enclosed/uploaded while submission of the tender to be enclosed in envelope no.1 as per **Annexure No. 1** **(It will be mandatory for the tenderer to submit an affidavit in the prescribed format as Annexure No. 1 on Rs. 500 stamp paper only dated after the date of publication of the tender. Otherwise, the said affidavit will not be considered)**
11)	The Bidder Shall not be Blacklisted in any other government / semi government / Urban Local bodies on contractors letter head. The Bidder organization shall upload an undertaking **(Submission of declaration letter by the tenderer regarding non-blacklisting. (Scan Copy))**

Annexure - 1

Affidavit (on Rs.500/- Stamp Paper)

Name of Work :- ----------

I ..... age ..... address .... (Authorized signatory to sign the contract), hereby submit, vide this affidavit in truth, that I am the owner of the contracting firm ..... / authorized signatory and I am submitting the documents in envelope no.1 for the purpose of scrutiny of the contract. I hereby agree to the conditions mentioned below :-

a. I am liable for action under Indian Penal Code for submission of any false / fraudulent paper / information submitted in envelope no.1.
b. I am liable for action under Indian Penal Code if during contract period and defect liability period, any false information, false bill of purchases supporting proof of purchase, proof of testing submitted by my staff, subletting company or by myself, I will be liable for action under Indian Penal Code.
c. I am liable for action under Indian Penal Code if any paper are found false / fraudulent during contract period and even after the completion of contract (finalization of final bill).

(Signature of contractor)
(seal of company)

14) PRE-TENDER CONFERENCE

Pre-Tender conference is open to all prospective tenderers and will be held on dt. 15/10/2026 at 12.00 hours in the office of the City Engineer, Mira Bhainder Municipal Corporation, wherein the prospective tenderers will have opportunity to obtain clarifications regarding the work and the tender conditions.

The prospective tenderers are free to ask for any additional information or clarification either in writing or orally and the reply to the same will be given in writing and this clarification referred to as common set of conditions, shall also be common and applicable to all tenderers. The minutes of this meeting along with the letters of tenderers will form the part and parcel of the tender documents. Bidder need to submit online signed copy of pre bid minutes in a technical bid. No queries/enquiries later than the date mentioned above will be considered.

15) SITE VISIT

Bidders shall mandatorily visit the site to assess the 'As-Is-Where-Is' operational condition of all Electro-Mechanical assets, STPs, and Network lines before quoting.

16) Manner of Submission of Tender and it's Accompaniments:

The Tenderer shall submit the tender and documents in two sealed envelopes as below online only

a) Envelope No.-1: Technical Bid

b) Envelope No.-2: Financial Bid

Financial Bid (Envelope No. 2) shall contain only main tender including unconditional covering letter.

The Tenderer should quote his offer on line in prescribed format as percentage of estimated rates in word and figure at the appropriated place of tender documents. The contractor shall quote for the work as per details given in the main tender. Offer shall be unconditional.

The tender document duly signed and sealed on all pages by authorized signatories should upload online.

c) Submission of Tender: On line

The contractor should quote his tender online. The contractor should deposit EMD and Tender fee online. The commissioner, Mira Bhayandar Municipal Corporation may at his discretion can extended the deadline for the submission of tenders by issuing an amendment to contractor in which

case all rights and obligations are reserved by commissioner, Mira Bhayandar Municipal Corporation, Bhayandar.
If tenders have been submitted by multiple bidders from the same IP Address, those tenders will be rejected.

17) Opening of Tender:

The tenders will be opened on the date specified in the Tender Notice. i.e., on 12**/08/2026 at 12.30hrs,** (If possible) in the presence of the intending bidders or their authorized representative to whom they may choose to remain present.
Following procedure will be adopted for opening of the Tender.

Envelope No.-1(Technical Bid)
First of all Envelope No.1 of the Tender will be opened to verify its contents as per requirements. If the various documents contained in this envelope do not meet the requirements of the MBMC a note will be recorded accordingly by the tender opening authority and the said Tenderer's Envelope No.2 will not be considered for further action and the same will be rejected.

Envelope No.-2 (Financial Bid)
This envelope shall be open online on the date specified in the tender schedule after opening of Envelop No .1 only if contents of Envelope No.1 are found to be acceptable to the Department and / or fulfill the Qualifying Criteria. The tendered rates percentage above or below the estimated rates quoted in price bid shall then be read out in the presence of bidders who remain present at the time of opering of Envelope No.2

18) The tendered rates should be inclusive of all statutory duties and taxes Excluding GST.

19) The EMD will be returned as promptly as possible, after award and signing of the Contract Agreement or expiration of the period of bid validity, whichever is earlier.

20) In case of dispute or difference of opinion arising between Engineer in charge & Contractor matter will be refer to the Commissioner , Mira Bhayndar Municipal Corporation the decision of Commissioner will be final and binding.

21) All other rules regarding insurance, workman's compensation, labour etc. shall be binding on the contractor. The contractor shall be responsible to

pay compensation to his staff, labourers according to labour compensation rules, Labour laws, on account of any accident and loss of limb, or life, property due to accident, etc.

22) Time of Contract **:**The contract period is **Twelve** months including monsoon.

23) The tenderer whose tender is accepted is required to note that no foreign exchange will be released by the Mira Bhayndar Municipal Corporation.

24) Negotiations

The Commissioner MBMC may carry out negotiations with the lowest Bidder for modification of the bid by the calling the bidder in its office in which case the bidder shall remain present in the office for negotiations. The bidder may at his discretion give his revised bid in writing. The original bid shall then be treated as modified bid and modified shall be treated as a final bid.

25) Right Reserved:

1) Conditional Tender will be rejected.
2) Right to reject any or all tenders without assigning any reason thereof is reserved by the Commissioner, Mira Bhayndar Municipal Corporation whose decision will be final and binding on tenderers.

26) ENQUIRIES

Clarifications, if any, can be sought from:

Executive Engineer(Water Supply Dept.)

Mira Bhayndar Municipal Corporation

Indira Gandhi Bhavan, ChattrapatiShivajiMaharajMarg,

Bhayndar

Maharashtra State, INDIA

0120-4200462, 0120-4001002

Specimen Froms

PROFORMA OF BANK GUARANTEE

[ON STAMP PAPER OF REQUISITE VALUE]

To,

The Commissioner,
Mira Bhaindar Municipal Corporation,
Bhaindar.

1 In consideration of the **MiraBhaindar Municipal Corporation,** (hereinafter referred as "**MBMC**" which expression shall include its legal representative, successors and assigns) having agreed under the terms and conditions of Contract No. _____ Dated _____ made between _____ (hereinafter called "the Contractor" which expression shall unless repugnant to the subject or context include his heirs, executors, administrators and assigns/its successors and assigns) and the **MBMC** in connection with _____ (hereinafter called "the said Contract") to accept a Deed of Guarantee as herein provided for Rs. _____ (Rupees _____) from a Scheduled Bank in lieu of the Security Deposit to be made by the Contractor for the due fulfilment by the Contractor of the terms and conditions contained in the said Contract, we the _____ Bank constituted and established under the Banking Companies (acquisition and Transfer of Undertaking Act. 1970 (hereinafter referred to as "the said Bank" and having our Head Office at _____ at the request of _____ (Contractor(s) do hereby undertake to pay to the **MBMC** amount not exceeding Rs. _____ (Rupees _____) against any loss or damage caused to or suffered or would be caused to or suffered by the **MBMC** by reason of any breach or breaches by the said Contractor(s) of any of the terms and conditions contained in the said Agreement, and to unconditionally pay the amount claimed by the **MBMC** on demand and without demur to the extent expressed.

2 We, _____ do hereby undertake to pay (Indicate the name of bank) the amounts due and payable under this Guarantee without any demur, merely on a demand from the **MBMC** stating that the amount claimed as due by way of loss or damage caused to or would be caused to or suffered by the **MBMC** by reason of 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 regards the amount due and payable by the Bank under this guarantee. However, our liability order this guarantee shall be restricted to an amount not exceeding Rs._____ (Rupees _____)

3 We, _____ further agree that (indicate the name of the bank) the MBMC shall be the sole judge of and as to whether the Contractor has committed any breach or breaches of any of the terms and conditions of the said contract and the extent of loss, damage, costs, charges and expenses caused to or suffered by or that may be caused to or suffered by the **MBMC** on account thereof and the decision of the **MBMC** that the Contractor has committed such breach or breaches and as to the amount or amounts of loss, damage, costs, charges and expenses caused to or suffered by or the may be caused to or suffered by the **MBMC** from time to time shall be final and binding on us."

4 We undertake to pay to the **MBMC** any money so demanded not-withstanding any dispute or disputes raised by the Contractor(s) / Supplier(s) in any suit or proceedings pending before any Court or Tribunal relating thereto; our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment thereunder and the Contractor(s)/Supplier(s) shall have no claim against us for making such payment.

5 We,_____ further agree that the *(indicate the name of Bank)* 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 **MBMC** under or by virtue of the said agreement have been fully paid and its claims satisfied or discharged or till the **MBMC** certifies that the terms and conditions of the said

Agreement have been fully and properly carried out by the said Contractor(s) and accordingly discharge this Guarantee. Unless a demand or claim under this guarantee is made on us in writing on or before the ___day of _____ we shall be discharged from all liability under this Guarantee thereafter.

6. We, _____ further agree with the **MBMC** that the **MBMC** shall have the fullest liberty without our consent and without affecting in any manner our obligations herein under 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 or from time to time any of the powers exercisable by the **MBMC** 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, or extension being granted to the said Contractor(so or for any forbearance act or omission on the part of the **MBMC** or any indulgence by the **MBMC** to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provisions have effect of so relieving us.
7. This Guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor(s)/Supplier(s).

8. We, _____ lastly undertake not to revoke this Guarantee during its currency except with the previous consent of the **MBMC** in writing.

Date the_____ day of _____2026

For and on behalf of the Bank

The above Guarantee is accepted by the **MBMC**.

For and on behalf of the **MBMC**.

Name and Designation

Date: _____

MIRA BHYANDAR MUNICIAPL CORPORTION

Name of Work : **Operation & Maintenance of SBR STP- 6C & 8 in Mira Bhyander Municipal corporation area.**

UNDERTAKING FOR GUARANTEE BY THE CONTRACTOR

I / we (name of the contracting firm / proprietor) _____ _____ guarantee that:

All the work executed under the contract will be reliable.

All the work will be of the type, which has been proven in service to be suitable for the duty required by the specifications and will have been manufactured and tested in accordance with the appropriate standard specifications approved by the Engineer.

We will replace, repair and adjust free of all charges to the Corporation any part of the work, which fails to comply with the specifications or amendment to such specifications, covered in the tender documents, fair wear and tear excepted until the completion of Defect Liability period.

We will repair and maintain all the components of the storm water drainage syMBMC in the project area as in the scope of the tender and further modifications thereto until the completion of Repair and Maintenance period.

I / We accept & undertake to abide by the clauses relating to quality and guarantee the work.

Date Signature of the Contractor

MIRA BHYANDAR MUICIPAL CORPORTION

Name of Work : **Operation & Maintenance of SBR STP- 6C & 8 in Mira Bhyander Municipal corporation area.**

DECLARATION BY THE CONTRACTOR

I hereby declare that I have personally visited and thoroughly inspected all Sewage Treatment Plants (STPs). I have fully understood the existing condition, operational status, constraints, and all local factors affecting the work.

I further declare that I have carefully examined all tender documents, specifications, scope of work, and contract conditions, and I agree to execute the work in accordance with the same.

I hereby unequivocally agree and undertake that all STPs and associated infrastructure shall be handed over to me on an "AS IS WHERE IS" basis, including all existing defects, deficiencies, non-functional equipment, leakages, damages, and operational issues. I shall not claim any extra cost, compensation, or extension of time on account of the present condition of these installations.

I undertake to immediately take over the facilities and commence the work of operation and comprehensive maintenance, and to restore, repair, rectify, and maintain all systems, equipment, and units in safe, efficient, and continuous working condition, meeting the prescribed performance standards and statutory norms at all times during the contract period.

I further agree that:

- Any breakdown, failure, or non-performance shall be my sole responsibility.
- I shall arrange all required manpower, tools, tackles, spares, consumables, and equipment at my own cost unless specifically provided in the contract.
- I shall ensure uninterrupted operation of STPs without causing nuisance, overflow, pollution, or public inconvenience.

- I shall be fully responsible for compliance with all applicable environmental norms as per MPCB and CPCB, pollution control regulations, safety standards, and labour laws.

I understand and accept that any failure to meet performance standards, delay in repairs, negligence, or non-compliance shall attract penalties, risk and cost action, or termination of contract as per tender conditions.

I undertake to abide by all instructions issued by the Executive Engineer-In-Charge or his authorized representative and shall not deviate from the contract conditions under any circumstances.

Signature of the Contractor

STATEMENT NO. I

STATEMENT OF LIST OF WORKS IN HAND AND WORK TENDERED FOR AS ON THE LAST DATE OF SUBMISSION OF THIS TENDER

Name of Contractor

(A) Works in Hand

Sr.No	Name of Works	Agreement No	Tendered Amount	Date of Commencement	Stipulated date of completion	Value of work already Done	Value of Balance work to be executed in next 12 months	Probable Date of Completion	Remarks
1	2	3	4	5	6	7	8	9	10
				SAMPLE	FORM				

(B) Works Tendered For

Sr.No	Name of Works	Name and Address of Client	Tendered Amount	Time Limit	Probable Date when decision is expected	Other relevant details if any
1	2	3	4	5	6	7
			SAMPLE	FORM		

Note :-1) This is only a standard form. Details are to be furnished in this format in the form of type written statements which shall be scanned and Enclosed in Envelope No.1 duly signed.

2) The documentary proof of work in hand work tendered for should be submitted with this statement duly attested by Gazetted Officer**.**

Signature of Contractor

Contractor/Agency No. of Correction Executive Engineer

STATEMENT NO. II

DETAILS OF PLANTS AND MACHINERY IMMEDIATELY OWNED AND AVAILABLE WITH THE TENDERER FOR THIS WORK

Name of Contractor

Sr No	Name of Equipment	No. of Units	Kind & make	Capacity	Age & Condition	Present Location	Remarks
1	2	3	4	5	6	7	8
			SAMPLE	**FORM**			

Note : *1) This is only a standard form. Details are to be furnished in this format in the form of type written statements which shall be Scanned and Enclosed in Envelope No.1 duly signed.*

STATEMENT NO. III

DETAILS OF WORKS SIMILAR TYPE AND MAGNITUDE CARRIED OUT BY THE CONTRACOTR DURING LAST THREE YEARS (i.e.2023-24, 2024-25 & 2025-26)

NAME OF THE TENDERER

Sr.No	Name of Works	Name and Adress of the organization for whom the work was done	Place and Country	Agreement No	Date of Comerncement	Tendred Cost	Total Cost of Work Done	Date of Completion	Principle features in brief
1	2	3	4	5	6	7	8	9	10
-----SAMPLE FORM-----									

Note :- This is only a standard form ; details are to be furnished in this format in the form of type written statement which shall be Scanned and Enclosed in Envelope No.1 duly signed. The documentary proof of similar type and magnitude should be submitted with statement.

STATEMENT NO. IV

Sr No	Name of Person	Designation	Qualification	Whether working in field or in office	Professional Experience of work carries out	Which the person is working with the Tenderer	Remarks
1	2	3	4	5	6	7	8
			SAMPLE	**FORM**			

Note :- This is only a standard form ; details are to be furnished in this format in the form of type written statement which shall be Scanned and Enclosed in Envelope No.1 duly signed. The documentary proof of Technical persons should be submitted with statement.

Signature of Contractor

GENRAL CONDITIONS

MIRA BHAYNDER MUNICIPAL CORPORATION,

NAME OF WORK: **Operation & Maintenance of SBR STP- 6C & 8 in Mira Bhyander Municipal corporation area.**

GENERAL CONDITIONS OF CONTRACT

1**. DEFINITIONS:**

1.1 In the contract, the following terms shall be interpreted as indicated -

a) "The Contract" means the agreement entered into between the owner and the contractor as recorded in the contract form signed by the parties, includes all attachments and appendices there to and all documents incorporated by references therein. Contract is the deed of contract together with all its original accompaniments and those later incorporated in it by internal consent.

b) "The Contract Price" means the price payable to the contractor under the contract for the full and proper performance of its contractual obligations.

c) "The Goods" means all of the equipment's, machinery and/or other materials which the" contractor is required to 'supply to the owner under the contract.

d) "Services" means services ancillary to the contract such as transportation and insurance and any other incidental services, such as Provision of Technical staff and other such obligations of the contractor covered under the contract.

e) The "Contractor" means successful tenderer that is the tenderer whose tender has been accepted and who has been authorised to proceed with the work.

f) "Client" means Mira Bhaindar Municipal Corporation.

g) "MBMC" means Mira Bhaindar Municipal Corporation

h) "Tender" means the proposal of the contractor submitted in prescribed form setting forth the prices for the goods to be supplied and other related services to be rendered and setting forth his acceptance of the terms and obligations of the conditions of contract and specifications.

i) "Contract Time" means period specified in the document for the entire execution of contracted works and other services to be rendered commencing from the date of notification of award including monsoon period.

j) "Month" means calendar months.

k) "Site" means location at which the contractor will have to execute the contracted work.

l) "The Engineer" shall mean the Executive Engineer in charge of the work.

2. SCOPE OF WORK

Scope of work includes providing skilled, semiskilled and unskilled man power, tools and equipment, required consumables and skilled expertise to operate maintain and carryout repairs to the MBMCs as mentioned in detailed item wise specifications and Schedule 'B".

3. SPECIFICATIONS:

The wording of items in Schedule - B shall be taken as guidelines for general provisions and coverage under the item. The detailed specification for relevant items shall be as per detailed specifications enclosed and as per P.W.D. Hand Book, Standard Specifications relevant and latest editions of I.S. & Green book of Maharashtra Jeevan Pradhikaran. The other standard, wherever quoted, shall be applicable.

4. LINE OUT: (NOT APPLICABLE)

All details and dimensions of existing structures, pipe line, etc. shall be obtained by the contractor before giving line out. The contractor shall himself carryout the line out of works in the presence of the representative of the MBMC, and the contractor shall be responsible for accuracy of it. He shall employ a qualified Engineer for the purpose as well as for supervision of works.

5. INTENT AND INTERPRETATION OF CONTRACT DOCUMENTS:

(NOT APPLICABLE)

5.1 The contract documents are complementary and what is called for by one is as binding as if called for by all. Any work that may be reasonably inferred from the drawings or specifications as being required to produce the intended result shall be provided by the contractor whether or not it is specifically called for, in schedule – B.

The contractor shall furnish and pay for all labour, supervision, materials, equipment, transportation, construction, equipment and machinery tools, appliances, water, fuel, power energy, light, heat, utilities, telephone, storage, protections, safety provisions, and all other facilities, services and acceptable execution, testing initial operation and completion of the work in accordance with the contract documents, ready for use and operation by the owner. The cost of all these arrangements shall be deemed to be included in the contract offer and no separate payment shall be admissible therefore.

5.2 INTERPRETATIONS:

Written clarifications or interpretations necessary for the proper execution or progress of the work, in the form of drawings or otherwise, will be issued with reasonable promptness by the Engineer and in accordance with any schedule agreed upon. Such clarifications or interpretations shall be consistent with or reasonably inferable from the intent of the contract documents and shall become a part thereof. Where, there is a discrepancy between the drawings and the specifications, the contractor shall obtain the “Engineer" Interpretation which shall be binding on the contractor.

5.3 DRAWING:

Figured dimensions on drawings shall govern over scaled dimensions and detailed drawings shall govern over general drawings.

5.3.1 SIGNED DRAWINGS:

Signed drawings alone shall not be deemed to be in order for work unless it is entered in the agreement or schedule for drawings under proper attestation of the contractor

and the Engineer or unless it has been sent to the contractor by the Engineer with a covering letter confirming that the drawing is and authority for work in the contract.

5.3.2 TECHNICAL WORDS:

Work, materials or equipment described in works which so applied have a well known trade or technical meaning shall be deemed to refer to such recognized meanings.

6.0 LINE OUT OF THE WORK:

6.1 SURVEYS AND MEASUREMENTS:

The contractor shall carefully preserve all surveys as also setting out stakes, reference points, bench marks and monuments. Should any stakes, points or benches be removed or destroyed by any act of the contractor or his employees, they may be reset at the contractor's expense. Any expense incurred in replacing permanent monument which the contractor may have failed to preserve shall be borne by the contractor unless the removal of the monuments is required by the contract documents. The contractor shall supply without charge the requisite number of persons with the means and materials necessary for the purpose of working survey, setting out works, and counting, weighing and assisting in the measurement or examination at any time and from time to time of the work or materials.

6.2 CONTRACTOR'S VERIFICATION:

The contractor will establish at the work site a substantial B.M., and connect it to a permanent B.M. available in the area with known value. The contractor will then carry out necessary surveys and leveling, covering his work, in verification of the survey data on the working drawings furnished by the Engineer and he will be responsible for establishing the correct lines and levels and verification of the lines and level furnished on the working drawings.

If any error has erupted in the work due to non observance of this clause, the contractor will be responsible for the error and bear the cost of corrective work.

6.3 SITE OFFICE:

The Contractor shall construct a semi permanent nature site office if required with minimum six table, four almarie, twenty numbers of chairs and other facilities. The use of the site offices will be done by the departmental staff during their visits to site .

7. SECURITY DEPOSIT AND INDEMNITY BOND

7.1 SECURITY DEPOSIT:

The Security Deposit shall be returned to the contractor without any interest when the contractor ceases to be under any obligation under the contract. This shall be read with Clause No.20 of B-1 Form, Defect Liability Clause.

7.2 LOSS OR DAMAGE INDENITY BOND:

The Contractor shall be responsible during the progress as well as maintenances for any liability imposed by law for any damage to the work or any part thereof or to any of the materials or other things used in performing the work or for injury to any person or persons or for any property damaged in or outside the work limit. The Contractor shall indemnify and hold the owner and the Engineer, harmless against any and all liability, claims, loss or injury, including costs, expenses, and attorney's fees incurred in the defense of same, arising from any allegation whether groundless or not, of damage or injury to any person or property resulting from the performance of the work or from any material used in. the work or from any condition of the work or work site, or from any cause whatsoever during the progress and maintenance of the work.

8. SUPERVISION AND SUPERINTENDENCE

8.1 CONTRACTOR'S SUPERVISION:

The Contractor shall supervise and direct the works efficiently and with his best skill and attention. He shall be solely responsible for means, methods, techniques, procedures and sequences of construction. The contractor shall co-ordinate all parts of the work and shall be responsible to see that the finished work complies fully with tile

contract documents, and such instructions and variation orders as the Engineer may issue during the progress of the works.

8.2 WORK ORDER BOOK:

a) The Contractor shall himself engage an authorized representative all the time on the work capable of managing and guiding the work and understanding the specifications and contract conditions. A qualified and experienced Engineer shall be provided by the Contractor as his representative for technical matters in case the Engineer-in-charge considers this as essential for the work and so he directs the contractor. He will take orders as will be given by the Executive Engineer or his representative and shall be responsible for carrying them out. This representative shall not be changed without prior intimation to the Executive Engineer and his representative on the work site. The Engineer-in-charge has unquestionable right to ask for changes in the quality and strength of contractor's supervisory staff and to order removal from work of any of such staff. The contractor shall comply with such orders and effect replacements to the satisfaction of the Engineer-in-charge.

b) A work order book shall be maintained on site and it shall be the property of MBMC and the contractor shall promptly sign orders given therein by the Executive Engineer or his representative or his superior officer and comply with them. The compliance shall be reported by contractor to the Engineer in good time so that it can be checked. The blank work order book with machine numbered pages should be provided by the contractor and he will be allowed to copy out the instruction therein from time to time.

9. PROTECTION:

The contractor shall take all precautions and furnish and maintain protection to prevent damage, injury or loss to other persons who may be affected thereby, all the works and all materials and equipment to be incorporated therein whether in storage on or off the site, under the care, custody or control of the contractor or any of his sub-contractors and other improvements and property at the site or where work is to be performed including building, trees and plants, pole lines, fences, guard, rails, guide

posts, culvert and project, markers sign, structures, conduits, pipelines and improvements within or adjacent to streets, right of way, or easements, except those items required to be removed by the contractor in the contract documents. The contractors protection shall include all the safety precautions and other necessary forms of protection, and the notification of the owners of utilities and adjacent property.

The contractor shall protect adjoining site against structural, decorative and other damages that could be caused by the execution of works and make good at his cost any such damages that could be caused by the execution of works and make good at his cost any such damages.

10. UTILITIES AND SUB-STRUCTURES:

Before commencing any excavations, the contractor shall investigate, determine the actual locations, and protect the indicated utilities and structures, shall determine the existence, position and ownership of other utilities and substructures in the site or before the work is performed by communication with such property owners, search of records, or otherwise and shall protect all such utilities and substructures.

Except for those improvements and facilities require to be permanently removed by the contractor, the contractor shall make satisfactory and acceptable arrangements with the appropriate owners, and at his expense, shall repair and restore all improvements, structures, private and public roads, property, utilities and facilities disturbed, disconnected, or damaged as a result or consequence of his work or the operations of those for whom he is responsible or liable, including that caused by trespass of any of a them, with or without his knowledge or consent, or by the transporting of workmen, material or equipment to or from the site.

11. WORKMEN:

The contractor shall at all times enforce strict discipline and good order among his employees and shall not employ on the works any unfit person or anyone not skilled and experienced in the assigned task.

The Contractor shall in respect of labor employed by him comply with or cause to be complied with the provisions of various labour law and rules and regulations as applicable to them in regard to all matters provided therein and shall indemnify the owner in respect of all claims that may be made against the owner for noncompliance thereof by the contractor.

In the event of the contractor committing a default or breach of any provisions of labour laws and rules and regulations the contractor shall without prejudice to any other liability under the acts pay the owner a sum as decided by the Engineer.

12.1 WORK DURING NIGHT OR ON SUNDAYS AND HOLIDAYS:

Unless otherwise provided, none of the permanent works shall be carried out during night, Sunday or authorized holidays without permission in writing. However, when work is unavoidable or necessary for the safety of life, priority of works, the contractors shall take necessary action immediately and advice the Engineer accordingly.

12.2 WORKMANSHIP:

The quality of workmanship produced by skilled knowledgeable and experience workmen, machines and artisans shall be excellent. Particular attention shall be given to the strength appearance and finish of exposed work.

12.3 MATERIALS AND EQUIPMENT:

All materials and equipment incorporated in the work shall be new. Materials and equipment not covered by detailed requirements in the contract documents shall be of the best commercial quality suitable for the purpose intended and approved by the owner prior to use in the work.

13.1 OPTIONAL MATERIALS;

Only one brand, kind or make of material or equipment shall be used for each specific purpose throughout the works, notwithstanding that similar material or equipment of two or more manufactures or proprietary items may be specified for the same purpose.

14. LAWS AND REGULATIONS:

a) Government Law:

The contract documents shall be governed by the· laws and bylaws of India, the State of Maharashtra and the local bodies in this region.

b) Resolving the disputes:

In case of disputes, between a Contractor and the field officers, regarding this tender, the Municipal Commissioner MBMC shall be the sole arbitrator and no external arbitrator shall be appointed.

15. PERMITS, FEES AND TAXES:

Unless otherwise provided in the contract documents, the contractor shall secure and pay for all permits, Govt. fees and licenses necessary for the execution and completion of the works. The contractor shall pay all duties, including excise duty, sales tax, local taxes, income tax, octroi and other taxes and any other taxes and any other levies required by law including sales taxes properly assessed against his equipment or property used in connection with the work and clearance certificate shall be shown to the Engineer. If the contractor is entitled for any refund / exemption of above taxes, necessary certificate regarding the issue of materials for MBMC works will be issued by the Commissioner MBMC however, the MBMC authorities will not take any responsibility of refund/exemption of such taxes fees and in case of disputes between authority refunding and the contractor, the MBMC and its officers shall be indemnified by the Contractor. Any violation, in the legal provisions of taxes, duties, permits and

fees, carried out by the contractor and detected subsequent shall be the sole responsibility of the contractor and his legal heirs.

16. BURRIED AND CONCELLED WORK:

The contractor shall help in- recording the precise location of all piping, conduits, ducts, cables and like work that is buried, embedded in concrete or masonry, or concealed in wood or metal frame, walls and structures at the time such work is installed and prior to concealment. Should the contractor cover such work before such recording take place, he shall uncover the unrecorded work to the extent required by the Engineer and shall satisfactorily restore and reconstruct the removed work with no change in the contract price or the contract time.

17. WARNINGS AND BARRICADES:

The contractor shall provide and maintain barricades, guards, guard rails, temporary bridges and walkways, watchmen, headlights and danger signals illuminated from sunset to sunrise and all other necessary appliances and safeguards to protect the work, life property, the public, excavations, equipment's and materials. Barricades shall be of substantial construction and shall be painted such as to increase their visibility at night. For any accident arising out of the negligence of above instructions the contractor shall be bound to bear the expenses of defense of every suit, action or other legal proceedings, at law, that may be brought by any person for injury sustained owing to negligence of the above precautions and to pay all damages and costs which may be awarded in any such action or proceedings to any such person or which may with the consent of the contractor be paid in compromising any claim by any such person.

18. PRECAUTIONS WHILE WORKING IN THE VICINITY OF ROAD

(a) When the work is required to be done along, below or near existing traffic road, the contractor(s) shall take steps as are necessary for the safety of the road, labour working at site. He/they will also be required to make program

of his/their work so as not to interfere with the movement of road traffic. No extra payment shall be allowed for these precautions and also for crossing road required during the execution of the work. It should be ensured that the main traffic road is not disturbed.

(b) In addition to the precautions taken by the contractor for the safety of the road and labour, it may be necessary to post flagmen in some locations as an additional safety measure. The contractor(s) shall be fully responsible for any damage to or trespass caused by his/their men to surrounding structure, MBMC bears no liability whatsoever on this account.

(c) Instructions given by Road Authority regarding safety shall be strictly followed during the execution of work.

(d) There may be some service lines such as electrical cables, MGL gas line, S&T cables, and water pipe lines, CC drains crossing above and below the ground levels. These should be supported as per the satisfaction of the site in charge of Concern Authority (Reliance Power/Tata Power/ MGL / Water supply Department of MBMC / PWD Department of MBMC) and after the completion of the work these to be restored in their original alignment. There should not be any damage to these service lines during execution. Contractor is entirely responsible for any damages.

19. TRAFFIC MANAGEMENT

The contractor has to plan his work including stacking of construction materials and placing of machinery such that it will in no way affect the traffic on existing. A board of size 1.0 m x 1.80 m indicating name of the work, name of the owner i.e. MBMC, name of the consultant, Cost of the work, name of the contractor shall be displayed at suitable location and blinkers at night if necessary. Traffic diversion/caution boards of suitable

size shall be provided as directed. All that is stated above in incidental to the work and no separate payment will be made to the contractor.

20. ENGINEER'S STATUS DURING CONSTRUCTION AUTHORITY OF THE ENGINEER:

The Engineer shall have the authority to enforce compliance with the contract documents. On all questions relating to quantities, the acceptability of materials, equipment, or works, the adequacy of the performance of the work and the interpretation of the drawings and specifications, the decision of the Engineer shall be final and binding and shall be precedent to any payment under the contract agreement unless otherwise provided in the contract documents. The Engineer shall have the authority to stop the work or any part thereof as may be necessary to ensure the proper execution of the work, disapprove or reject the works which is defective, to require the uncovering and inspection or testing of the works, to require reexamination of the works, to issue interpretations and clarifications, to order changes or alterations in the works and other authority as provided elsewhere in the contract document.

The Engineer shall not be liable for the results of any ruling, interpretation or decision rendered, or request, demand, instruction, or order issued by him in good faith. The contractor shall promptly comply with requests, demands, instructions and order from Engineer.

The whole of the works shall be under the directions of the Engineer, whose decision shall be final, conclusive and binding on all parties of the, contract, on all questions relating to the construction and meaning of plans, working drawings, sections and specifications connected with the work. The Engineer shall have the power and authority from time to time and at all times to make and issue such further instructions and directions as may appear to him necessary or proper for the guidance of the contractor and for good and sufficient execution of the works according to the terms of specifications. The contractor shall receive, execute, obey and be bound by the same according to the true intent and meaning thereof; fully and effectually. Engineer may

order any of the works contemplated thereby to be omitted, with or without the substitution of any other works in lieu thereof, or may order any works or any portion of works executed or partially executed, to be removed, changed or altered and if needful, may order that other works shall be substituted instead thereof and the difference of expenses occasioned by any such diminution or alteration so ordered and directed shall be deducted from or added to the amount of this contract.

In case the progress of the Contractor is found to be less than the programme given by him at any point of time and if the Engineer is convinced that the balance work cannot be executed within the balance period of time by the Contractor, a notice of 30 days will be issued to improve the progress. In case there in no improvement a further notice of seven days will be given and thereafter a part or whole of the work will be withdrawn from the Contractor and will be got done at the risk and cost of the Contractor. The right of Engineer in this respect shall be unquestionable in any court of law. On expiry of the seven days notice, as above, the Contractor shall remove his materials. men, equipments, plant and management from the site, within seven days so that the new agency can take over immediately. Failing to this, the Authority will remove the aforesaid things at the cost of the Contractor. This authority is in addition to the Clause 3 of the B-1 Form of the Contractor.

21. DEFECTS AND RECTIFICATION:

For period specified in the Clause 20 of the defect liability period for the individual type of work from the date of issuance of. the completion certificate in accordance with para "Final Inspection and Acceptance" contractor shall remain liable for any of the works or parts thereof or equipment and fittings supplied which in the opinion of the Engineer fail to comply with the requirements of the contract or are in any way unsatisfactory or defective (fair wear and tear excepted). The process of the assembly commissioning of all sections of pipe lines, tested hydraulically in patches, will involve some additional measures such as shaft of suitable height, fixing of air valves at more number of places on the alignment and all such measures shall be done by the contractor at his cost. MBMC wants the results of completion of pipelines, included in

the tender satisfactorily in time and no excuses or reasoning of the failures. Hence, the Contractor shall be conversant with the site limitations and restrictions of particular levels at the end and he should execute the work in accordance with exact specifications and requirements. To the intent that the works and each part thereof shall at or as soon practicable after the expiry of the above period be taken over by the Engineer in the condition required by the contract to the satisfaction of the Engineer, the contractor shall finish the work (if any) outstanding at the date of completion as soon as may be practicable after such date and shall execute all such work of repair, amendment, reconstruction, rectification and making good of defects, imperfections, shrinkages or other faults as may during the period of maintenance or after it's expiry be required of the contractor in writing by the Engineer as a result of an inspection made by or on behalf of the Engineer prior to the expiry of the period. All such work shall be carried out by the contractor at his own expenses if the necessity thereof shall in the opinion of the Engineer be due to the use of materials or to the neglect or failure on the part of the contractor to comply with any obligation expressed or implied on the contractor's part under the contract. If the contractor fails to do any such work as entitled to carry out, such work in which the contractor should have carried out at the contractor's own cost, the Engineer shall be entitled to recover from the contractor the cost thereof or may deduct the same from the moneys that become due to the contractor. Notwithstanding the aforesaid, if the contractor remains in default, one calendar month after the Engineer has given written instructions in writing, the Security Deposit shall become payable to the MBMC who will deduct the cost plus overhead expenses of such works as have been necessary to rectify the contractor's default and the balance, if any, shall be disbursed. The Contractor shall submit the operation and maintenance manual for the fruitful operation of the works. The Contractor will have a liberty to visit the operating works during the defect liability period and satisfy himself about the on-going operations in case he do not visit and a defect is observed then the Engineer's opinion shall be final and binding as to the application of defect liability.

22. RIGHT TO WITHHOLD:

The Engineer may refuse to approve any payment, or because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously approved and paid to such extent as may be necessary in the opinion of the Engineer to protect him from loss because (a) The work is defective, (b) Third party claims have been filed or there is reasonable evidence indicating probable filing of such claims, (c) of the Contractor's failure to make payment properly to sub-contractors or for labour, material or equipment (d) of damage to another Contractor, or to the property of other caused by the Contractor, (e) of reasonable doubt that the work cannot be completed for the unpaid balance of the contractor price, (f) of reasonable indication that the work will not be completed within the contract time, (g) of the Contractor's neglect or unsatisfactory prosecution of the work including failure to clean up. Once the provisions of law that enables or require the Engineer to with held such payments are removed, payment will be made for amounts withheld because of them to the extent the contractor is entitled to payment.

23. FINAL INSPECTION AND ACCEPTANCE:

Upon written notice from the contractor, that the entire work required by the contract documents is complete and that all submittals required by him are made, and after the Contractor has delivered the bonds, certificates of inspection, guarantees, warranties, releases and other documents, as required by the contract documents or by law, the Engineer will make a final inspection, and he will notify the Contractor in writing of any particulars in which this inspection reveals that the work is defective, and will also notify the Contractor writing of any deficiencies in the submittals and the documents required by him.

The contractor shall promptly make such corrections as are necessary to rectify all defects or deficiencies. After the Contractor has completed any such corrections to the satisfaction of the owner, the engineer will issue a written completion certificate of the work and file any notice and completion required by law or otherwise.

24. CONTINUING OBLIGATION OF THE CONTRACTOR:

The Contractor's obligation to perform and complete the work in accordance with the contract documents is and shall be absolute. Neither the observation during construction and final inspection of the work by the Engineer, nor any payment to the Contractor under the Contract documents, nor any use or occupancy of the work or any part thereof by the Engineer, nor any act of acceptance by the defective work by the Engineer shall constitute acceptance of work not in accordance with the contract documents.

25. INCOME TAX:

During the course of contract period the deduction of Income Tax will be made at 2% of the gross amount of each bill in excess of Rs.5000/- or as per the advice of the Income tax authority. Presently 8% surcharge over the tax is being levied, which constitutes the overall percentage as 2%.

26. FORCE MAJEURE:

Neither party shall be liable to the other for any loss or damage occasioned by or arising out of the acts of God and in particular unprecedented floods, volcanic eruptions, earthquake or other conclusion of nature and other acts such as, but not restricted to, invasion, act of foreign countries, hostilities or warlike operations before or after declaration of war, rebellion, military or usurped power which prevent performance of the contract and which could not have been foreseen or avoided by a present person I such as Earthquake of magnitude more than for which the structures are designed.

27. WRITTEN NOTICE:

Written notice shall be deemed to have been duly served or delivered in person to the individual or member of the firm or to an officer of the corporation for whom it was intended, or if delivered at or sent by registered or certified mail to the last business address known to him who gives the notice. The notice on the Fax Message / E-mail

shall be deemed to have been duly served the address given in the contractor's tender on which all notices, letters and other communications to the contractor shall be mailed or delivered, except that said address may be changed by the Contractor by notifying the owner in writing. This shall not preclude the service of any notice, letter of other communication upon the Contractor personally.

28. USE OF COMPLETED PORTIONS:

The owner shall have the right, upon written notice to the Contractor, to take possession or occupancy of, and use any completed or partially completed portions of the work, notwithstanding that the time for completing the entire work or such portions may not have expired but such taking possession or occupancy or a waiver or acceptance of any work not completed in accordance with the contract documents.

29. CLEANING UP

The contractor shall at all times during the work keep the site and premises, adjoining property and public property free from accumulations of waste materials, rubbish, and other debris resulting from the works, and at the completion of the work shall remove all waste materials, rubbish and debris from and about the site and premises as well as all tools, construction equipment and machinery and surplus materials, and shall leave the site and premises, clean, tidy and ready for occupancy by the owner. The Contractor shall restore to their original condition those portions of the site not designated for alteration by the contract documents. Paved ways, parking areas and roadways disturbed by the construction shall be redone by filing the excavation, if any, by sand compacted material and bringing it to its original shape as directed and approved by the Engineer. No waste material shall be buried or disposed off on the owner's property unless so approved in writing by the Engineer in charge. Before the Contractor applies for final inspection and acceptance of the work, all items of work shall be complete, ready to operate, and in a clean condition as determined by the Engineer.

30. OWNER'S RIGHT TO CLEAN UP:

If the Contractor fails to satisfactorily clean up or if a dispute arises between the Contractors or in several Contractors as to their responsibility or cleaning up, the Engineer may clean up and charge the cost thereof to the Contractor for his failure, or to the several contractors as the Engineer shall determine to be just.

31. FOSSILS ETC.

All fossils, coins, articles of value of antiquity and structures or other remains or things of geological or archaeological interest discovered on the site shall be deemed to be the property of the owner and the Contractor shall take reasonable precautions to prevent his workmen or any other person from removing or damaging any such article or thing and shall immediately upon discovery thereof and before removal acquaint the Engineer of such discovery and carry out at the expenses of the Engineer's order as to the disposal of the same.

32. LABOUR RULES:

If demanded by MBMC , the contractor will have to produce to the satisfaction of the accepting authority a valid and current licence issued in his favour under the provision of Contract Labour (Regulation and Abolition) Act 1970, before starting the work, otherwise the Contractor shall have to face the further consequences.

33. STATUTORY INCREASE IN DUTIES, TAXES ETC:

All the taxes (except work contract tax) and duties levied by the State and Central Govt. and by Local Bodies shall be fully borne by the Contractor and shall not be reimbursed to him on any account.

34. INSPECTION, TESTING & FEES:

All materials and equipment required for the work under this contract irrespective whether specified or not, shall be tested at manufacturer’s works laboratory and the Test Certificate thereof shall be furnished.

The material/equipment of which makes are not expressly specified in the tender shall be of a make approved by the Engineer-in-charge. The OAP for the material and equipment shall be got approved from the Engineer-in-charge before placing the orders and the testing shall be carried out as per approved OAP. The cost required for inspection including the departmental inspection and conveyance of the officers shall be borne by the Contractor, the cost of which IS deemed to have been included in the quoted cost.

35. MACHINERY REQUIRED:

All machinery required for erection/ execution purposes such as cranes, trucks etc. shall be arranged by the Contractor. Department shall not take any responsibility for providing such machinery even on rental basis. No concreting shall be permitted unless centering and reinforcement is approved by the Engineer-in-charge.

36. DISCREPANCIES AND OMISSIONS:

The tender drawings and specifications shall be considered as explanatory of each other and together shall form the technical requirements and stipulations of tender documents. Detailed drawings shall have preference over small scale drawings. Similarly, detailed specifications shall have preference over general specifications. Should any discrepancy arise as to the meaning, intent or interpretation of any specification or drawing the decision of the Engineer-in-charge shall be final and binding on the Contractor.

37. NO INTEREST ON DUES:

No interest shall be payable by the MBMC on amounts, due to contractors pending final settlement of claim. Further, no interest shall be payable by MBMC on any amount / payment.

38. CHANGE IN SITE:

No claims shall be paid on account of reasonable change in site or orientation as the circumstances may call for.

39. TOOLS AND PLANT:

All tools, instruments and machinery and all other materials (not included in the Material Schedule 'A') shall be acquired by the Contractor at his cost. It is however, open to the Engineer to lend or supply to the Contractor implements, machinery or other service not covered by the tender document which he can be and may consider desirable. For such tools, instruments, machinery and service provided, the Contractor will have to sign an agreement and pay Security Deposit and rental charges as may be fixed by the Engineer.

40. EXCAVATED MATERIALS:

All excavated stuff shall be MBMC property and shall be disposed off by the Contractor in a manner as directed by the Engineer.

41. If there is any dispute between the contractor and the Engineer in Charge, the contractor is not allowed to go for Arbitration and in such cases the decision of Commissioner (MBMC) will be final. Even if the Contractor files a suit in the court, the MBMC may allot the work to the other agency to avoid delay in work.

42. REFILLING PAYMENT:

Though the contractor is required to do refilling before hydraulic testing to avoid traffic hurdle, no payment for refilling of the trenches of pipeline shall be payable till satisfactorily hydraulic testing is given. Re-excavation required if any during testing shall be done by the contractor at his own cost.

43. EXTRA ITEMS:

It is binding on the contractor to carryout such extra works as will be occurred when the same can be conveniently carried out by the contractor in the opinion of the Engineer-in-charge as internal part of the main work in addition, alteration or legitimate and reasonable extension.

Extra charges of claims in respect of extra works shall not be allowed unless the work to which they relate are clearly without the spirit and meaning the specifications or unless such works are ordered in writing by Executive Engineer or his representative and claimed for in specified manner before the work is taken in hand.

FORM B-1

MIRA BHYANDAR MUNICIPAL CORPORATION

FORM B-1

PERCENTAGE RATE TENDER AND CONTRACT FOR WORKS

Name of Work: Operation & Maintenance of SBR STP- 6C & 8 in Mira Bhyander Municipal corporation area.

GENERAL RULES & DIRECTIONS FOR THE GUIDANCE OF CONTRACTORS

1. All works, proposed to be executed by Contract, shall be notified in a Form of invitation to tender, pasted on a Notice Board hung up in the office of the Executive Engineer, MBMC.

This form will state the works to be carried out as well as the date of submitting and opening tenders, and the time allowed for carrying out the work, also the amount of earnest money to be deposited with the tender, the amount of the security deposit to be deposited by the successful Tenderer and the percentage, if any, to be deducted from bills. It will also state whether refund of quarry fees, royalties and ground rents will be granted. Copies of any other documents required in connection with the work shall be signed by the Executive Engineer, MBMC for the purpose of identification and shall also open for Inspection by Contractors at the office of the Executive Engineer, MBMC during office hours.

Where the works are proposed to be executed according to the specifications recommended to a Contractor and approved by a competent authority on behalf of the Mira Bhayandar Municipal Corporation such specifications with designs and drawings shall form a part of the accepted tender.

2. In the event of the tender, being submitted by a firm, it must be signed by each Partner thereof, and in the event of the absence of any partner, it shall be signed on his behalf by a person holding a power of attorney authorizing him to do so.

2.A(I) The Contractor shall pay along with the tender the sum of Rs. 9,02,086/-(Rupees Nine Lacs Two Thousand Eighty Six Only) as and by way of Earnest Money (should be paid by online receipt say MBMC of MBMC). The said amount of Earnest Money shall not carry any interest whatsoever.

ii) DELETED

iii) If after submitting the tender, or if after the acceptance of his tender, the Contractor neglects to furnish the balance amount of Security Deposit without prejudice to any other rights and powers of the Corporation hereunder, or in law, Corporation shall be entitled to forfeit the full amount to the Earnest Money deposited by him.

iv) In the event of his tender not being accepted, the amount of Earnest Money deposited by the Contractor shall, unless it is prior thereto forfeited under the provisions of Sub-Clause (iii) above, be refunded to him on his passing receipt therefore.

3. Receipts for payments made on account of any work, when executed by a firm should also be signed by all the partners except where the contractors are described in their tender as firm, in which case the receipt shall be signed in the name of the firm by one of the partners, or by some other person having authority to give effectual receipts of the firm.

4. Any person who submits a tender shall fill up usual printed form stating to what percentage above or below the rates specified in Schedule-B (Memorandum showing Item of work to be carried out) he is willing to undertake the work. The percentage shall be stated only in the form of contract below the title "Tender for works" at the space provided there for. Only one percentage rate on all the rates included in Schedule B shall be named. Tenders, which propose any alterations in the works specified in the said form of invitation to tender or in the time allowed for carrying out the work or which contain separate percentage over Estimated Rates/Schedule rates for different sub-works or items, or, which contain any other conditions, of any sort or which are not filled with the percentage at the space provided for the purpose and not signed at proper places in the printed B-1 tender form will be liable for rejection. No printed form of tender shall include a tender for more than one work. But, if the contractors who wish to tender two or more works, they shall submit a tender for each work separately. Tenders shall have the name and number of the work to which they refer, written outside the Envelopes.

5. The Commissioner or his duly Authorized Assistant shall open tenders in the presence of contractors who have submitted tenders or their representatives who may be present at the time, and he will enter the amounts of the several tenders in a comparative statement in a suitable, form. In the event of a tender being accepted, the contractor shall for the purpose of identification, sign copies of the specification and other documents mentioned in Rule-1. In the event of tender being rejected, the Executive Engineer, MBMC shall authorize the MBMC officer to refund the amount of the earnest money deposited to the tenderer, on his giving a receipt for the return of the money.

6. The officer competent to dispose of the tenders shall have the right of rejecting all or any of the tenders without assigning any reason.

7. No receipt for any payment alleged to have been made by a contractor in regard to any matter relating to this tender or the contract shall be valid and binding on the Corporation unless it is signed by the appropriate officer of Mira Bhaindar Municipal Corporation.

8. Not Used.

9. All work shall be measured net by standard measure and according to the rules and customs of the Mira Bhaindar Municipal Corporation., without reference to any other custom.

10. Under no circumstances shall any contractor be entitled to claim enhanced rates for items in this contract.

11. Every registered contractor should produce along with his tender, valid certificate of registration as approved contractor in the appropriate class and renewal of such registration with date of expiry.

12. All corrections and additions or pasted slips should be signed.

13 The measurements of work shall be taken according to the usual methods in use in the Public Works Department / Maharashtra JeevanPradhikaran and no proposals to adopt alternative methods will be accepted. The decision of Executive Engineer, MBMC as to what is the usual method to be used in the Corporation, will be final.

14 The tendering Contractor shall furnish a declaration along with the

tender showing all works for which he has already entered into contract and the value of the work that remains to be executed in each case on the date of submitting the tender, (with a copy of Certificate from the Head of the office concerned duly attested from gazette officer).

15 Every Tenderer shall furnish along with the tender information regarding the Income-tax Circle or Ward of the district in which he is assessed to Income-tax, the reference to the number of the assessment and the assessment year or a valid Income-tax clearance certificate.

16. No foreign exchange would be released by the Mira Bhaindar Municipal Corporation, for the purchase of plant and machinery or any other purpose for the execution of the work contracted for.

17. The contractor will have to construct shed, for storing controlled and valuable materials issued to him or purchased by him if any, at work site having double locking arrangement. The materials will be taken for use in the presence of the Departmental person. No materials will be allowed to be removed from the site of works without written permission of the Engineer-in-Charge.

18. The contractors shall also give a list of machineries in their possession and which they propose to use on the work in the form of statement as prescribed in this tender.

19. Every registered or unregistered contractor should furnish along with tender a statement showing previous experience and technical staff employed by him.

20. Successful Tenderer will have to produce to the satisfaction of the accepting authority a valid and current license issued in his favor under the provision of Contract Labour (Regulation and Abolition Act, 1973) before starting work failing which acceptance of the tender will be liable for withdrawal and Earnest Money/Security Deposit will be forfeited to Mira Bhaindar Municipal Corporation

21. The contractor shall comply with the provisions of the Apprentices Act 1961 and the rules and orders issued thereunder from time to time. If he fails to do so, his failure will be a breach of the contract and the Commissioner, MBMC may, in his discretion cancel the contract. The Contractor shall also be liable, for any pecuniary liability arising on account of any violation by him of the provisions of the Act.

22. The work order to the successful tenderer will be issued STP wise i.e. works under sr. no 4, 6, 8 & 9 will be issued immediately after finalization tender. And work order for remaining works i.e. sr. no 1, 2, 3, 5 & 7 will be issued as per requirement

FORMAT for Letter of Commercial Offer(Tender for works)(To be printed on letterhead of the firm and submitted in Envelope -2)

To,

The Commissioner

Mira Bhaindar Municipal Corporation, Bhaindar

Sub: Operation & Maintenance of SBR STP- 6C & 8 in Mira Bhyander Municipal corporation area.

(Rs.1,85,46,927/-)

Dear Sir,

Bidder's Offer

I/We hereby tender for the execution, for MIRA BHAINDAR MUNICIPAL CORPORATION (here-in-before and hereinafter referred to as Corporation or MBMC) of the work specified in such memorandum at _____ percent below/above the estimated rates entered in Schedule 'B' (Memorandum showing items of work to be carried out) and in accordance in all respects with the specifications, designs, drawings, and instructions in writing referred to in rule 1 hereof and in Clause 13 of the annexed conditions of contract and agree that when materials for the work are provided by the corporation, such materials and the rates to be paid for them shall be as provided in Schedule 'A' hereto.	In figures as well as in words

Memorandum

1 A General Description

Operation & Maintenance of SBR STP- 6C & 8 in Mira Bhyander Municipal corporation area.

Note: Contractor shall carry out necessary surveys for aligning the structures prior to construction.

A.	Estimated Cost	Rs. **1,85,46,927.00**
B.	Earnest Money	Rs. 1,85,469.00
C.	Security Deposit	Rs. 5% of Accepted Tender Cost.
	i. Initial security deposit	At the time of agreement 3% of Accepted Tender Cost
	ii.	Balance 2% Security Deposit will be Deducted from R.A. Bill at rate of 5% from each RA bill.

D. Additional Security Deposit:

If the tender is proposed to be accepted at the rate quoted less then estimated cost put to tender additional security deposit over and above 5% in at the below rate shall have to be paid by the tenderer.

a) For offer upto 10% below → Nil

b) For offer upto 10% to 15% below → 2%

c) For offer more than 15% below → 4%

(Additional Security deposit shall be based on estimated cost put to tender)

The Additional Security Deposit in full in the form of FDR/Bank Guarantee from Nationalized/Scheduled Bank will have to be deposited at the time of agreement along with 50% of original security deposit

E) Time allowed for completion of the work from date of written order

to commence 12 (Twelve months) Calendar months including monsoon.

2 I/We agree that this offer shall remain open for acceptance for a minimum period of 120 days from the date of opening the same and thereafter until it is withdrawn by me/us by notice in writing duly addressed to the authority opening the tenders and sent by registered post A.D. or otherwise delivered, at the office of such authority. The Earnest money deposited on-line only. The amount of Earnest Money shall not bear interest and shall be liable to be forfeited to the MBMC should I/We fail to (I) Abide by the stipulation to keep the offer open for the period mentioned above or (ii) sign and complete the contract documents as required by the Engineer and furnish the security deposit, as specified in item (d) of the memorandum contained in Para - I above within the time limit, laid down in clause, (1) of the annexed general conditions of the contract. The amount of earnest money may be refunded to me/us after work order if so desired by me/us in writing unless the same or any part thereof has been forfeited as aforesaid.

3. Should this tender be accepted I/We hereby agree to abide by and fulfill all the terms and provisions of the conditions of contract annexed hereto so far as applicable and in default thereof to forfeit and pay to Corporation, the sums of money mentioned in the said conditions (Earnest Money).

Contractor (**)

Address

Dated the day of 2026

(Witness)

(Witness)

Address

(Occupation)

Accepted For Rs._____ Rs. _____
_____) _____) % Above/Below/ The estimated cost put to tender Rs.....

The above tender is hereby accepted by me for and on behalf of the Mira Bhayandar Municipal Corporation.

(*)

Executive Engineer
Mira Bhaindar Municipal Corporation

Dated day of 20

CONDITIONS OF CONTRACT

CLAUSE -1:- Security Deposit

The person / persons whose tender may be accepted (hereinafter called the Contractor, which expression shall unless excluded by or repugnant to the context include his heirs, executors, administrators and assignors) shall (A) within seven days (which may be extended by the Commissioner, MBMC. up to 15 days, if he decides fit to do so) of the receipt by him of the notification of the acceptance of his tender, deposit with the Commissioner, MBMC, a sum sufficient which will make up full initial security deposit specified in the tender(Initial security deposit of 3 % (Three percent)of accepted tender costshall be submitted by successful bidder at the time of agreement in the form of cash/DD/Pay order/ Bank Guarantees from Nationalized Banksin the enclosed form in favor of the Commissioner, Mira Bhaindar Municipal Corporation) & permit the Corporation at the time of making any payment to him for work done under the contract to deduct 2 % (Two percent) of contract sum each R.A. Bill at the rate of 5% of the gross amount to the extent that total required security deposit Such deductions shall be held by the Corporation by way of Security Deposit.

All compensation or other sums of money payable by the contractor to the Corporation under the terms of this contract may be deducted from, or paid by the sale of a sufficient part of the security deposit or from the interest arising there from, or from any sums which may be due or may become due by the Corporation to the contractor under any other contract or transaction of any nature on any account whatsoever, and in the event of his security deposit being reduced by reason of any such deduction or sale as aforesaid, the contractor shall within ten days thereafter, make good in cash or F. D. R. pledged to Commissioner, MC as aforesaid, any sum or sums which may have been deducted from, or raised by sale of security deposit or any part thereof. The Security Deposit referred to, when paid in cash may, at the cost of the depositor, be converted into interest bearing securities, provided that the depositor has expressly desired this in writing.

If the amount of the security deposit to be paid in a lump sum within the period specified at above, is not paid, the tender / contract already accepted, shall be considered as cancelled and legal steps taken against the contractor for recovery of the amounts.

The amount of the security deposit lodged by a contractor shall be refunded along with the payment of the final bill, if the date upto which the contractor has agreed to maintain the work in good order is over. If such date is not over only 90% amount of security deposit shall be refunded alongwith the payment of the final bill. The amount of security deposit retained by the MBMC shall be released after expiry of period upto which the contractor has agreed to maintain the work in good order is over.

In the event of the contractor failing or neglecting to complete rectification work within the period up to which the contractor has agreed to maintain the work in good order, then, subject to provisions of Clause 17 and 20 hereof, the amount of security deposit retained by the Corporation shall be adjusted towards cost incurred by the Corporation on such rectification work.

CLAUSE 2:- Compensation for delay

The time allowed for carrying out 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, all due delay hence (time being deemed to be of the essence of the contract on the part of the Contractor) and the Contractor shall pay a compensation as an amount equal to 0.1% (Point one percent), of the amount of the estimated cost of the whole work as shown by the tender for every day that the work remains uncommented, or unfinished after the proper dates. The total amount of compensation to be paid under the provisions of this clause not exceeds 10 percent of the estimated cost of the work as shown in the tender And further to ensure good progress. during the executing of the work the Contractor shall be bound, in all case in which the time allowed for any work exceeds one month to complete. Commissioner should be the final authority in this respect.

for complete minimum quantum of work as compared to accepted tender cost as stated below :-

1.	¼ of the work in	¼ of the time
2.	½ of the work in	½ of the time.
3.	¾ of the work in	¾ of the time.

NOTE : - The quantity of the work to be done within particular time to be specified above shall be fixed by the Executive Engineer after taking into consideration the circumstances of each case. And abide by the program of detailed progress laid down by the Executive Engineer.

CLAUSE 3:- Action when whole of the security deposit is forfeited

In any case in which under any clause or clauses of this contract, the contractor shall have rendered himself liable to pay compensation amounting to the whole of his security deposit, (whether paid in one sum or deducted by installments) or in the case of abandonment of the work owing to serious illness or death of the contractor or any other cause, the Commissioner, MBMC on behalf of the

Corporation, shall have power to adopt any of the following courses, as he may deem best suited to the interest of Corporation.

a) To rescind the contract (for which rescission notice in writing to the contractor under the hand of Commissioner, MBMC shall be conclusive evidence) and in that case, the security deposit of the contractor shall stand forfeited and be absolutely at the disposal of the Corporation.

b) To carry out the work or any part of the work departmentally or through other contractor, debiting the original contractor with the cost of the work, expenditure incurred on tools and plants and charges for advertisement for fixing new contractor and those on additional supervisory staff including the cost of work charged establishment employed for getting the un-executed part of the work completed and crediting him with the value of the work done departmentally / through other contractor in all respects in the same manner and at the same rates, as if it had been carried out by the contractor under the terms of his contract. The certificate of the Commissioner, MBMC as to the costs and other allied expenses so incurred and as to the value of the work so done departmentally, shall be final and conclusive against the contractor.

c) To order that the work of the contractor be measured up and to take such part thereof as shall be unexecuted out of his hands and to give it to another contractor to complete, in which case, all expenses incurred on advertisement for fixing a new contracting contractor, additional supervisory staff including the cost of work charged establishment and the cost of the work executed by the new contract contractor will be debited to the contractor and the value of the work done or executed through the new contractor shall be credited to the contractor in all respects and in the same manner and at the same rates, as if it had been carried out by the contractor under terms of his contract. The certificate of the Commissioner, MBMC as to all the cost of the work and other expenses incurred as aforesaid for or in getting the unexecuted work done by the new contractor and as to the value of the work so done shall be final and conclusive against the contractor.

d) In case the contract shall be rescinded under clause (a) above, the contractor shall not be entitled to recover or be paid, any sum for any work therefore actually performed by him under this contract unless and until the Commissioner, MBMC shall have certified in writing the performance of the such work and the amount payable to him in respect thereof and he shall only be entitled to be paid the amount so certified.

e) In the event of either of the courses referred to the clause (b) or (c) being adopted and the cost of the work executed departmentally or through a new contractor and other allied expenses exceeding the value of such work credited to the contractor, the amount of excess shall be deducted from any money due to the contractor, by the Corporation under the contract or otherwise howsoever or from his security deposit or the sale proceeds thereof provided. However, the contractor shall have no claim against the Corporation even if the certified value of the work done departmentally or through a new contractor exceeds the certified cost of such work and allied expenses; provided always that whichever of the three courses mentioned in clauses, (a), (b) or (c) is adopted by the Commissioner, MBMC, the contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials, or entered in to any engagements or made any advance payments on account of or with a view to the execution of the work or the performance of the contract.

CLAUSE 4:- Action when the progress of any particulars portion of the work is unsatisfactory.

If the progress of any particular portion of the work is unsatisfactory, the Commissioner, MBMC shall notwithstanding that the general progress of the work is in accordance with the conditions mentioned in Clause 2, be entitled to take action under Clause 3(b) after giving the contractor 10 days notice in writing. The contractor will have no claim for compensation, for any loss sustained by him owing to such action.

CLAUSE 5:-Contractor liable to pay compensation If action not taken under clauses 3 & 4

In any case in which any of the powers conferred upon the Commissioner, MBMC by Clauses-3 and 4 shall have become exercisable and the same shall not have been exercised, the non-exercise thereof shall not constitute a waiver of any of the conditions hereof and such powers shall notwithstanding be exercisable in the event of any future case of default by the contractor for which under any clause or clauses hereof, he is declared liable to pay compensation amounting to the whole of his security deposit and the liability of the contractor for past and future compensation shall remain unaffected.

Power to take possession of or require removal of or sell Contractor's plant

In the event of the Commissioner, MBMC taking action under sub-clause (a) or (c) of Clause 3, he may, if he so desires, take possession of all or any tools and plants, materials and stores, in or upon the work or the site thereof or belonging to the contractor, or procured by him and intended to be used for the execution of the work or any part thereof, paying or allowing for the same in account at the contract rates, or in the case of contract rates not being applicable at current market rates, to be certified by the Commissioner, MBMC whose certificate thereof shall be final.

In the alternative, the Commissioner, MBMC may, after giving notice in writing to the contractor or his clerk of the work, foreman or other authorized agent require him to remove such tools, plants, materials or stores from the premises within a time to be specified in such notice; and in the event of the contractor failing to comply with any such requisition, Commissioner, MBMC may remove them at the Contractor's expenses or sell them by auction or private sale on account of the Contractor and at his risk, in all respects, and the certificate of the Commissioner, MBMC as to the expenses of any such removal and the amount of the proceeds and expenses of any such sale shall be final and conclusive against the contractor.

CLAUSE 6 :-

If the contractor shall desire an extension of the time for completion of the work on the ground of his having been unavoidably hindered in his execution or on any other ground, he shall apply in writing to the Executive Engineer before the expiration of the period stipulated in the tender or before the expiration of 30 days from the date to which he was hindered as aforesaid or on which the case for asking for extension occurred, whichever is earlier and the Executive Engineer may, if in his opinion there are reasonable grounds granting an extension, grant such extension as he thinks necessary or proper. The decision of the Executive Engineer in this matter be final.

Clause 6 A :- In the case of delay in handling over the land required for the work due to unforeseen cause, the contractor shall not be entitled for any compensation whatsoever from the MBMC on the ground that the machinery or labour was idle for certain period. Contractor may, however apply for extension of time limit which may be granted on the merit of the case.

CLAUSE 7:- Final certificate

On Completion of the work the Contractor shall be furnished with the certificate by the Executive Engineer hereinafter called the Engineer-in-charge of such completion but no such certificate shall be given nor shall the work be considered to be complete until the Contractor shall have been all scaffolding. Surplus material and Rubbish and shall have been cleaned, the dirt from all the wood work, doors, windows, walls, floor or other parts of the building in or up. On which the work has been executed or of which he may have has possession for the purpose of executing the work, nor until the works shall have been measured by the Engineer-in-Charge or where the measurements have been taken by his subordinates until they have received the approval of the Engineer-in-Charge the said measurements

being, binding and conclusive against the Contractor. If the Contractor shall fail to comply with the requirements of this clause as to the removal of scaffolding surplus material and Rubbish and cleaning off dirt on or before the date fixed for the completion of the work, the Engineer-in-charge may at the expenses of Contractor remove such scaffolding surplus materials and Rubbish and dispose of the same as he thinks fit and clean off such dirt as aforesaid and the Contractor shall for with the pay amount of all expenses so incurred but shall have no claim in respect of any such scaffolding or surplus materials as aforesaid except for any sum actually raised by the sale thereof

CLAUSE 8:- Payment on intermediate certificate to be regarded as advance,

No payment shall be made for any work, estimated to cost less than Rupees one thousand till the whole of work shall have been completed and a certificate of completion given. But in the case of works estimated to cost more than Rupees one thousand, the contractor shall on submitting a monthly bill therefor be entitled to receive payment proportionate to the part of the work then approved and passed by the Engineer-in-charge whose certificate of such approval and passing of the sum so payable shall be final and conclusive against the contractor. All such intermediate payments shall be regarded as payments by way of advance / on account bills against the final payments only and not as payments for work actually done and completed and shall not preclude the Engineer-in-charge from requiring any bad, unsound, imperfect or unskillful work to be removed or taken away and reconstructed, or re-erected, nor shall any such payment be considered as an admission of the due performance of the contract or any part thereof in any respect or the accruing of any claim, nor shall it conclude, determine or affect in any other way the powers of the Engineer-in-charge as to the final settlement and adjustment of the accounts or otherwise, or in any other way vary or effect the contract. The final bill shall be submitted by the contractor within one month of the date fixed for the completion of the work, otherwise the Engineer-in-charge's

certificate of the measurements and of the total amount payable for the work shall be final and binding on all parties.

CLAUSE 9:- Payment At reduced rates on account of items of work not accepted as completed, to be at the discretion of the Engineer-in -charge.

The rates for several items on work estimated to cost more than Rs. 1000/- agreed to within, shall be valid only when the item concerned is accepted as having been completed fully in accordance with the sanctioned specifications. In case where the items of work are not accepted as so completed the Engineer-in-charge may make payment on account of items at such reduced rates as he may consider reasonable in the preparation of final or on accounts bill.

CLAUSE No. 10:- Bills to be submitted monthly

A bill shall be submitted by the Contractor in each month on or before the date fixed by the Engineer- in-charge for all work executed in the previous month and the Engineer -in-charge shall take or cause to be taken requisite measurement for the purpose of having the same verified and the claim so far as it is admissible, shall be adjusted and paid if possible, within 10 days from the presentation of the bill. If the Contractor does not submit the bill within the time fixed as aforesaid, the Engineer- in-charge may depute a subordinate to measure the said work in the presence of the Contractor or his duty authorized agent whose counter signature to the measurement list shall be sufficient warrant, and the Engineer-in-charge may prepare a bill from such list which shall be binding on the Contractor in all respects.

CLAUSE 11:- Bills to be on printed forms

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

CLAUSE 12:- Stores supplied by Corporation

Contractor has to make his own Store arrangement.

CLAUSE 12 (A):- Storage of controlled material

All stores of controlled materials such as cement, steel, etc. procured by the Contractor, should be kept by the Contractor under lock and key and they will be accessible for inspection by the Executive Engineer or his authorized agent at all the times.

CLAUSE 13:- 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 workman like manner, and both as regards material and in every other respect in strict accordance with specifications. The Contractor shall also confirm exactly, fully and faithfully to the designs, drawings and instructions in writing relating to the work signed by the Engineer-in-Charge and loaded in his office and to which the Contractor shall be entitled to have access for the purpose of inspections at such office or In the site of the work during office hours. The Contractor will be entitled to receive one sets of contract drawings and working drawings as well as one certified copy of the accepted tender along with the work order free of cost.

CLAUSE 14 :- Alterations in specifications and designs not to invalidate contracts.

The Engineer-in-charge shall have power to make any alterations in or additions to the original specifications, drawings, designs, and instructions that may appear to him to be necessary or advisable during the progress of the work and the contractor shall be bound to carry out the work in accordance with any instructions in this connection which may be given to him in writing, signed by the Engineer-in-charge and such alteration shall not invalidate the contract and any additional work which the contractor may be directed to do in the manner above specified as part of the work, shall be carried out by the contractor on the same conditions in all respects on which he agreed to do the main work, and at the same rates as are specified in the tender for the main work. And if the additional and altered work

includes any class of work for which no rate is specified in this contract, then such class of work shall be carried out at the rates entered in the Schedule of Rates of the Corporation or relevant Government departments, prevailing at the time when the extra items crop up or at the rates mutually agreed upon between the Engineer-in charge and the contractor, whichever are lower.

Rates for works not entered in estimate or Schedule of rates

If the additional or altered work for which no rate is entered in the Schedule of Rates, is ordered to be carried out before the rates are agreed upon then, the contractor shall within seven days of the date of receipt by him of the order to carry out the work, inform the Engineer-in-Charge of the rate which it is his intention to charge for such class of work, and if the Engineer-in-Charge does not agree to this rate, he shall by notice in writing be at liberty to cancel his order to carry out such class of work and arrange to carry it out in such manner as he may consider advisable, provided always that if the contractor shall commence work or incur any expenditure in regard thereto before the rates shall have been determined, as lastly hereinbefore mentioned, then in such case, he shall only be entitled to be paid in respect of the work carried out or expenditure incurred by him prior to the date of the determination of the rate as aforesaid according to such rate or rates as shall be fixed by the Engineer-in-Charge. In the event of a dispute, the decision of the Commissioner will be final.

Where, however, the work is to be executed according to the designs, drawings and specifications recommended by contractor and accepted by the competent authority, the alternation above referred to shall be within the scope of such designs, drawings and specifications appended to the tender.

Extensions of time in consequence of additions & alterations

The time limit for the completion of the work shall be extended in the proportion that the increase in its cost occasioned by alternations or additions bears to the cost of the original contract work, and the certificate of the Engineer-in-charge as to such proportion shall be conclusive.

CLAUSE 15:- No claim to any payment or compensation for alteration in or restriction of work

a) If at, any time after the execution of the contract documents, the Engineer shall for any reason what-so-ever (other than default on the part of the contractor for which the Corporation is entitled to rescind the contract) desire that the whole or any part of the work specified in the tender should be suspended for any period of that the whole or part of the work should not be carried out at all, he shall give to the contractor a notice in writing of such desire and upon the receipt of such notice the contractor shall forthwith suspend or stop the work wholly or in part as required, after having due regard to the appropriate stage at which the work should be stopped or suspended so as not to cause any damage or injury to the work already done or endanger the safety thereof, provided that, the decision of the Engineer as to the stage at which the work or any part of it could be or could have been safely stopped or suspended shall be final and conclusive against the contractor. The contractor shall have no claim to any payment or compensation whatsoever, by reason of or in pursuance of any notice as aforesaid, on account of any suspension, stoppage or curtailment except to the extent specified hereinafter.

b) Where the total suspension of work ordered as aforesaid continued for a continuous period exceeding 90 days, the contractor shall be at liberty to withdraw from the contractual obligations under the contract so far as it pertains to the unexecuted part of the work by giving a 10 days prior notice in writing to the Engineer, within 30 days of the expiry of the said period of 90 days, of such intention and requiring the Engineer to record the final measurements of the work already done and to pay the final bill. Upon giving such notice the contractor shall be deemed to have been discharged from his obligation to complete the remaining un-executed work under this contract. On receipt of such notice the Engineer shall proceed to complete the measurement and make such payment as may be finally due to the contractor within a period of 90 days from the receipt of such notice in respect of the work already done by the contractor. Such payment

shall not in any manner prejudice the right of the contractor to any further compensation under the remaining provisions of this Clause.

c) Where the Engineer requires the contractor to suspend the work for a period in excess of 30 days at any time or 60 days in the aggregate, the contractor shall be entitled to apply to the Engineer within 30 days of the resumption of work after such suspension, for payment of compensation to the extent of pecuniary loss suffered by him in respect of working machinery rendered idle on the site or on the account of his having had to pay the salary or wages of labour engaged by him during the said period of suspension, provided always that the contractor shall not be entitled to any claim in respect of any such working machinery, salary or wages for the first 30 days whether consecutive or in the aggregate of such suspension or in respect of any suspension what-so-ever occasioned by unsatisfactory work or any other default on his part. The decision of the Engineer in this regard shall be final and conclusive against the contractor.

d) In the event of

i. Any total stoppage of work on notice from the Engineer under Sub clause 1) in that behalf.

ii. Withdrawal by the Contractor from the contractual obligations to complete the remaining unexecuted work under sub-clause 2) on account of continued suspension of work for a period exceeding 90 days.

Curtailment in the quantity of item or items originally tendered on account of any alteration, omission or substitution in the specifications, drawings, designs, or instructions under Clause 14, where such curtailment exceeds 25 % in quantity and the value of the quantity curtailed beyond 25 % at the rates for the item Specified in the tender is more than Rs. 5,000.

It shall be open to the contractor, within 90 days from the service of (i) the notice of stoppage of work or (ii) the notice of withdrawal from the contractual obligations under the contract on account the continued suspension of work or (iii) notice under Clause 14 resulting in such curtailment, to produce to the Engineer

satisfactory documentary evidence that he had purchased or agreed to purchase material for use in the contracted work before receipt by him the notice of stoppage, suspension or curtailment and require the Corporation to take -over on payment such material at the rates determined by the Engineer provided, however, such rates shall in no case exceed the rates at which the same were acquired by the contractor. The Corporation shall thereafter take over the material so offered, provided the quantities offered are not in excess of the requirements of the unexecuted work as specified in the accepted tender and are of quality and specifications approved by the Engineer.

CLAUSE 15 (A):- No claim to compensation on account of loss due to delay in supply of material by MBMC if any.

Contractor shall not be entitled to claim any compensation from the MBMC for the loss suffered by him on account of delay by MBMC in the supply of materials entered in schedule "A" where such delay is caused by

I) Difficulties relating to the supply of railway wagons.

II) Force majeure.

III) Act of God.

IV) Act of enemies of the state or any other reasonable cause beyond control of Government.

In case of such delay in the supply of material, the MBMC shall grant such extension of time for the completion of the works as shall appear to the Executive Engineer to be reasonable in accordance with the circumstances of the case. The decision of the Executive Engineer as to the extension of time shall be accepted as final by the Contractor.

CLAUSE 16:- Time limit for unforeseen claims.

Under no circumstances whatsoever, shall the contractor be entitled to any compensation from Corporation on any account unless the contractor shall have submitted a claim in writing to the Engineer-in-Charge within one month of the case of such claim occurring.

CLAUSE 17:- Action & compensation payable in case of bad work

If at any time before the security deposit or any part thereof, is refunded to the contractor, it shall appear to the Engineer-in-Charge or his subordinate in charge of the work, that any work has been executed with unsound, imperfect or unskillful workmanship or with materials of inferior quality, or that any materials or articles provided by him for the execution of the work are unsound, or of a quality inferior to that contracted for or are otherwise not in accordance with contract, it shall be lawful for the Engineer-in-Charge to intimate this fact in writing to the contractor and then notwithstanding the fact that the work, materials or articles complained of may have been inadvertently passed, certified and paid for, the contractor shall be bound forthwith to rectify, or remove and reconstruct the work so specified in whole or in part, as the case may require, or if so required, shall remove the materials or articles so specified and provide other proper and suitable materials or articles at his own charge and cost and in the event of his failing to do so within a period to be specified by the Engineer-in-Charge in the written intimation aforesaid, the contractor shall be liable to pay compensation at the rate of one percent of the amount of the estimate for every day not exceeding ten days during which the failure so continues and in the case of any such failure the Engineer-in-Charge may rectify or remove, and re-execute the work or remove and replace the materials or articles complained of as the case may be at the risk and expense in all respects of the contractor should the Engineer-in-Charge consider that any such inferior work or materials as described above may be accepted or made use of it

shall be within his discretion to accept the same at such reduced rates as he may fix therefor.

CLAUSE 18:- Work to be open inspection. Contractor or responsible agent to be present

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

CLAUSE 19:- Notice to be given before the work is covered.

The contractor shall give not less than five days notice in writing to the Engineer-in-Charge or his subordinate in charge of the work before covering up or otherwise placing beyond the reach of measurement, any work in order that the same may be measured and correct dimensions thereof taken before the same is so covered up or place beyond the reach of measurement and shall not cover up or place beyond the reach of measurement any work without the consent in writing of the Engineer-in-charge or his subordinate in charge of the work and if any work shall be covered up or placed beyond the reach of measurement, without such notice having been given or consent obtained, the same shall be uncovered at the contractors expense and in default thereof no payment or allowance shall be made for such work or for the materials with which the same was executed.

Clause 20: Contractor liable for damage done and for imperfection

If during the period of 24 months from the date of completion as certified by the Engineer-in-Charge pursuant to Clause-7 of the Contract or 24 months after

commissioning the work, whichever is earlier in the opinion of the Commissioner, MBMC., the said work is defective in any manner whatsoever, the contractor shall forthwith on receipt of notice in that behalf from the Commissioner, MBMC, duly commence execution and completely carry out at his cost in every respect all the work that may be necessary for rectifying and setting right the defects specified there-in including dismantling and re-construction of un-safe portion strictly in accordance with and in the manner prescribed and under the supervision of the Commissioner, MBMC. In the event of the Contractor failing or neglecting to commence execution of the said rectification work within the period prescribed thereof in the said notice and / or to complete the same as aforesaid as required by the said notice, Commissioner, MBMC shall get the same executed and carried out departmentally or by any other contractor at the risk on account and at the cost of the Contractor. The Contractor shall forthwith on demand pay to the Corporation the amount of such costs, charges and expenses sustained or incurred by the Corporation of which the certificates of the Commissioner, MBMC shall be final and binding on the contractor. Such cost, charges and expenses shall be deemed to be arrears of land revenue and in the event of the Contractor failing or neglecting to pay the same on demand as aforesaid without prejudice to any other rights and remedies of the Corporation; the same may be recovered from the contractor as arrears of land revenue. The Corporation shall also be entitled to deduct the same from any amount which may then be payable or which may thereafter become payable by the Corporation to the Contractor either in respect of the said work or any other work whatsoever or from the amount of security deposit retained by the Corporation.

ANNEXURE TO CLAUSE 20:

The defect liability period shall be as under

(DELEATED)

Clause 21: Contractor to supply plant, ladder, scaffolding etc.

The Contractor shall supply at his own cost all materials (except such special materials if any, as may in accordance with the contract, be supplied from the Corporation stores), plant, tools, appliances, implements, ladders, cordage, tackle, scaffolding and temporary works requisite or proper for the proper execution of the work, whether, in the original, altered or substituted form and whether included in the specification or other documents forming part of the contract or referred to in these conditions or not and which may be necessary for the purpose of satisfying or complying with the requirements of the Engineer-in-Charge as to any matter as to which under these conditions he is entitled to be satisfied, or which he is entitled to require together with the carriage therefor to and from the work. The Contractor shall also supply without charge the requisite number of persons with means and materials necessary for the purpose of setting out works and counting, weighing and assisting in the measurement or examination at any time and from time to time of the work or the materials, failing which the same may be provided by the Engineer-in-Charge at the expense of the contractor and the expenses may be deducted from any money due to the contractor under the contract or from his security deposit or the proceeds of sale thereof, or of a sufficient portion thereof.

And is liable for damages arising from non provision of lights, fencing etc.

The contractor shall provide all necessary fencing and lights required to protect the public from accident and shall also be bound to bear the expenses of defense of every suit, action or other legal proceeding, that may be brought by any person for injury sustained owing to neglect of the above precautions, and to pay any damages and costs which may be awarded in any such suit, action or proceedings to any such persons, or which may with consent of the contractor be paid for compromising any claim by any such persons.

Clause 21 (A): Scaffolds to comply with regulations

The Contractor shall provide suitable scaffolds and working platforms, gangways and stairways and shall comply with the following regulations in connection therewith.

a) Suitable scaffolds shall be provided for workmen for all works that cannot be safely done from a ladder or by other means.

b) A scaffold shall not be constructed, taken down or substantially altered except

   i. Under the supervision of a competent and responsible person; and

   ii. As far as possible by competent workers possessing adequate experience in this kind of work.

c) All scaffolds and appliances connected therewith and ladders shall

   i. Be of sound material,

   ii. Be of adequate strength having regard to the loads and strains to which they will be subjected, and

   iii. Be maintained proper completion.

d) Scaffolds shall be so constructed that so part thereof can be displaced in consequence of normal use.

e) Scaffold shall not be over-loaded and so far as practicable the load shall be evenly distributed.

f) Before installing lifting gear on scaffolds special precautions shall be taken to ensure the strength and stability of the scaffolds.

g) Scaffolds shall periodically inspected by a completed person.

h) Before allowing a scaffold to be used by his workmen, the contractor shall whether the scaffold has been erected by his workmen or not, take steps to ensure that it complies fully with the regulation here-in specified

i) Working platform, gangways and stairways shall:

   i) Be so constructed that no part thereof can sag unduly or unequally.

   ii) Be so constructed and maintained, having regard to the prevailing conditions as to reduce as far as practicable risks of persons tripping or

slipping, and

iii) Be kept free from any unnecessary obstruction.

j) In the case of working platform, gangways, working places and stairways at a height exceeding 3 Meters.

i) Every working platform and every gangway shall be closely boarded unless other adequate measures are taken to ensure safety

ii) Every working platform and gangway shall have adequate width and

iii) Every working platform, gangway, working place and stairway shall be suitably fenced.

k) Every opening in the floor of a building or in a working platform shall except for the time and to the extent required to allow the excess of persons or the transport or shifting of material, be provided with suitable means to prevent the fall of persons or materials.

l) When persons are employed on roof where there is a danger of falling from a height exceeding 3 meters suitable precautions shall be taken to prevent fall of persons or materials.

m) Suitable precautions shall be taken to prevent persons being struck by articles which might fall from scaffolds or other working places.

n) Safe means of access shall be provided to all working platforms and other working places.

Clause-21(B): Hoisting appliances to comply with regulations

The contractor shall comply with the following regulations as regards the Hoisting Appliances to be used by him

a) Hoisting machine and tackle, including their attachments, anchorages and supports shall

i. Be of good mechanical construction, sound material and adequate strength and free from patent defect and

ii. Be kept in good repair and in good working order.

b) Every rope used in hoisting or lowering materials or as a means of

suspension shall be of suitable quality and adequate strength and free from patent defect.

c) Hoisting machines and tackle shall be examined and adequately tested after erection on the site and before use and be re-examined in position at intervals to be prescribed by the Corporation.

d) Every chain, ring, hook, shackle swivel and pulley block and in hoisting or lowering materials or as a means of suspension shall be periodically examined.

e) Every crane driver or hoisting appliance operator shall be properly qualified.

f) No person who is below the age of 18 years, shall be in control of any hoisting machine, including any scaffold, or shall give signals to the operator.

g) In the case of every hoisting machine and of every chain, ring, hook, shackle, swivel and pulley block used in hoisting or lowering or as means of suspension, the safe working load shall be ascertained by adequate means.

h) Every hoisting machine and all gear referred to in preceding regulation shall be plainly marked with the safe working load.

i) In the case of a hoisting machine, having a variable safe working load, each safe working load and the conditions under which it is application, shall be clearly indicated.

j) No part of any hoisting machine or of any gear referred to in regulation (g) above shall be loaded beyond the safe working load except for the purpose of testing.

k) Motors, gearing transmissions, electric wiring and other dangerous part of hoisting appliance shall be provided with efficient safeguards.

l) Hoisting appliances shall be provided with such means as will reduce to a minimum the risk of the accidental descent of the load.

m) Adequate precautions shall be taken to reduce to a minimum the risk of any part of a suspended load becoming accidentally displaced.

Clause-22: Measure for prevention of fire

The Contractor shall not set fire to any standing jungle, trees, brushwood or grass without a written permit from the Engineer in Charge. When such permit is given and also in all cases when destroying cut or dug up trees, brushwood, grass etc. by fire; the contractor shall take necessary measure to prevent such fire spreading to or otherwise damaging surrounding property.

Clause 23: Liability of contractor for any damage done in or outside work area

Compensation for all damages done intentionally or unintentionally by Contractor's labour whether in or beyond the limits of Corporation property including any damage caused by the spreading of fire mentioned in clause 22, shall be estimated by the Engineer-in-charge or such other officer as he may appoint and the estimate of the Engineer-in-charge, subject to the decision of the Commissioner on appeal, shall be final and the contractor shall be bound to pay the amount of assessed compensation on demand, failing which, the same will be recovered from the contractor as damages in the manner prescribed in Clause-1 or deducted by the Engineer-in-charge from any sums that may be due or become due from Corporation to contractor under this contract or otherwise. The Contractor shall bear the expenses of defending any action or other legal proceeding that may be brought by any persons for injury sustained by him owing to neglect of precautions to prevent the spread of fire and he shall pay any damages and cost that may be awarded by the Court in consequence.

Clause 24: Employment of female labour

The employment of female labours on works in neighbor-hood of soldier's barracks should be avoided as far as possible.

Clause 25 : Work on Sundays

No work shall be done on a Sunday without the sanction in writing of the Engineer-in-charge.

Clause 26: Rescission of contract for subletting work without approval or by Binding public officer

The Contract shall not be assigned or sublet without the written approval of the Engineer-in-charge and if the contractor shall assign or sublet his contract, or attempt so to do, or become insolvent or commence any proceeding to get himself

adjudicated and insolvent or make any composition with his creditors or attempt so to do or if possible bribe, gratuity, gift, loan perquisite, reward or advantage pecuniary or otherwise, shall either directly or indirectly be given, promised or offered by the Contractor or any of his servants or agents to any public officer or person in the employment of Corporation in anyway relating to his office or employment, or if anyway directly or indirectly interested in the contract, the Engineer-in-charge may thereupon by notice in Writing, rescind the contract and security deposit of the contractor shall thereupon stand forfeited and be absolutely at the disposal of Corporation and the same consequences shall ensure, as if the contract had been rescinded under clause-3 hereof and in addition the contractor shall not be entitled to recover or be paid for any work therefor actually performed under the contract.

Clause 27: Sum payable by pay of compensation to be considered as reasonable compensation without reference to actual loss.

All sums payable by a contractor by way of compensation under any of these conditions shall be considered as a reasonable compensation to be applied to the use of Corporation without reference to the actual loss or damage sustained, and whether any damage has or has not been sustained.

Clause 28: Changes in the constitution of firm to be notified

In the case of tender by partners, any changes in the constitution of a firm shall be forthwith notified by the Contractor to the Engineer-in-charge for his information.

Clause 29: Works under direction and control of the Employer

All works to be executed under the contract shall be executed under the direction and subject to the approval in all respects of the Commissioner, MBMC, who shall be entitled to direct at what point or points and in what manner they are to be commenced and from time to time carried on.

Clause 30: Decision of Engineer in charge to be final

Except where otherwise specified in the contract and subject to the powers delegated to him by Corporation, the decision of the Engineer in charge shall be final, conclusive and binding on all parties to the contract, upon all questions relating to the meaning of the specifications, designs, drawings and instructions hereinbefore mentioned and as to the quality of workmanship, or materials used on the work, or as to any other question, claim, right, matter or thing whatsoever, if anyway arising out of, or relating to the contract, designs, drawings, specifications, estimates, instructions, orders or other conditions or otherwise concerning the works, or the execution, or failure to execute the same, whether arising during the progress of the work or after the completion or abandonment thereof.

The Contractor may appeal to the Commissioner if the Contractor is not satisfied with the order passed by the Engineer in Charge as aforesaid, he may within thirty days of receipt by him of any such order, appeal against it to the Commissioner provided that

a) The accepted value of the contract exceeds Rs.10.00 Lakh (*Rupees Ten Lakh*)
b) Amount of claim is not less than Rs.1.00 Lakh (*Rupees One Lakh*)
The Commissioner's decision in the matter shall be conclusive, final and binding on the Contractor.

Clause-31: Stores of European or American manufacture to be obtained from the Corporation

Deleted.

Clause 32: Lump sum in estimates

When the estimate on which a tender is made includes lump sums in respect of parts of the work, the contractor shall be entitled to payment in respect of the items of work involved or the part of work in question at the same rates as are payable under this contract for each item, or if the part of work in question is not in the opinion of the Engineer-in-charge capable of measurement, the Engineer-in-charge may at his discretion, pay the lump sum amount entered in the estimate and the certificate in writing of the Engineer-in-charge shall be final and conclusive against the contractor with regard to any sum or sums payable to him under the provision of this clause.

Clause 33: Action where no specifications laid down

In the case of any class of work for which there is no such specification as is mentioned in Rule 1 of Form B1, such work shall be carried out with the Corporation's specification & in the event of there being no Corporation's specification, then in such case the work shall be carried out in all respects in accordance with all instructions and requirements of the Engineer-in-charge.

Clause 34: Definition of "work"

The expression "Works" or "Work" where used in these conditions, shall, unless there be something in the subject or context repugnant to such construction, be construed to mean the works contracted to be executed under or in virtue of the contract, whether temporary or permanent and whether original, altered substituted or additional.

Clause 35: Contractor's percentage whether applied to net or gross amount of bill

The percentage referred to in the tender shall be deducted from / added to the gross amount of the bill before deducting the value of any stock issued.

Clause 36: Payment of quarry fees, royalties etc.

All quarry fees, royalties, octroi dues/cess and ground rent for stacking materials, if any, shall be paid by the contractor.

Clause 37: Workmen related

The contractor shall be responsible for and shall pay any compensation to his

workmen payable under the Workman's Compensation Act 1923 (VIII of 1923) (hereinafter called the said Act) for injuries caused to the workmen. If such compensation is payable or paid by Corporation as Principal under Sub-section (1) of section 12 of the said Act on behalf of the contractor, it shall be recoverable by Corporation from the Contractor under sub-section (2) of the said section. Such Compensation shall be recovered in the manner laid down in the Act.

Clause 37 (A): Compensation under Workmen's Compensation Act

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

Clause 37 (B): Medical Aid to workmen

The Contractor shall provide all necessary personal safety equipment and first aid apparatus available for 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 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 37 (C): The Apprentices Act, 1961

The contractor shall duly comply provision of "The Apprentices Act, 1961 (III)", the rules made there under and the orders that may be Issued from time to time under the said Act & the said rules and on his failure or neglect to do so, be subject to all the liabilities and penalties by the said Act and said Rules.

CLAUSE 38:- Claim for quantities entered in the tender or estimates.

1. Quantities in respect of the several items shown in the tender are approximate, and no revision in the tendered rate shall be permitted in respect of any of the items so longs as, subject to any special provision contained in the specifications, prescribing different percentage of permissible variations, the quantity of the item does not exceed the tender quantity by more than 25 percent or so long as the value of the excess quantity beyond the limit of tender quantities at the rate of the item specified in the tender, is not more than Rs. 5,000/- (whichever is more)

2. The Contractor shall, if ordered in writing by the Executive Engineer so to do also carry out any quantities in excess of the limit mentioned in sub-clause (1) hereof on the same conditions as and in accordance with the specifications in the tender and at the rates (I) derived from the rates entered in the current schedule of rates and in the absence of such rates, (ii) at the rate prevailing in the market, the said rates being increased or decreased as the case may be by the percentage which the total tendered amount bears to the estimated cost of the works as put to tender based upon the schedule of rates applicable to the year in which the tender were invited (For purpose of operation of this clause, this cost shall be taken to be RS.1,10,00,000/-(Rupees OneCorers tenLacs Only.)as per DSR 2016-17.

4. Claims arising, out of reduction in the tendered quantity, of any item beyond 25% will be governed by the provisions of clause 15 only when the amount of such reduction beyond 25% at the rate of item specified in the tender is more than Rs. 5,000/- This reduction is exclusively of the reduction mentioned in clause No 14 & 15 of work and site condition.

5. This Clause is not applicable to extra items.

6. There is no change in the rate if the excess is more than 25% of the tendered quantity, but the value of the excess work- at the tendered rates does not exceed Rs. 5,000/-

7. The quantities to be paid at tendered rate shall include :-

   Tendered quantity plus.

   25% excess of the tendered quantity or the excess quantity of the value of Rs.5000/- at the tendered rate whichever is more.

8. In the Schedule B any probable item is included without stating its quantity but by stating the rate for such item, then the tendered quantity for such item shall be treated as Zero for applicability of this clause.

9. Till approval for excess quantity is accorded by competent authority interium payment will only be released as under:-

a) At accepted tender rate or current schedule rate whichever is less for quantity exceeding Schedule-B quantity by 25% or of cost upto Rs.5000 (i.e. for entire quantity exceeding the quantity stated in the tender subject to condition that total expenditure on the tendered work shall not exceed sanctioned cost of the scheme.

b) The balance payment due as per provision of clause 38 will be released by the Engineer-in-Charge only after approval from the competent authority is received by him.

Note:

If the quantity stated in the tender exceeds the tender quantity, i.e. quantity under Clause 38 the Executive Engineer shall obtain approval for excess quantity involved from The Commissioner Mira Bhaindar Municipal Corporation authorities according to power delegated to them as the case may be.

Clause – 38-A : Till approval for excess quantity are accorded by competent authority interim 50% payment will be released as under :

a) At accepted tender rate or current schedule rate whichever is less for (i.e. entire quantity exceeding quantity stated in the tender subject to condition that total expenditure on the tendered work shall not exceed accepted tender cost.
b) The excess quantity beyond 25% will be paid at tendered rate of CSR rate whichever is minimum till approval of the competent authority is received subject to the condition that total expenditure shall not exceed accepted tender cost.
c) The balance payment due as per provision of Clause-38 will be released by the Engineer-in-Charge only after approval from the competent authroity is received by him.

Clause – 38-B : Deleated.

Clause 39: Employment of famine labour etc.

The Contractor shall employ any famine, convict or other labour of a particular kind or class if ordered in writing to do so by the Engineer-in-charge.

Clause 40: 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 accorded in sanction of estimates and release of any payments.

Clause 41: Claims for compensation for delay in execution of work

No compensation shall be allowed for any delays in the execution of the work on account of water, standing in borrow pits or compartments. The rates are inclusive for hard or cracked soil, excavation in mud, sub-soil water or water standing in borrow pits and no claim for an extra rate shall be entertained, unless otherwise expressly specified.

Clause 42: Entering upon or commencing any portion of work

The contractor shall not enter upon or commence any portion of work except with the written instructions of the Engineer-in-charge or his subordinate in charge of the work. Failing such authority, the contractor shall have no claim to ask for measurement of or payment for work.

Clause 43 : Minimum age of persons employed and the payment

a) No contractor shall employ any person who is under age of 18 years.
b) The Engineer-in-charge or his Agent is authorized to remove from the work any person found working which does not satisfy these conditions and no responsibility shall be accepted by Corporation for any delay caused in the completion of the work by such removal.
c) The Contractor shall pay fair and reasonable wages exceeding those stipulated in Minimum Wages Act of 1918 and its subsequent amendments, applicable to the area in which the work of the contract is located to the workmen employed by him in the contract undertaken by him. In the event of any dispute arising between the

Contractor and his workmen on the grounds that the wages paid are not fair and reasonable, the dispute shall be referred without delay to the Commissioner, MBMC. who shall decide the same. The decision of the Commissioner, MBMC shall be conclusive and binding on the Contractor, but such decision shall not in any way affect the conditions in the contract regarding the payment to be made by Corporation at the sanctioned tender rates.

d) Contractor shall provide drinking water facilities to the workers. Similar amenities shall be provided to the workers engaged on large work in urban areas. Contractor to take precaution against accidents which take place on account of labour using loose garments while working near machinery.

Clause 44: Method of payment

Payment to contractors shall be made by cheque drawn on any Bank within the MiraBhaindar Municipal Corporation Limits.

Clause 45: Acceptance of conditions compulsory before tendering the work.

Any contractor who does not accept these conditions shall not be allowed to tender for works. Entering into contract by the contractor with Mira Bhaindar Municipal Corporation by the Contractor shall be considered as incontrovertible proof of acceptance of all conditions of the contract by the Contract.

Clause 46: Employment of scarcity labour

If Government declares a state of scarcity or famine to exist in any village situated within 16 Kilometer of the work, the Contractor shall employ upon such parts of the work, as are suitable for unskilled labour, any person certified to him by the Commissioner, MBMC. or be any person to whom the Commissioner MBMC may have delegated this duty in writing to be in need of relief and shall be bound to pay to such person wages not below the minimum which Government may have fixed in this behalf. Any disputes, which may arise in connection with the implementation of this clause, shall be decided by the Commissioner, MBMC whose decision shall be final and binding on the Contractor.

Clause 47: Contractor's prices not to exceed controlled prices

The price quoted by the Contractor shall not in any case exceed the control price, if any, fixed by Government or reasonable price which it is permissible for him to charge a private purchaser for the same class and description, the controlled price or the price permissible under Hoarding and Profiteering Prevention Ordinance, 1948, as amended from time to time. If the price quoted exceeds the controlled price or the price permissible under Hoarding and Profiteering Prevention Ordinance, the Contractor will specifically mention this fact in his tender along with the reasons for quoting such higher prices. The purchaser at his discretion will in such case exercise the right of revising the price at any stage so as to conform with the controlled price on the permissible under the Hoarding and Profiteering Prevention Ordinance. This discretion will be exercised without prejudice to any other action that may be taken against the Contractor.

Clause 48: Rates inclusive of Sales Tax and other taxes

1. Deleted

Clause 49 : Local labour to be employed

The Contractor shall employ at least 80 percent of the total number of unskilled labour to be employed by him for the work under the contract, from out of the persons ordinarily residing in the district in which site of the said work is located. Provided, however; that if the required number of unskilled labour from that district is not available, the Contractor shall in the first instance employ such number of persons as is available and thereafter may with previous permission in writing of the Engineer-in-charge of the said work, obtain the rest of the requirement of unskilled labour from outside district.

CLAUSE 50 : Wages to be paid to the skilled & unskilled labour

Wages to be paid to the skilled and unskilled laborers engaged by the Contractor the Contractor shall pay the laborer skilled and unskilled according to the wages prescribed by the Minimum Wages Act, 1948 applicable to the area in which the work of the Contractor is in progress.

A Contractor shall comply with the provisions of the Apprentice Act, 1961 and the rules and the orders issued there under from time to time. If he fails to do so his failure will be breach of the contract and the Executive Engineer may, in this discretion, cancel the contract. The Contractor shall be liable for any pecuniary liability arising on account of any violation by him of the provision of the act. The Contractor shall pay the laborers skilled and unskilled according to the wages prescribed by the Minimum Wages Act of 1948 applicable to the area in Which the work of the Contractor is in progress.

Clause 51: The dues from the Contractor deemed to be arrears of the Land Revenue

All amounts whatsoever which the Contractor is liable to pay to the Corporation in connection with the execution of the work including the amount payable in respect of

i) materials and or stores supplied / issued hereunder by the Corporation to the contractor
ii) hire charges in respect of heavy plant, machinery and equipment given on hire by the Corporation to the contractor for execution by him of the work and / or on which advances have been given by the Corporation to the Contractor, shall be deemed to be arrears of the Land Revenue and the Corporation may without prejudice to any other rights and remedies of the Corporation, recover the same from the Contractor as arrears of revenue.

Clause 52: Compliance with Contract Labour (Regulation and Abolition) Act

The successful tenders will be required to produce to the satisfaction of the specified concerned authority a valid and consequent license issued in favour

under the provisions of the Contract Labour (Regulation and Abolition) Act, 1970 before starting the work. On failure to do so, the acceptance of tender should be liable to be withdrawn and also earnest money/Security Deposit forfeited.

The contractor shall duly comply with all the provisions of the Contract Labour (Regulation and Abolition) Act, 1970 (37 of 1970) and the Maharashtra Contract Labour (Regulation and Abolition) Rules, 1971, as amended from time to time and all other relevant statutes and statutory provisions, concerning payment of wages, particularly to workmen employed by the Contractor and working on the site of the work. In particular the Contractor shall pay wages to each worker employed by him on the site of the work at the rates prescribed under the Maharashtra Contract Labour (Regulation and Abolition) Rules 1971.

If the Contractor fails or neglects to pay wages at the said rates or makes short payment and the Corporation makes such payment of wages in full or part thereof less paid by the Contractor, as the case may be, the amount so paid by the Corporation to such workers shall be deemed to be arrears of Land Revenue and the Corporation shall be entitled to recover the same as such from the Contractor or deduct same from the amount payable by the Corporation to the Contractor hereunder or from any other amount payable to him by the Corporation.

As per regulation of Govt of Maharashtra Labour Welfare CESS 1% will deducted from each R.A. Bill.

Clause 53: Engaging apprentices as per Apprenticeship Adviser's recommendations

The Contractor shall engage apprentices such as bricks-layer, carpenters, wire-men, plumber as well as blacksmith as recommended by the State Apprenticeship Adviser, Directorate of Technical Education, Dhobi Talav, Mumbai on the construction work.

Clause 54: Where the work are required to work near Machine and are liable to accident

they should not be allowed to wear loose clothes like Dhoti, Jhabba etc.

Clause 55: Provision of all applicable Indian Laws shall be treated as applicable for this contract.

Clause 56: In view of the difficult position regarding the availability of the Foreign exchange, no foreign exchange, will be released by the Department for the purchase of the Plant and Machinery required for the execution for the work concerned.

Clause 57: Anti Malaria measures

a) The anti malaria and other health measures shall be as directed by the Joint Director (Malaria and Filaria) of Health Services .
b) Contractor shall see that mosquitogenic conditions are not created so as to keep vector population to minimum level.

c) Contractors shall carry out anti malaria measures in the area as per guidelines prescribed under National Malaria Eradication Programme and as directed by the Joint Director (M & F) of Health Services, .

d) In case of default in carrying out prescribed anti-malaria measure resulting in increase in Malaria incidence, Contractor shall be liable to pay to the Corporation the amount spent by the Corporation, on anti-malaria measures to control the situation in addition to fine.

e) Relation With Public Authorities :-The contractor shall make sufficient arrangement for draining Away the sewage, as well as, water coming from the bathing and washing places and shall dispose off this water in such a way as not to cause any nuisance. He shall also keep the premises clean by employing sufficient number of sweepers. The contractor shall comply with all rules, regulations, byelaws and directions given from time to time by any local or public authority in connection with this work and shall pay fees or charges, which are leviable on him without any extra cost to Govt.

Clause 58: No claim in case of shelving the project

If the project is shelved by the Corporation before commencement, the contractor will have no right to claim any losses or compensation due to the same and for whatsoever reasons.

Clause 59: Price Variation Clause (This clause is not applicable)

(deleated)

Clause No. 60 : The contractor shall provide and maintain barricades, guards, guard rails, temporary bridges and walkways, watchmen, headlights and danger signals illuminated from sunset to sun rise and all other necessary applications and safeguards to protect the work, life, property, the public, excavations, equipment's and materials. Barricades shall be substantial construction and shall be painted such to increase their visibility at night. For any accident arising out of the neglect of above instructions, the contractor shall be bound to bear the expenses of defense of every suit, action or other legal proceedings, at law, that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay all damages and costs which may be awarded in any such suit, action or proceedings to any such person or which may with the consent of the contractor be paid in compromising any claim by any such person.

Clause No. 61: The contractor shall provide in the joint names of the Engineer-in-charge and the contractor, insurance cover only from the Government Insurance, Maharashtra State, 264, 1st Floor, MHADA, Opp. Kalanagar, Bandra (East), Mumbai-400 051. Insurance policy/policies taken out from any other Corporation will not be accepted. However, if the contractor desires to effect insurance with the local office of any insurance Corporation, the same should be made the Co-Insurance-cum-Insurance. If the policy taken by the

contractor is not on Co-Insurance basis. (Director of Insurance 60% and Insurance Co. 40%) the same will not be accepted and the amount of premium calculated by the Director of Insurance will be recovered directly from the amount payable to the contractor. The policy shall cover from the date of work order for the following events which are due to the contractor's risks.

a) Loss of or damage to the Civil and Mechanical and Electrical equipments supplied/installed including the materials such as pipes, valves, specials etc. brought on site.
b) Loss of or damage to contractor's equipments including his vehicles.

c) Loss of or damage to property (except the Works, Plant Material and Equipment) in connection with the contractor; and;

d) Personal injury or death due to vehicles of the contractor and/or due to any accident that may arise at or around the site to the Contractor'' personnel or to the MBMC, staff or to any other person not connected with MBMC /Contractor.

61.1 Policies and certificates for insurance shall be delivered by the Contractor 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 or damage incurred.

61.2 If the Contractor does not produce any of the policies and certificates required, the Engineer may effect the insurance for which the contractor should have produced the policies and certificates and recover the premiums it has paid from payments otherwise due to the contractor or, if no payment is due, the payment of the premiums shall be of debt due.

61.3 Alterations to the terms of an insurance shall not be made without the approval of the Engineer.

61.4 The minimum insurance cover for loss and damages to physical property, injury and death shall be 40% of the contract cost per occurrence with number of occurrences as 4 (Four). After each occurrence the contractor shall pay additional premium necessary so as to keep the insurance policy valid always till the defect liability period is over.

61.5 No payment will be released to the contractor until the insurance coverage with the Govt. Insurance fund, Maharashtra State is providedand unless the proof of insurance coverage is produced by the Contractor to the Engineer-in-Charge.

CLAUSE 62 :Deleted

CLAUSE 63:- Disputes

All disputes and difference arising between Mira Bhaindar Municipal Commissioner and the party in any manner connected with this agreement shall be referred to the

Commissioner; MBMC The decision of the Commissioner will be final, conclusive & binding on the parties.

CLAUSE 64:- (PMC) : If Mira Bhaindar Municipal Corporation appointed PMC as a construction supervision and management consultant for supervising / monitoring works under this contract. The civil/ mechanical/electrical shall be liable to execute the work under the supervision of PMC. All decisions regarding the work in such cases shall be taken jointly by Mira Bhaindar Municipal Corporation & PMC and in case of any dispute between the PMC and the contractor the decision taken by the Executive Engineer, Mira Bhaindar Municipal Corporation will be final and binding on both the parties. All the work measurements will be taken and recorded by MBMC Engineer.

ADDITIONAL CLAUSES

MIRA BHINDAR MUNICIPAL CORPROTION, BHAINDAR

Name of Work : **Operation & Maintenance of SBR STP- 6C & 8 in Mira Bhyander Municipal corporation area.**

INSTRUCTIONS TO TENDERER

1. AWARD CRITERIA:

The MBMC will award the contract to the successful bidder whose bid has been determined to be substantiality responsive and has been determined as the lowest evaluated bid provided further that the Bidder is determined to be qualified to perform the contract satisfactorily.

2. ACCEPTANCE OF THE TENDER:

The acceptance of the tender rests with MBMC The right to reject any or all the tenders without assigning any reason thereof is reserved by MBMC. The tenderer whose tender is accepted will have to enter into regular agreement in the type and form prescribed by MBMC and abides by all the rules embodied therein.

2.10 No corrections, additions or alterations in the tender documents shall be made. No special stipulations in the tender document shall be permitted.

2.20 The Tender shall be liable to be rejected outright if while submitting the same.

i) The tenderer proposes any conditions and alterations in the obligatory conditions of the tender.

ii) If the offer in words and in figures is not filled in ink in appropriate page of B-1 Form or if there is discrimination.

iii) If the specified Earnest Money in specified form is not paid.

iv) Any erasures are made in the tender documents.

2.30 If the tendering contractors are a firm or company, they shall in their forwarding letter should mention the names of all the partners of the firm or the company as the case may be and the names of the partners who hold the power of attorney authorizing him to conduct transactions on behalf of the Company / Firm.

2.40 Rules and conditions of the contract are subject to amendment till the time of acceptance of tender.

2.50 The notes and conditions stipulated in this notice will form a part of the agreement.

3. SIGNING OF CONTRACT:

At the same time as the MBMC notifies the successful Bidder that the bid has been accepted, the MBMC will send the bidder an acceptance letter informing the further necessary line of action including signing of contract etc.

4. FOR SPECIAL ATTENTION OF TENDERER:

The tenderer is expected to visit the site before quoting the tender and get himself acquainted with the site conditions and site requirements.

There may be some local problems which will be required to be tackled by the tenderer. Local suppliers may create problems of supply of sand and metal during execution which shall have to be solved by the successful bidder. On this account no extension of time limit will be granted nor any compensation will be given.

Police Protection, if considered necessary will have to be arranged by the Tenderer at his own cost.

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SPECIAL CONDITION OF CONTRACT

MIRA BHINDAR MUNICIPAL CORPROTION, BHAINDAR

Name of Work : **Operation & Maintenance of SBR STP- 6C & 8 in Mira Bhyander Municipal corporation area.**

SPECIAL CONDITION OF CONTRACT

1. GENERAL

These are to apply as additional specifications and conditions unless otherwise already provided for contradictorily elsewhere in this contract.

2. ERRORS, OMMISSIONS AND DISCREPANCIES

a) In case of errors, omissions, and/or disagreement between written and scaled dimensions an drawing or between drawing,-, and specifications etc. the following order of preference shall apply.

i) "Between act" and scaled dimension or descriptions on drawing the later shall be adopted.

ii) Between the written or shown description or dimension in the drawing and corresponding one in the specification, the latter shall apply.

iv) Between the written description of the item in the schedule of quantities and the detailed description in the specifications of the same items, the latter shall be adopted.

b) In case of discrepancy between percentage rates quoted in figures and words, the lower of the two will be considered for acceptance of tender.

c) In all cases of omissions and/or doubts or discrepancies in the dimensions or description or any item or specifications, a reference shall be made to the Executive Engineer, MBMC Bhayandar whose elucidation, elaboration or decision shall be considered as authentic. The Agency shall be held responsible for any errors that may occur in the work through lack of such reference and precaution.

d) The special provision in detailed specifications and, wording of any item shall gain precedence over corresponding contradictory provision (if any) in the Standard Specifications of MBMC Bhayandar, Department Hand Book where reference to such specifications is given without reproducing the details in the contract.

3. WORKING METHODS AND PROGRESS SCHEDUILE:

3.1 PROGRAM OF WORK

The work is required to be completed within a period of 12 (Twelve Months).

3.2 a) METHODLOGY OF CONSTRUCTION AND CONSTRUCTION EQUIPMENTS

Agency shall furnish at least 15 days in advance his programme of commencement of item of work, the details of actual methods that would be adopted by the Agency for the execution of various items of work supported by necessary detailed drawing and sketches including those of the Plant and Machinery that would be used, their locations, arrangement for conveying and handling materials etc. and obtain prior approval of Engineer-in-charge well in advance of starting of such item of work the Engineer-in-charge reserves the right to suggest modifications or make complete changes in the method proposed by the Agency, whether accepted previously or not at any stage of the work, to obtain the desired accuracy, quantity and progress of the work which shall be binding on the Contactor, and no claim on account of such change in method of execution will be entertained by MBMC Bhayandar so long as specifications of the item remain unaltered. The sole responsibility for the safety and adequacy of the methods adopted by the Agency, will however, rest on the Agency, irrespective of any approval given by the Executive Engineer.

In case of slippage from the approved work programme at any stage, the Agency shall furnish revised programme to make up the slippage within the stipulated time schedule and obtain the approval of the Executive Engineer tothe revised programme.

b) CONTRUCTION EQUIPMENT

The Agency shall be required to give a trial run of the equipments for establishing their capability to achieve the laid down specifications and tolerance to the satisfaction of the Executive Engineer before commencement of the work. All equipment provided shall be of proven efficiency and, shall be operated and maintained at all times, in a manner acceptable to the Engineer and no equipment or personnel will be removed from site without permission of the Executive Engineer.

C) PROGRESS SCHEDULE

The Agency shall furnish. within the period of 15 days of the order to start the work, the programme of work-In CPM/PERT charts in quadruplicate indicating the date of actual start, the monthly progress expected to be achieved and the anticipated completion date of each major item of work to be done by him, also indicating dates of procurement and anticipated completion date of each major item of work to be done by him, also indicating dates to procurement and setting up of material And plant machinery The schedule is to be such as is practicable of achievement towards the completion of whole In the time limit, the particulars Items, If any, on the due dates specified in the contract and shall have the approval of the Engineer-In-charge No revised schedule shall be operative without such acceptance in writing. the Engineer is further empowered to ask for more detailed schedule or schedules say week by week for any item or item, in case of urgency of

work- as will be directed by him and the Agency shall supply the same as and when asked for.

The Agency shall furnish sufficient plant, equipment and labour as may be necessary to maintain the progress of the schedule. The working and shift hours restricted to one shift a day for operations to be done under the MBMC Bhayandar supervision shall be such as may be approved by the Engineer-in-charge. They shall not be varied without the prior approval of the Executive Engineer each time, if requested by the Agency. The Agency shall provide necessary lighting arrangements etc. for night work as directed by Executive Engineer without extra cost.

Further the Agency shall submit the progress report of work-in prescribed form and charts etc. at periodical intervals, as may be specified by the Engineer and submit periodically returns thereof as may be specified by the Engineer-in-charge.

4 CO-ORDINATION

When several agencies for different sub-work of the Project are to work simultaneously on the Project site, there must be full co-ordination and cooperation between different Agencies to ensure final completion of the whole Project smoothly. The scheduled dates for completion specified in each contract shall therefore, are strictly adhered to. Each Agency may make his independent arrangement for water, power, housing, etc. if they so desire. On the other hand the Agencies are at liberty to mutual agreement In this behalf and make joint arrangement with the approval of the Engineer No single Agency shall take or cause to be taken by steps or action that may cause, disruption, discontent, or disturbance of work, labour or arrangements etc of other Agency in the Project localities. Any action by any Agency which the Engineer in unquestioned discretion may consider and shall be dealt with as such.

In case of any dispute, disagreement between the Contactors, the Engineer's decision regarding the coordination, co-operation and facilities to be provided by any of the Agencies shall be final and binding on the Agencies concerned and such a decision or decisions shall not vitalany contract not absolve the Agency(s) of his/their obligations under the contract not consider for the grant for any claim or compensation.

5. ASSISTANCE IN PROCURING PRIORITIES, PERMITS, ETC.

The Executive Engineer, on a written request by the Agency, will if in his opinion, the request is reasonable and in the interest of work and is progress, assist the Agency in securing-the priorities for deliveries transport perm it's for controlled materials etc. where such are needed. The MBMC Bhayandar will not, however, be responsible for the non availability of such facilities or delay in this behalf and no

claim on account of such failures or delay, in this behalf and no claims on account of such failures or delay, shall be allowed by the MBMC Bhayandar.

The Agency shall have to make his own arrangement for machinery required for the work. However, such machinery conveniently available with the Department may be spared as the rules in force on recovery of necessary Security Deposit and rent with agreement in the prescribed form. Such not form a ground for any claim or extension of time limit it for this work.

6. QUARRIES

6.1 No quarries are available with MBMC-Bhayandar. The Agency (s) shall have to arrange the same himself/themselves.

7. TEMPORARY QUARTERS AND SITE OFFICE

7.1 The Agency shall at his own expense maintain sufficient experienced supervisory staff etc. required for the work and shall make his own arrangement, provide housing for them with all Necessary arrangement, including fire preventing measures etc. as directed by the Engineer-in charge.

7.2 The Agency shall provide, furnish, maintain and remove on completion of the work, a suitable office on the work-site for the use of Executive Engineer's representative.

8. TREASURE – TROVE

In the event of discovery-by the Agency or his employees, during the progress of the work of any treasure, fossils, minerals or any other articles of value or interest, the Agency shall give immediate intimation thereof to the Engineer and Forthwith hand over to the Executive Engineer such being property of MBMC, Bhayandar.

9. DAMAGE BY FLOODS OR ACCIDENTS.

The Agency shall take all precautions against damage by floods or like or from accidents etc. No compensation will be paid to the Agency on this account or for correcting and repairing any such damages to the work during construction shall be liable to make good at his cost any plant or material belonging to the Government lostof damaged by floods or from any other clause which is in his charge.

10. POLICE PROTECTION

For the Special protection of camp and of the Agency's works, the Department will help the Agency as far as possible, to arrange for such protection with the concerned authorities, if so required by the Agency in writing. The full cost of such protection shall be borne by the Agency.

11. TRAFFIC REGULATION DURING THE WORK

11-1 Unless, Separately provided in the Contract the Contractor shall have to make all necessary arrangements for regulating Traffic, day to night during the period of construction to the entire satisfaction of the Executive Engineer. This includes the construction and maintenance to diversions, if necessary The Agency shall have to provide necessary caution boards Barricades, flags, lights and watchmen etc. so as to comply with the latest Motor Vehicles Rules and Regulator and for traffic safety and he shall be responsible for all claims fro accidents which may arise due to his negligence whether "in Regulation the traffic or in stacking material on the roads or due to any other reasons.

11.2 The Agency at all times carry out the work on the "road in a manner creating least interference to the flow of traffic, while consistent with the satisfactory - execution of the same. For all works involving improvements & to the existing road, the Agency shall, in accordance with the directives of the Engineer-in-charge, provide & and maintains during the executing of work a passage for traffic, either along, or part of the existing carriageway under improvement or along a temporary diversion constructed close to the road.

Traffic, safety and control shall be as per clause No. 112.4 of M.O.S.T. specifications for roads and bridges (2nd revision 1990)

12 INITIAL MEASUREMENTS FOR RECORD

Where, for proper measurement of the work, it Is necessary to have an initial set of levels or others - measurements taken, the same as recorded in the authorized field book or measurement book of MBMC Bhayandar by the Executive Engineer or his authorized representative will be signed by the Agency who will be entitled to have a true copy of the same made at his cost. Any failure on the part of the Agency to get such levels -etc. recorded before starting work will render him liable to accept the decision of the Executive Engineer as to the basis of taking measurement. Like wise the Agency will not cover any work which will render its subsequent measurements difficult or Impossible without first getting the same jointly measured by himself and the autopsied representative of the Executive Engineer. The record of such measurements on the MBMC Bhayandar side will be signed by the contactor and he will be entitled to have a true copy of the same made at his cost.

13 TESTING ETC.:

The contractor shall make arrangements for testing of all materials for cement concrete, compression test etc. Necessary cubes of 15 cm x 15 cm. Size will be cast as per the directives of the Engineer in charge and as specified in I.S. which shall be tested in Govt. laboratory for compressive strength of mix. The Contractor shall bear all the expenses in this regard and get the cube testing done from approved govt. laboratory.

The weld tests required to be carried out as per the provision of IS shall be at the cost of the contractor and from the reputed Govt. laboratory.

14 MISCLLANEOUS

14.1 Item Quoted by Agency shall be inclusive of all Govt. Taxes e.g. Sales Tax GST etc.

14.2 For providing electrical wiring or water lines etc. recesses shall be provided if necessary through walls, slabs, beams etc and later on refilled up with bucks or cement moiled with out any extra cost,

14.3 In case it becomes necessary for the due fulfillment of Contract for the Agency to occupy land outside the MBMC Bhayandar limits the Agency will have to make his own arrangement with the land owners and to pay such rents if any are payable as mutually agreed between them.

14.4 The special provision, in detailed specification or working of any item shall main precedence over corresponding contradictory provision (if any) in the standard specifications or P. W. D Hand Book where reference to such specification-s is given without reproducing the details in contract.

14.5 Suitable separating barricades and enclosures shall be provided to separate material brought by Agency and material issued by MBMC Bhayandar to Agency tender Schedule 'A' same applies for the material obtained from different sources of supply.

14.6 The Stacking and storage of construction material at the site shall be in such a manner so as. to prevent deterioration or intrusion of foreign matter and to ensure the preservation of their quality, properties and fitness for the work Suitable precautions shall be taken by the Agency to protect the material against atmospheric actions, fire and other hazards. The materials likely to be carried away by wind shall be stored in suitable stores or with suitable barricades and where there is likely hood of subsidence of soil; such heavy materials shall be stored on approved platforms.

14.7 The Agency shall be responsible for making goods the damages done to the existing property during construction -by his men.

14.8 If it is found necessary from safety point of view to test any part of the structure, the test shall be carried out by the Agency with the help of the Department at his own cost.

14.9 Defective work is liable to be rejected at any stage. The Agency on no account can refuse to rectify the defects merely on reasons that further work has been earned out No extra payment shall be made for rectification.

14.10 General directions or detailed description of work, materials item coverage of rate given in the specification are not necessary repeated In the Bill of Quantities. Reference is, however, drawn to the appropriate section clause(s) of the General Specifications in accordance with which the work is to be carried out.

14.11 In the absence of specific directions to the contrary the rates prices inserted in the items are to be considered as the full inclusive rate and price for the finished work described there under and are to cover all lab our, materials, wastage, temporary work, plant, overhead charges and profits, as well as, the general liabilities, obligations and risks arising out of the General Conditions of contract.

14.12 The quantities set down against the item in the Schedule 'B" is only indicative in nature.

14.13 All measurements will be made in accordance with the methods indicated in the specification and read in conjunction with the General Conditions of contract.

If there is any typographic mistake in units of the quantity or at any other places in such cases the stranded code of practices given in hand book / red book or stranded procedure in MJP will be followed and decision of Executive Engineer in this matter will be final & binding on contractor.

14.14 The details shown on drawings and all- other information pertaining to the work shall be treated as indicative and provisional only and are liable to variations as found necessary while preparing working drawings which will be supplied by the MBMC Bhayandar during execution. The Agency shall not on account of which variation be entitled to any increase over the ones quoted in the tender which are on quantity basis.

14.15 The, recoveries if any due from Agency will be affected as arrears of land revenue through the collector of the District.

14.16 Extraneous materials and steps to minimize dust nuisance during construction shall be as per clause II of M.O.S.T. specifications (Second Edition 1990)

15 PROTECTION OF UNDERGROUND- TELEPHONE CABLE AND. AERIAL - TELEPHONE WIRES AND POLES, TRANSMISSION TOWERS, ELECTRICITY CABLE AND WATER SUPPLY LINES

During the execution of work, it is likely that the Agency may meet with telephone cable, electrical, cable, water supply lines, etc. It will therefore, be the responsibility of the Agency to protect it carefully. All such cases should be brought to the notice of the Engineer-in-charge by the Agency and also to the concerned Department. Any damage whatsoever done to these cable and pipelines by the Agency shall be made good by him at his cost.

16 MEDICAL AND SANITARY ARRANGEMENTS TO BE PROVIDED FOR LABOUR EMPLOYED IN THE CONSTRUCTION BY THE AGENCY.

a) The Agency shall provide an adequate supply of potable water for daily use of laborers on works and in camps.

b) The Agency shall construct trench or semi permanent latrines for the use of the Labours. Separate latrines shall be provided for men and women.

c) The Agency shall build sufficient number of huts on a suitable plot of land for use of the lab ours according to the following specifications.

1. The Agency must find his own land.

2. The Agency shall construct a sufficient number of bathing places. Washing places should also be provided for the purpose of washing clothes.

3. The Agency shall construct sufficient arrangements for draining away the surface and sewage water as well as water from the bathing and washing places and shall. Dispose off this waste in. such a way as not to cause any nuisance.

d) The Agency shall engage a medical officer with a traveling dispensary for a camp containing 500 or more persons if there is no Government or other private dispensary situated within 8 kilometer from the camp. In case of emergency the Agency shall arrange at his own cost for transport for quick medical help to his sick worker.

e) The Agency shall provide the necessary staff for affecting a satisfactory drainage syMBMC and cleanliness of the camp to the satisfaction of the Engineer At least one sweeper per 200 people should be engaged.

17 SAFETY CODE

Suitable scaffolds shall be provided for all workmen that firmly supported on ground or from solid construction except such short period works as can be done safely from ladder. When ladder is used an extra labours shall be engaged for holding the ladder and if the ladder is use for carrying materials as well, suitable footholds and handholds shall be provided on the ladder and the ladder shall be given an inclination not steeper - than 1 to 4 (l horizontal and 4 vertical).

Scaffolding or staging more than 3.25m above the ground or Roofs, swain or suspended from an overhead' support or erected with stationary supports or shall have a guard rail properly attached, bolted, brace' and otherwise assured at least In high above the floor or platform of such scaffolding or staging an extending along the entire length of the outside and ends thereof with only such opening as may h necessary for the delivery of materials. Such scaffolding or Staging shall be so fastened as to prefer it from swaying from the building of structure.

Working platform gangways, and stairways shall he so constructed that they do so sag unduly or i more than 3,25 m above ground level or floor level, it shall be closely boarded, have adequate width and suitably fenced as described in 2 above.

Every opening In floor of the building or in a Working platform shall be provided with suitable protection to prevent fall of persons or material by providing suitable fencing or railing with minimum height of 1 meter -

Safe means of access shall be, provided to all working platform and other working places. Ever ladder shall be securely fixed. No portable single ladder shall be over 9m in length; width between side rails in a sung ladder shall in no case less than 30

cm for ladders up to and including 3 m. in length. For longer ladder this width shall be increased at least 6 mm for each additional 30 cm of length. Uniform step spacing shall not-exceed) 30cm.

Adequate precautions shall be taken to prevent danger from electrical equipments. No material on any' of the site shall he stacked or placed as to cause danger or inconvenience to any person or the public. The Agency shall provide all necessary fencing and Lights to protect public from accidents and shall be bound to bear expenses of defense of every suit, action or other proceedings at law that may be brought by any person for injury sustained owing to the neglect of the above precaution and to pay any damages and costs which may be awarded in any such suit action or proceedings to any such person or which may with the consent of the Agency to be paid to comprise any claim by any such person.

18 EXCAVATION AND-TRENCHING

All trenches, 1.5 meters or more in depth, Shall at all times be supplied ladder for each 30 meters in length or fraction thereof. Ladder shall be extended from bottom of trench to at least I meter above surface of the ground, sides of a trench which is 1.5 meters or more in depth shall be stepped back to give suitable slope, or security held by timber bracing, so as to avoid the danger of sides collapsing. Excavated materials shall not be placed within 1.3 meters of edge of trench or half of depth of trench whichever is more. Cutting shall be done from top to bottom under no circumstances shall undermining or undercutting be done.

19 DEMOLITION

Before any demolition work is Commenced and also during the, processor the work.

a) All roads and open areas adjacent to the work- site shall either be closed of suitably protected.

b) No electric cable or apparatus which is liable to be a source of danger or a cable or apparatus used by operator shall remain electrically charged.

c) All practical steps shall be taken to prevent danger to person employed, from risk or Fire explosion of holding. No floor, roof or other Part of a building shall be so overloaded with debris of materials as to render it unsafe.

All necessary personal safety equipments as considered adequate by the Engineer-in-charge shall b available for use of persons employed on the site and maintained In a condition suitable for immediate use and Agency shall take adequate step to ensure proper use of equipment by those concerned,

a) Workers employed on mixing asphalted materials cement and time mortars concrete shall be provided with protective footwear and protective goggles.

b) Those engaged in handling any materials which is injurious to eyes shall be provided with protective goggles.

c) Those engaged in handling any works shall be provided ‘with welder's protective eyes hyoids.

d) Stone breakers shall be provided with protection goggles and protective clotting and seated at sufficiently safe internals.

e) When workers are employed in sewer and manholes which are in use. The Agency shall ensure that manhole covers are opened and tm hold are ventilated at least for an hour before workers are allowed to get into them, Manhole opened shall be cordoned off- with suitable tailing and provided with warning single or boards to prevent accident to public.

t) The Agency shall not employ, men below the age of 18 and women on the work- of painting with. products containing- lead in any form wherever men above the age of 18 are employed on the work of lead painting the following precautions shall he taken.

i) No paint containing lead or lead product shall be used except in the form of pastor or ready made paint.

ii) Suitable face masks shall be supplied for use by workers when paint is applied in the form of spray or a surface having lead paint dry, Rubbed and scrapped

iii) Overalls shall be supplied by the Agency to workmen and adequate facilities shall be provided to enable working painters to wash during on cessation of work

g) When work, is done near any place where there is risk of drowning all necessary equipment shall be provided and kept ready for use and all necessary steps, taken for prompt rescue of any person in danger and adequate provision made for prompt first aid treatment of all injuries likely to be sustained during the course of the work.

20 Use of hoisting machines and shackles including the attachments, anchorage supports shall con firm to the following

a) i) These shall be of good mechanical- construction, round materials and adequate strength and free from potent defects and shall be kept in good repair and in good working order.

ii) Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality and of adequate strength and free from potent defects

b) Every crane driver or hoisting appliance operator shall be properly qualified and no person under the area of 21 years shall he in charge of any hoisting machine including any scaffolding.

c) Incase of every hoisting machine and of every chain ring hook. Shackle own and pulley block used in hoisting or lowering or as means of suspension safe working load shall be ascertained by adequate means. Every hosting machines and all gear referred to above shall be mainly marked with safe working loads. In case of hoisting machine having a variable safe working load and the conditions under which it is applicable shall be clearly indicated No part of any machine or of gear

referred to above in this paragraph shall be loaded beyond safe working load except for the purpose of testing.

d) In case of departmental machine safe working load shall be notified by the Engineer-in-charge. As regards Agency's machine the Agency's shall modify safe working load of each machine to- the Engineer in-charge whenever he brings, it to site of work and get it verified by the Engineer In-charge.

Motors, gearing transmission, electric wiring and other dangerous parts of hoisting appliances shall be provided with such means as will reduce to the minimum risk of accidental descent of load. Adequate precaution shall be taken to reduce to the minimum the risk of any of a suspended-load becoming accidentally displaced, when work are employed. On electrical installations, which are already energized insulating materials wearing approved such as glove, sleeved and coats as may be necessary shall be provided. Workers shall nor wear any rings, watches and carry keys or other materials which are good- conductors of electricity.

All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in a safe condition and no scaffold ladder equipment shall be altered or removed while it is in use Adequate washing facilities shall be provided at or near places of Work.

These safety provisions shall be brought to the notice of all concerned by display on a notice board at a prominent place at the work spot persons responsible ensuring compliance with the safety code shall be named there & by the Agency.

i) To ensure effective enforcement of the rules and regulations reading to safety precautions arrangements made by the Agency shall be open to inspection by the Engineer in charge o his representatives and the inspecting officers,

ii) Failure to comply with the provision hereunder shall make the Agency liable to pay to the Department as penalty an amount not exceeding Rs. 500/- for each default and decision of the Engineer-in charge shall be final and binding.

Not with standing the above conditions 110 14 the Agency is not exempted from the operation o any other Act or rules enforce.

21 SCOPE OF RATES FOR DIFFERENT ITEMS OF WORK:

For item rate contract, the contract unit rates for different items of work shall be payment in full for completing the work to the requirements of the specifications including full compensation for all the operations detailed in the item wise specifications given in relevant section. In the subsequence of any directions to the Agency the rates are to be considered as the full inclusive rate for finished work covering all labour materials, wastage, temporary work plant, equipment, overhead charges and profit as well as the general, liabilities obligations and risks arising out of the General Conditions of Contract.

The item rates quoted by the Agency shall unless otherwise specified also include compliance with supply of the following.

I) General works such as setting out, clearance of site before setting out and clearance of works after completion.

ii) A detailed program for the construction and completion of works (using CPM/PERT techniques) giving in addition. to construction activities, detailed network activities for the submission and approval of materials, procurement of critical materials and, equipment, fabrication of special products equipments and their installations and testing and for all activities of the employer that are likely to elects the progress of the work, etc. including updating of all such activities on the basis of the decisions taken at the periodic site review meeting or as Directed by the Engineers

iii.) Samples of various materials proposed to be used on the work for conducting tests thereon as required as per the provision of the contract.

iv). Design, of mixes as per relevant clauses of the- specifications giving proportions of ingredients, sources of aggregates and binder along with accompanying trial mixes as per the relevant clauses of these specifications to be submitted to the Engineer for his approval before use of the works.

v) Detailed design calculations and drawings for all temporary works (such as form work, staging, centering, specialized constructional handling and launching equipment and the like)

vi) Detailed drawing for template, support and end anchorage, details for prescreening cable profiles, bar bending and cutting schedule for reinforcement material for fabrication of structural steel etc.

vii) Mill test reports for all mild and high tensile steel and cast steel as per the relevant provisions of the specifications.

Testing of various finished items and materials including bitumen, cement concrete bearings as required under these specifications and furnishing test report/certificates these specifications and furnishing test report/certificates.

ix) Inspections Reports in respect of form work, staging reinforcement and other items of works as per the relevant specifications.

x) Any other data which may be required as per these specifications or the conditions of contract or any other annexure/schedules forming part of the contract.

xi) Any other item of work which is not specifically provided in the Bill of Quantities, but which is necessary for complying with the provision of the contract and

xii) All temporary works, form work and false works.

Portions of road works beyond the limits and or any other work may be constructed by the employee directly through other agencies, Accordingly, other agencies employed by the Employers may b working in the vicinity of the work being executed by the Agency The Agency shall liaise with such agencies and adjust his construction program for the completion of the work accordingly and no claim or compensation due to any reason whatsoever will be entertained, on this

account. The employer will be indemnified by the Agency for any claims from other agencies on this account.

22. PAYMENTS

A) Running Bills:

One payments in the months will be, granted by the Engineer-in-charge if the progress is satisfactory. Agency should submit it bills to the Engineer-in-charge in appropriate forms.

B) Final Bill

The Agency should submit it final bill within one month after completion of the work and the same will be paid within 3 months if it is in order. Disputed, item and claims if any shall be excluded from the final bill and settled. separately later on.

23 HANDING OVER OF WORK

All the work and materials before finally taken over, by MBMC, Bhayandar will be the entire liability of the Agency for guarding Maintaining and making good any magnitude Interim payments made for such work will not alter this position. The handing over by the Agency and taking over by the Executive Engineer or his authorized representative will be always in writing of which copies will go to the Executive Engineer or his authorized representative and the. contract for, it is However understood that before taking over such work MBMC Bhayandar will not put into regular use as distinct from causal, or incidental one. Except as specifically mentioned elsewhere in this contract, or as mutually agree to.

24 The testing of materials used in the work, like material, concrete cube, etc. will be carried out by the Agency at his own cost.

25 The sign boards required at the work site viz., 'work in progress', 'Diversion', etc. should provided by the Agency at his cost. where ever necessary and as ordered out by site Engineer.

26 It is necessary to keep the record like cement consumption work, progress report, Laboratory test, monthly progress always on site.

27 The excavation should be done carefully in case of damages by the Agency to water supply Pipes, electric or telephone cables, gas pipeline or any other utility services will be made good at the cost of the Agency.

28 Agency should give the power of attorney to his representative who attends the Municipal Office for letter correspondence signing of MB Etc.

29 **SPECIAL CONDITION (TECHNICAL)**

29.1 The construction material brought at site shall be as per the relevant ISS/BIS standard and offered to the site Engineer for his approval before use. It will be entirely at the discretion of the site Engineer whether to accept or reject the

materials brought at site after the prima facie inspection. In case any lot is rejected the same shall be removed by the contractor at his own cost.

29.2 The test certificate of material shall be produced by the contractor as per the directions of Engineer-in-charge.

29.3 In spite of the production of above test certificate, it shall be at the discretion of the Engineer-in-charge to take random samples. The contractor will have to make all arrangements for taking the sample as instructed by Engineer-in-charge and get the samples of cement/steel and other material tested from the Govt. approved lab/reputed lab at his own cost.

29.6 The tendered rates should be inclusive of all statutory duties and taxes excluding GST

29.7 Procurement of required machinery and plants, other specialized machineries etc. should be done by contractor at his own cost and no extra payment will be made. For reduction of friction between soil and MS Pipe during pushing, suitable arrangement will have to be made to reduce the disturbance of road to the minimum.

29.9 The contractors should use only potable water for construction purpose including curing and they should make their own arrangement for potable water and power supply at their own cost. MBMC will not provide water and electric connection for execution purpose.

30. **INSPECTION, REGISTER AND RECORDS**

The contractor/s shall maintain accurate records, plan and charts showing the dates and progress of all main operations and the Engineer shall have access to this information at all reasonable times. Records of tests made shall be handed over to the Engineer's representative after carrying out the tests. The following registers will be maintains at site by the Contractor(s).

(i) Work order Register

The Contractor/s shall promptly sign orders given therein by the Engineer or his representative or his superior offices and comply with them. The compliance shall be reported by the contractor/s to the Engineer in good time so that it can be checked.

(ii) Cement Register

This register will be maintained to record daily receipt and issue of the cement duly indicating the balance quantity. The quantum of the work done for the cement issued on a particular date will also be maintained.

(iii) Steel Register

The register will record the receipts of steel items and details of reinforcements and members wherever steel is used.

(iv) Pipe Stock register (MSA)

This register will be maintained to record daily receipt and issue of the MS pipes duly indicating the balance quantity.

(v) Pipe laying register

This register will be maintained to record daily Chainage wise pipe laying.

(vi)Labour Register

This register will be maintained to show daily strength of labour in different categories employed by the Contractor/s.

(vii)Log book of events

All events are required to be chronologically logged in this book shift wise and data wise.

(viii)Inspection Register / Work order book

An inspection register shall be maintained at the site of work by the agency where to instructions regarding the working etc. shall be record by the Engineer or his executive subordinates. It is the liability of the contractor or his representative at the site to note such instructions wherever asked upon to do so and take action accordingly and comply with these instructions strictly, within reasonable time and without any delay.

(vii) Program and Progress Register

In this register programme as per bar chart submitted by contractor and actual progress achieved will be shown.

ADDITIONAL

CONDITIONS OF

MIRA BHINDAR MUNICIPAL CORPROTION, BHAINDAR

Name of Work : **Operation & Maintenance of SBR STP- 6C & 8 in Mira Bhyander Municipal corporation area.**

ADDITIONAL CONDITIONS OF CONTRACT

1) General:

The contract under execution is of operation and maintenance of SBR STP'S in Mira Bhayander Region and is to be let the contract to contractor in consolidated responsibility as a special case. If performance is not found satisfactory in contract period then contract will be terminated by 15 days notice. Hence following special conditions are imposed and specifically highlighted.

1) The Contractor should Construct Temporary site office The site office should be well furnished with 2 tables, 5 chairs, 1 cupboard etc. for keeping all relevant records. The Contractor will have to make his own arrangement for obtaining Telephone facility from Telephone authorities. The Contractor shall bear all charges deposits, monthly rental etc. as levied by Telephone dept.

2) Maintenance work covered under this Contract is an essential service hence o&m should be Un-interrupted even on holidays & 24 hours. If Contractor shows disinterest / negligence / lithergy in maintenance of proper & timely maintance a notice of 8 days will be given & work shall be get done at risk & cost of Contractor.

2) SCOPE OF WORK

i. The Contractor shall operate and maintain the entire plant within its Contract price for a total operation and maintenance period

ii. All necessary repairs, maintenance minor, replacements etc., shall be made during the O & M to maintain the plant at the status of formal handing over. Contractor shall be responsible for preventive repair, breakdown repair, for operation and maintenance during the period of O&M.

iii. At the end of O & M period the plant shall be handed over to the MBMC in fully functional condition except normal wear and tear expected during the period of operation and maintenance.

iv. During O & M period cost of power consumed shall not be in the Contractor price and bills of electric power shall be paid by the MBMC as per actual consumption.

v. The scope shall but not limited to the following items:

1. Operation and Maintenance including Mechanical, Electrical, Civil, and all allied works.
2. Sampling and testing of influent wastewater based on the tests and frequency desired by the MBMC'S representative and in general in accordance with the CPHEEO manual on Sewerage and Sewage Treatment.
3. Sampling and testing of additional samples for the day to day O & M of the STP and as mutually agreed from time to time between the Contractor and the MBMC representative.
4. MPCB or any other laboratory effluent treatment charges shall be borne by the Tenderer.
5. Sampling of final treated sewage to ensure that the guarantee Parameters are as stipulated in the Bid document.
6. The sampling frequency to be as per relevant norms of Maharashtra pollution Control Boardor higher as decided by MBMC representative. The MBMC reserves right to collect samples at random at the will of the MBMC through any agency nominated by him.
7. The MBMC shall have right to seek part of sample collected by the Contractor without any prior intimation to cross check the result on random basis, however the analysis charges of such samples shall be borne by Contractor.
8. Maintenance of Proper records of sampling as per approved Performa.
9. Loading, Unloading and Transportation of screening, dewatered sludge and wet grit out of treatment plant site as directed by MBMC representative.

10. Maintenance of log books of all the equipments/instruments connected to the PLC/SCADA shall forwarded at monthly intervals in the form of a hard copy as monitored by the PLC.Such records are given regularly to the MBMC in the form of hard copy at monthly intervals.
11. The reports shall contain sufficient appropriate and adequate data to make the recordsmeaningful and amenable to analysis for evaluating the performance of the plant as well as to help in O & M decisions.
12. Security of the campus and contents therein shall be Contractor's responsibility.
13. The records maintained by the Contractor shall be produced periodically to the MBMC representative for proper monitoring. The MBMC representative's remarks shall be attended to on nest submission. Consolidated summary report shall be furnished to the MBMC monthly, quarterly and yearly containing salient features.
14. The Contractor shall also maintain history sheets of overhauling, maintenance, replacement of all the important electrical and mechanical equipment.
15. The O &M shall include the appropriate preventive maintenance of equipment as per the Manufacturer's recommendation.
16. All the equipment even standby supplied, installed and commissioned by the Contractor should be in operational/ functional condition throughout the O & M period. The Contractor shall take all preventive measures to maintain them in working condition.
17. The frequency of break downs of various equipments shall be the least as far as possible. The total number of such re-occurrences shall not exceed three times per annum otherwise penalty shall be levied on the Contractor at the discretion of Engineer-in-charge.
18. The operation, maintenance and repairs services shall be performed according to thefollowing.

(a) Down time:

- The plant shall never be operated at less than 50% of its design capacity due to maintenance and repair reasons, if adequate quantity of sewage is available.

- The period of such exceptional operation shall not exceed two consecutive days and shall not be more than three days a week otherwise penalty shall be levied on the Contractor at the discretion of Engineer-in-charge.
- The maximum downtime of the whole plant shall not exceed 24 hours.
- The periods for repairs and maintenance have to be communicated to the MBMC representative at least 5 calendar working days in advance.

(b) Operation of the plant as per O & M Manual

- The plant shall be operated according to the rules and procedures laid down in the O & M manual (as per CPHEEO MoUD Manual)
- The plant must be in position to Work at the design capacity at any time.

i) Operation of the Pumps

- The following points should be observed while operating the pumps.

- Dry running of the pumps should be avoided.
- Centrifugal pumps if installed with negative suction should be primed before Starting.
- Pumps should be operated only within the recommended range of the head-discharge
- If pump is operated at a point away from duty point, the pump efficiency normally reduces.
- Operation near the shut-off point should be avoided, as it causes substantial recirculation within the pump, resulting in overheating of sewage in the casing and consequently, overheating of the pump.
- Voltage during operation of the pump-motor set should be within ±10 % of the rated voltage. Similarly, current should be below the rated current shown on the name plate of the motor.
- When parallel pumps are to be operated, the pumps should be started and stopped with atime lag between two pumps to restrict change of flow velocity to minimum and to restrict the dip in voltage in the incoming feeder and should be adequate to allow the pump head to stabilize.

- When the pumps are to be operated in series, they should be started and stopped sequentially, but with minimum time lag. Any pump next in sequence should be started immediately after the delivery valve of the previous pump is even partly opened. Due care should be taken to keep open the air vent of the pump next in sequence, before starting that pump.
- The running of duty pumps and standby pumps should be scheduled so that no pump remains idle for a long period and all pumps are in ready-to-run condition. Similarly, the running schedules should be ensured so that all pumps do not wear equally needing simultaneous overhaul.
- If any undue vibration or noise is noticed, the pump should be stopped immediately and the cause for vibration or noise should be checked and rectified.
- Generally, the number of starts per hour shall not exceed four. Frequent starting and stopping should be avoided as each start causes overloading of motor, starter, contactor and contacts. Although overloading lasts only for a few seconds, it reduces the life of the equipment.
- Troubles in a sewage pumping station can be mostly traced to the design stage itself. This is all the more true when too much grit is likely to come into the sewage pumping stations from sewage at monsoon time, which is difficult to handle. Hence, sewers should not collect any storm water.

GATES, VALVES AND ACTUATORS

Sluice gates are commonly used to control sewage levels in STPs. Attention should be paid to the following points for proper operation:

- Operate inactive sluice gates by smearing grease on stem threads.
- Clean sluice gate with wire brush and paint with proper corrosion-resistant paint.
- Ensure unobstructed operation of gate and headstock.
- Ensure that the spindle is not touching the stem guide.
- Remove foreign matter like paint, concrete, etc. in the fully open position of gate. Do’s for sluice gates
- Operate the gate at least once in every three months.

- Check the nuts of all construction and foundation bolts once in a year. Tighten the bolts, if loose.
- Examine the entire painted surface for any signs of damage to the protective paint. Don’ts for sluice gates
- Do not remove lock plates until the gate has been properly installed.
- Do not keep the gate out of operation for more than three months.
- Do not forget to set the stop nut in the correct position.
- Do not disturb the adjustment of wedge block bolts/studs.
- Do not over torque the crank handle/hand wheel.

Sludge Feed Pump

Operators should check the following items:

- Inlet and outlet flow rate
- Noise or vibration
- Bearing housing temperature
- Running amperage
- Pump speed
- Pressure
- Check the level and condition of the oil in the gear reducer
- Check the shaft alignment
- Check the condition of all painted surfaces
- Visually inspect mounting fasteners for tightness
- Clean dirt, dust or oil from equipment surfaces
- Check all electrical connections
- Stop and start equipment, checking for voltage and amp draw and any movement restrictions because of failed bearings, improper lubrication or other causes
- Check the drive motor for any unusual heat, noise or vibration
- Check mechanical seals and packing for leakage or wear

Maintenance

During operation, the operator should check for the following:

- The oil level and the flow of oil to the bearings in circulating oil systems
- Flow of cooling water and oil temperature, to ensure it is operating in the proper range
- Machine vibration
- Ammeter reading on the bowl motor
- Bearing temperatures, by touching them
- System for leaks
- Centrate quality
- Because the centrifuge will shut itself down in the event of a fault, the operator typically only looks at the mechanical parameters once per shift.

(a) Awareness & Cleanliness

- The Contractor and their personnel shall maintain a high degree of awareness in operation and maintenance of the plant and all relevant safety codes and procedures.
- At all times the plant, its equipment and surrounding shall be kept clean and in order inducing the buildings, floors, walls, roofs, windows and garden etc.

(b) Preventive maintenance

- The preventive maintenance shall be carried out according to the preventive maintenance schedule of the plant.(annexure I)
- The regular staff may be reinforced with short-term specialists by the Contractor forspecial maintenance tasks, after duly informing the MBMC representative of the need and the schedule.

(c) Repairs

- Repairs shall be made as and when needed very promptly on the spot or at the Contractor's / Manufacturer's workshop. The need of repair on the spot or at the Contractor's workshop has to be defied in co-ordination with the MBMC representative and according to the status of spare parts availability.

. (d) Spare parts

- The Contractor shall keep a reasonable stock of spare parts so that the down time of equipment can be kept within the limits specified.

- The contents of the stock and the reorder level of the inventory have to be approved by the MBMC representative.

(e) Transportation

All necessary transportation shall be arranged and made by the Contractor at his ownexpense. For better communication internet facility is provided throughout the entire operation & maintenance period on his own cost.

(f) Oil, Grease, Lubricants, Chemicals and Consumables

The Contractor has to ensure that there is always sufficient stock of 15 days of Oil, Grease, Lubricants consumables, and laboratory chemicals.

General Obligations

- The Contractor shall operate and maintain the entire plant under this Contract for the period specified in this Contract.
- The Contractor will submit a detailed operation and maintenance plan for approval of MBMC representative.
- All operation and maintenance activities shall be carried out strictly in accordance with the approved plan.
- If for any reason the sewage standards are not met and the penalty is imposed by MPCB, the same shall be recovered from the Contractor's payable amount. However MBMC reserves right to terminate the Contract on statutory ground or default of the Contractors.

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The services shall include but not be limited to the flowing items:

a) Operation and maintenance of the Sewage Treatment Plant from the inlet chamber up to disposal into channel leading to creek.

b) Training for O & M staff designated by MBMC as per requirement.

c) Generation and maintenance of periodic reports.

Operation

(a) Operational services

- The Contractor shall operate the complete Sewage Treatment Plant and associated services on a continuous 24-hous basis.
- The Contractor shall operate and utilize the control and monitoring system provided, if found necessary, he shall make adjustment (within the operation range) of the control system and equipment, so that the plant operation matches the treatment process requirements.
- If it is determined that the facility is not capable of meeting the design Parameters for any reason beyond the Contractor's control and not attributable to him, the Contractor shall determine the specific cause of failure/abnormality in the plant functioning and report to the MBMC representative and seek his directive on the necessary corrective action to be taken /adopted.
- The Contractor will be required to furnish the details of electricity consumption in the format prescribed by the MBMC representative.
- All consumables, Polyelectrolyte, Chlorine gas, lab Chemical and spares required in operating and maintaining the plant in good condition shall be provide by contractor
- The screenings grit, dewatered sludge and other garbage generated in the plant shall be removed from the site on periodic basis. No accumulation of such residues will be permitted within the Sewage Treatment Plant campus without application by Contractor giving valid reasons as well as permission of MBMC representative
- The Contractor shall clarify that such residues are in conformity to Environmental regulation / rules in force.
- The MBMC representative may, if required , decide the mode and timing of disposal of such residues in consultation with concerned Environmental and Civic Authorities and such directions shall be promptly followed by the Contractor, both in letter and spirit, without any reservations promptly and without any impact on the quoted and awarded and awarded O&M price and other costs.

- The Contractor at his own expense shall provide all tools, cleaning and housekeeping equipment, security and safety equipment.

Laboratory Services

a) The Contractor using the existing facility shall perform all tests, sampling and analysis regularly as stipulated in the Bid document and as required by the regulatory agencies and as directed by engineer-in-charge.

Manpower

a) The Contractor shall provide the required qualified managerial, technical supervisory, laboratory, administrative and non technical personnel and labour necessary to operate and maintain the treatment plant and the premises in a safe way and efficiently on a continuous 24 hours basis for the full term of the O & M period.

b) The qualification and capability of Contractor's personnel shall be appropriate for the tasks they are assigned to perform.

c) The staff provided shall possess the necessary skills and trained in the operation of the plant prior to assign to the Work.

d) If in opinion of the MBMC representative a person of Contractor's staff is considered to be inadequately trained and skilled or otherwise inappropriate for the assigned task and MBMC representative may inform the Contractor in writing, the Contractor shall replace him with a person of appropriate skills and training for the task, approved by the MBMC representative, immediately of being so informed.

g. Normal time duty hours for the Contractor's O &M personnel shall be notified by the Contractor and if necessary be modified in consultation with the MBMC representative.

h. A shift schedule shall be established by the Contractor and approved by the MBMC representative to ensure the presence of necessary number of Contractor's staff for duty at site 7 days a week, including holidays.

i. In the event it becomes necessary for more than one of the Contractor's key personnel to be absent from the plant, the Contractor shall provide a qualified

replacement at his own expense and ensure that specified project duty coverage is maintained.

j. The Contractor shall include in his cost medical and accident insurance expenses of all the staff employed by him along with all provision of the labour welfare acts prescribed from time to time by the state and central government

k. Adequate insurance cover shall also be maintained during O &M period for all MBMCs aswell as casual temporary employees and visitors.

l. MBMC is not liable for any compensation on arising due to any accident/ mishap of any nature occurring in the plant premises.

Safety

The Contractor shall be responsible for safety of his staff during O & M of the plant and shall procure, provide and maintain all safety equipment necessary for satisfactory O & M such as gloves, boots, mats, safety belts, masks, respiratory system for chlorine operation, etc.

1. The Contractor shall utilize awareness procedures in every element of operation and maintenance.
2. The Contractor shall emphasize site safety including adoption of maintenance.
   a. Safe working procedures, cleanliness and care of the plant as a whole
   b. Accident and hazardous conditions prevention and reporting
   c. Shall impart safety training to all members at regular intervals, especially for new comers.
   d. Shall provide Notice Boards and display boards at appropriate locations, detailing precautions tobe taken by O & M personnel to Work in conformity to regulations and procedures and by the visitors to the plant.
   e. Shall notify the MBMC representative immediately if any accident occurs whether on-site or off site in which Contractor is directly involved and results thereof any injury to any person, whether directly concerned with the site or a third party. Such initial notification may be verbal and shall be followed by comprehensive report within 24 hours of the accident.

3. The Contractor may refuse entry into the plant, to all personnel's including MBMC representative on grounds of safety and person not carrying proper identification.
4. Personnel shall be permitted entry into the plant only on disclosing their identity and those authorized personnel including MBMC representative shall be issued identity cards with photographs by the Contractor, this also includes casual visitors who shall beissued a temporary visitors entry permit.

Reporting

a. The Contractor shall prepare consolidated monthly reports on plant operation and maintenance and submit the same to the MBMC representative within first 7 working days of the next calendar month.
b. The daily reports are to be prepared and retained at site for inspection.
c. Overall reporting formats shall be approved by MBMC representative and may have to be modified from time to time as required and approved by MBMC representative.
d. Contractor may have to prepare and submit additional reports on particular matters and incidents having special significance as and when required by the MBMC representative. Maintenance

General Obligations

(i) The Contractor shall ensure the continuity of the plant operations and that the breakdown or the deterioration in performance of the plant are minimized by a preventative maintenance schedule.
(ii) The maintenance schedule of all critical components shall primarily comprise of preventative and break down maintenance.
(iii) Regular preventative operational maintenance comprises of planned and regular maintenance carried out by the Contractor on a day-to-day basis, including cleaning, lubricating, minor adjustment, together with the preventive and corrective maintenance plan for those items of the plant and equipment

within the treatment works which have been commissioned and made operational.

(iv) Breakdown maintenance comprises of any unplanned maintenance required.

(v) Non commissioned assets / components of the plant if any shall have to undergo a regular "non operational& storage maintenance".

(vi) The Contractor shall carry out the maintenance of the plant installations in accordance with the requirements of the O & M Manual and the equipment manufactures instructions and only approved grades of lubricants will be used. The frequency of lubrication, adjustments to be made regularly and recommended spare parts by the equipment/machine/ instrument manufactures/supplier shall always be carried out and appropriate inventory shall be held in store.

(vii) The Contractor shall maintain a maintenance log of all repairs, oil & lubricant changes carried out for each equipment's maintenance Log Card.

Building and Site Maintenance

The Contractor shall be responsible for:

I. The total maintenance of building and all electrical, ventilation, plumbing and drainage installation in the building.

II. Housekeeping and cleaning of all buildings

III. Preventive and breakdown maintenance of the site water and wastewater services, cabling and earthing systems, air conditioning and the site road lighting system., Theupkeep of landscaped areas, tree plantation and flower pots etc.,

IV. Maintenance of the communication system of the plant.

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VI. Routine housekeeping maintenance shall be carried out in accordance with procedures.

VII. Normal breakdown maintenance shall be attended to within a period of 3 working days.

VIII. Any unusual breakdown due to forces of nature covered under insurance shall be inspected to and attended to only after being permitted to do so by the insurance agency in writing.

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Training

(a) The Contractor shall be responsible for instruction and training of all his personnel in all aspects of plant operation and maintenance till the end of the operation and maintenance period.

(b) The Contractor shall also be responsible for training personnel nominated by the MBMC who shall submit the CVs of the person to be trained to the Contractor for assessment if the person is qualified to be trained.

(c) The training will be imparted to skilled personnel possessing a basic qualifications as stipulated by the MBMC representative which shall be similar to those possessed by the Contractors personnel, will operate the plant at the expiry of the Contract, this shall be done in the last six months of the operation and maintenance Contract.

(d) The Contractor will make available for this purpose competent staff as well as proposed schedule information that may be necessary for effective execution of the training programme.

(e) The training shall be organized in three (3) stages as follows :

i. Basic technical training education to be carried out during the final stages of the erection period of the Contract through literature, manuals, handouts demonstration at site, etc.

ii. Intensive on the job training during commissioning and maintenance period.

iii. Examination at the end of the training and only those persons who qualify should be permitted to operate the plant.

(f) By the end of this training period, these personnel should be able to carry out their respective duties efficiently under the supervision of MBMC representatives and supervisory staff of the MBMC.

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Other Records

- The Contractor shall maintain detailed record of consumption of Polyelectrolyte, Chlorine, Coagulants, dewatering polymer and other scrubbing chemicals (if used)
- Record of dewatered sludge transported out of the plant site shall be maintained. Similarly record of material movement shall also be maintained as appropriate and approved by MBMC representative.
- These records shall be available to the MBMC representative for scrutiny and copies shall be furnished on demand.
- During O & M period tests for BOD, SS, COD, TN, NH3N, Phosphates and pH, VSS, SVI shall be done daily on composite samples.
- The results of these Parameters shall have compliance of the guaranteed values.
- The Contractor shall also maintain the records for daily, monthly and annual reporting to the MBMC

3) Responsibility for payment of wages by the Contractor:-

1) The contractor will have to pay the wages before 7th of every month in advance prior to receive bill payment from MBMC for previous month.

2) The contractor will have to pay his contribution as per the Employee's Provident Fund and Miscellaneous Provisions Act, 1952 and Employee's State Insurance Act, 1948 amended from time to time.

3) It shall be the duty of the contractor to ensure the disbursement of wages in the presence of the authorized representative of MBMC.The contractor shall have to open the Accounts in the name of labour and contractor and should deposit EPF, ESIC & Prof. Tax amount every month and attested challans should be submitted to MBMC before preparing monthly bill.

4) Monthly Bill Preparation, Submission & Payment:

i) The required documents for preparation of bill for this work shall be submitted upto 10th of every month. The following documents duly attested (True Copy) are to be submitted to MBMC in triplicate.

a) Typed bill in R.A. Bill form.

b) Acquaintance Roll of monthly payment of labour.

c) Monthly Muster Roll

d) ESIC / EPF / Prof. Tax Challans etc.

ii) The certificate from D.E. maintaining all workers attended duties in uniform approved by E.E.

iii) The contractor shall submit all the relevant forms of return e.g. Form No.3, 6 (a) & 9 for EPF and any other forms and submit it to MBMC as and when demanded.

5) Initial contract shall be for one year extendable upto one year on satisfactory performance report from Deputy Engineer, MBMC. Initial contract agreement is to be made on stamp paper of Rs.501- (Cost of stamp paper is to be borne by contractor only).

6) Recovery of absentee of labours will be made from each bill as reported by Deputy Engineer, at the rate proposed in the tender.

7) In case of any accident, it is full responsibility of the contractor / agency to pay workman compensation to Contract labour under workman compensation Act and MBMC will not pay extra separately to the contractor. Accident compensation if any granted by Hon. Labour Court shall be paid by contractor only. He should not claim on this account to MBMC. Contractor should draw Group Insurance with Life Insurance Corporation including natural death on duty of contract labour of minimum amount of Rs.20,000/- each.

8) Income Tax on gross value of the bill at the prevailing rate will be deducted from each R.A. / Monthly bill.

9) Contractor / Agency has to issue identity card having the signature of their authorized person to each member with their designation and other details of Duty etc.

10) Contractor will be held responsible for any theft of material, machinery etc. There shall not be any illegal business in plant / work premises by any person I employee.

11) If there is loss of MBMC property including pumping machinery etc. due to negligence of Contract labour, same shall be recoverable from agency at the rate recommended by Deputy Engineer.

12) Contractor shall timely report the arrangement made for the purpose of transportation work including Maintenance Vehicle Registration number.

13) Overtime expenses shall be fully borne by agency,

14) Monthly payment made by contractor to their labours shall be inclusive of all i.e. annual admissible leaves, medical leaves weekly of etc. Contractor is empowered to deduct the daily wages / salary for any absentee from wages of contract labour.

15) Agency shall submit details of duties and responsibility statement of each contract labour through Deputy Engineer, MBMC, within 15 days from the date of work order. However decision of Deputy Engineer, shall be final regarding duties to be fixed.

16) Contractor shall produce police-record report regarding character of the contract labour employed as and when demanded by MBMC.

17) It is not permissible to increase the number of contract labour in any case.

18) Agency shall submit the weekly report of the operation work in detailed through Deputy Engineer, to Managing Director for acceptance and suggestions.

19) Separate register for material supplied by agency, issued by department, consume and balance shall be maintained by the agency.

20) Contract Agreement under execution constitutes the full and complete understanding between the parties here to the said contract agreement including validity, performance or breach there of. If the parties hereto cannot reach by mutual understanding the same shall be referred to The Commissioner, MBMC as an Arbitrator and whose decision shall be final and binding on the parties hereto.

21) The different machineries required for M & R work should be provided as and when required during breakdown on emergency basis. No work should be hampered due to non availability of material and machinery.

22) The Contractor should see that no illegal PROPERTY connections are done ON DRAINAGE LINES. It is responsibility of Contractor to keep watch by patrolling. If illegal connection is found it should be immediately informed to Engineer-in-charge & disconnected. If it is found that the Contractor is involved in this, legal action against Contractor will be taken.

23) The Contractor must appoint One experienced Supervisors for overall monitoring of all M&R works covered under this Contract.. They should have a mobile phone and two wheeler for proper Co-ordination with MBMC officials, Concerned local bodies..

27. IDENTIFICATION BADGE WITH IDENTITY CARD:

Contractor will have to provide identification badge with title name plate strip to be displayed on shoulder or front pocket to each staff as approved by Engineer-in-charge along with identity card etc.

28. HOLIDAYS AND LEAVES:

Weekly off and leaves should be given to staff as per relevant labour rules, during holidays / causal leaves / earned leaves etc. and contractor shall arrange for the substitute the MBMC shall not make any separate payment or overtime for these substitute provided by the Contractor during above periods.

29. CONDUCT:

All employees of the Contractor shall follow the instruction of Engineer-in-charge. If any employee misbehaves with Engineer-in-charge he/she should be immediately removed from duty and substitute for that should be employed by the Contractor. If contractor fails to do so as non-refundable penalty of Rs.100/(Rupees One Hundred only) per day per such case will be recovered from the bill.

30. MACHINERY REQUIRED:

Vehicles such as Motor Cycles / rickshaw, cycles etc. besides Maintenance Vehicle required for maintenance and repairs of various components or conveyance of messages in respect of power or machinery failures or routine instruction etc. shall be arranged by the Contractor to attend the site immediately.

No extra payment shall be made for transportation required for maintenance and repairs from one site to another. The vehicles shall be in the charge of Engineer-in-charge and shall be ready for 24 hours for day to day maintenance and operation.

31. TENDER TO BE STRICTLY TO TENDER CONDITIONS AND SPECIFICATIONS:

It should be clearly noted that the Contractor has to strictly comply with the conditions and specifications laid down in the tender and no variation or deviations are permissible. Deviations made by the tenderer submitting the tender without following above instructions would result in treating the tender as conditional and it would not be binding on the MBMC to consider such conditional tender. In case the conditional tender is accepted due to oversight or any other reasons. It shall be treated as unconditional and all the conditions! deviations from NIT and minutes of pre-bid conference shall be treated as null and void for all purpose.

32. GOVERNING OF LABOUR LAWS:

The contractor shall be fully responsible for making arrangements entirely at his cost for housing all labour employed by him and make necessary satisfactory arrangements for the same as may be required under the rules and laws of the central Government, State

Government or local body, MBMC's quarters if available may be given on rental basis, but it is not binding on the MBMC. All the rules regarding workman's compensation etc. shall be binding on the Contractor without any claim on MBMC No guarantee shall be given by the MBMC to provide quarters to all the staff employed by the agency. So also food grains for the labour shall be arranged by the contractor where it is not available in the open market.

33. ACCIDENT ON THE WORK

The contractors shall be fully responsible for any accident may occur to the labour on his work on duty and report the same to the Engineer-in-charge and concerned government labour department authority and shall pay all necessary compensation as per rules, failing which it may be paid by MBMC from the amount payable to him. Contractor shall also be fully responsible for any loss to any individual or public property occurred due to him or his workers under the scope of this contract.

34. LABOUR LICENCES:

Agency has to produce labourlicence from labour department and its timely renewal is to be got done. Also agency has to pay to his labors as per labour act and should protect the interest of labour. Agency has to maintain various labour register as necessary as per labour act and should produce on demand. Other facilities like leave with pay overtime, bonus etc. are to be paid to labours without any extra claim. The agency is bound to comply the remarks raised by concerned labour authority for the tenure of contract.

35. LOSS OR DAMAGES AND IDENTITY AGREEMENT:

The contractor shall be responsible during the progress as well as maintenance for any liability imposed by law for any damage to the work of any part thereof or to any of the materials or other things used in performing the work of injury to any person or persons or for any property damaged in or outside the works limit. The Contractor shall indemnify and hold the owner and the Engineer harmless against any and all liability,

claims, loss or injury including cost expenses and attorney's fees incurred in the defence of same arising from any allegations whether groundless or not, or damage or injury to any person or property resulting from the performance of the work or from any cause whatever during the progress and maintenance of the work. The agency has to properly maintain all register and other records as per labour act and factory act and other Governing laws! rules / laws. The agency should produce all such records as and when required (even after within three years from the completion of work).

36. SAFETY OF CONTRACTORS STAFF & LOSS TO CONTRACTOR BY TERRORIST:

The work under this contract are in the proximity of Mumbai, where the activities of terrorists is increasing day by day. The safety of his staff is his sole responsibility and any loss due to above if occur to contractor that will not be entertained by MBMC.

37. USE OF SITE:

The contractor shall not unreasonable encumber the site with material and equipment. The Contractor should not use land for his private purpose. Use of MBMC's land for the purpose of housing of the labours may be permitted by MBMC but it is not binding on MBMC.

38. COMPLIANCE:

The contractor shall be bound by all ordnance acts codes, rules, regulations, orders and decrees of which in any way affects conduct of work or workman engaged for the works. The Contractor shall protect and indemnify compensation the MBMC against any claim or liability arising from violation of above.

39. HANDLING OF CHEMICALS:

Safety and facilities to the staff for handling of chemicals and equipments is an important consideration. Handling of chemicals needs Special attention. Following instructions are for guidance of the Contractor and observing them strictly at his cost.

40. CHLORINE (T.C.L. POWDER)

At the time of mixing T.C.L precautions to be taken. Chlorine vapour is extremely hazardous avoid prolonged breathing suitable gas mask may be used anticoloro solution shall be ready for quick relief.

Special precaution for keeping store room well ventilated be seen before entering, smoke test be carried out.

As chlorine is a dangerous gas and above certain levels inhalation of this gas is fatal. Therefore, it is essential that all operators working with chlorine are considered to be familiary with dangers of the gas. It is imperative to have protection equipments always readily available at site at the contractor's cost.

41. TESTS:

Routine tests should be performed and recorded to control the operation. All testing and sampling procedures should be carried out in accordance with standard methods for the examination of water and waste water published by the American Public Health Association. All analysis should be recorded in the registers as per predetermined formats based on guide lines given in CPHEEO manual on SEWEAGE. The contractor should send samples of raw and treated sewage to MPCB at Thane it is responsibility of agency to collect and send the samples and get it tested.

42. MAINTEANCE AND SUBMISSION OF RECORD TO MBMC:

The Contractor shall maintain various record as per prescribed format by MBMC. and submit the same once in a week. The details are as below:-

1. Job register containing date of complaint, type of complaint and compliance done by agency, material consumption and date of compliance of complaint duly signed with concern Mistry/ Mukudam/ Engineer-in-charge.
2. CHEMICAL. consumption register at every STP.

43. NO INTEREST ON DUES:

No interest shall be payable by dept. on the amounts due to contractors pending final settlement of the claims.

44. POWER OF ATTORNEY:

In case of tenderer is a firm or a company it shall in its forwarding letter mention the name of partners and of the persons who could hold the power of attorney, authorizing him to conduct the transactions on behalf of firm or company and shall produce certified true copy of power of attorney and partnership deed along with tender and original shall produced for verification on demand.

45. EXTRA ITEMS: It is binding on the contractor to carry out such extra works as and when required and ordered in writing will be ordered when the same can be carried out by the contractor in the opinion of the Engineer in charge as internal part of the main work either in addition alteration or legitimate and reasonable extra item cropped up will be paid at current sanctioned scheduled of rates of the M.J.P. / P.W.D. division. The decision of the MBMC will be binding. Payment of extra item will be released only after it approved finally by the appropriate Authority.

1. Unless or otherwise specifically provided for either in the item or in the specifications or in the schedule of supply of materials, all items in tender are inclusive of the cost of all materials required for the execution of the item and such of them as are not proposed to the notes below will be provided by the contractor of the approved type and make.

2. Other unforeseen items to be done in course of work will have to be done by the contractor as per specification in P.W.D. Hand Book Vol. I & II.

3. The contractor shall be responsible and liable to pay any damage to public property.

46. The contractor shall make proper and economic use of all the materials supplied by the Government whether free of cost or on payment and whether directly to him or through any other person for utilization in the execution of the contract. He shall keep

the account of such materials in suitable book which would be available for inspection by the Engineer-in-charge by the MBMC.
The contractor will be responsible for proper handling the safe custody of all materials deliver to him by government for use on work and shall return to government all surplus materials after completion of the work. The materials charge to the contractor and remaining surplus will be taken back and paid for and as required by Department. All surplus materials supplied to the contractor free of charge will be returned to government and delivered to places as directed and if any shortages are noticed or material found in damaged or unserviceable condition the cost therefore as fixed by the MBMC will be recovered from the contractor.

47. In case of legal dispute for materials brought and stored at site without permission of Engineer-in-charge contractor will be responsible for all legal dispute at his own cost and consequences without reference to Government.

48. Contractor shall give receipt of all materials issued either free of cost or at cost. In case if received free of cost he will make a mention of the same specifically in receipt book.
49. Extra charges of claims in respect of extra works shall not be allowed unless the work to which they relate are clearly without the spirit and meaning of the specifications or unless such works are ordered in writing by the MBMC and claimed for in specified manner before the work is taken in hand.

50. If it is found that a agency or owner of a agency working in the MBMC, misused the Power of Attorney for cheating to MBMC, given by the another agency which also working in MBMC, then no blank form to both the said agencies will be issued.

51. Salary should be paid to employed labour. Rise/Amendment in salary as per government norms (Minimum Wages Act) will be applicable and binding on contractor should quote accordingly. No reimbursement of any kind of rise is admissible to contractor. It is to be paid by the contractor to the labour only.

52. If agency/ tenderer not communicate their unwillingness to do the work beyond original time limit /extended time limit well before 3 months of expiry. It will be binding to the contractor to execute work for further 3 Months or finalization of new agency / contract whichever is earlier after said time limit.

53. During extension period if there is rise in wages contractor is bound to pay first accordingly and will be paid / reimbursed to contractor.

SCHEDULE "A"

MIRA BHAYANDER MUNICIPAL CORPORATION

SCHEDULE 'A' OF B1 TENDER

NAME OF WORK : Operation & Maintenance of SBR STP- 6C & 8 in Mira Bhyander Municipal corporation area.

Schedule 'A' showing (approximately) the materials to be supplied from the Departmental Store for the work contracted to be executed and the rates at which they are to be charged for.

Sr. No.	Particulars	Quantity	Rate at which the materials will be charged to the contractor	Unit	Place of Delivery

CONDITIONS OF

SCHEDULE "A"

MIRA BHAYANDER MUNICIPAL CORPORATION

NAME OF WORK : Operation & Maintenance of SBR STP- 6C & 8 in Mira Bhyander Municipal corporation area.

Conditions of supply under Schedule 'A'

1. Materials indicated in the schedule above will only be supplied by the Corporation at the issue rates shown against them and only on production of unstamped receipt thereof.
2. Materials will be issued at the place of delivery indicated in the schedule. Carting of materials from Corporation Store to site of work will have to be done by the Contractor at his own cost.
3. Contractor shall maintain account of materials received from Corporation and its consumption. The account shall be produced for review of the Inspecting Officer as and when demanded.
4. Contractor shall at the site of work provide a leak-proof pucca shed, with proper double locking arrangements to store materials, issued by the Corporation.
5. The stores shall be accessible for checking by Corporation Officer whenever desired.
6. If, after completion of work, materials issued by Corporation is found surplus and unused, such surplus materials in good condition only shall be returned to the Corporation at its place of delivery indicated in the schedule. Transport required therefore will be at Contractor's cost. For such materials, rates allowed will be rates as indicated in Schedule 'A' minus (-) Storage charges at 3% (Percent). Contractor shall therefore be cautious in getting materials issued.
7. If surplus material is misused or is not returned by the contractor, recovery at double the issue rate indicated above or market rate whichever is high will be made.
8. Portland or Pozollana cement whichever is available will be supplied in jute bags. Each bag shall be considered as having 50 kgs. cement in it. No cement will be issued on actual weighment basis.

Note : The tenderer submitting the tender should see that the rates in the above schedule are filled up by the Executive Engineer on the issue of the form prior to submission of the tender.

I/We have carefully studied the various items mentioned in schedule B herein above with the scope of work and detailed specification and all other terms and condition of this tender, also inspected the work site. On the basis of that I/we hereby undertake to execute the work of MBMC water Distribution Scheme .

Note :- 1) All work shall be carried out as per Public Works Department Hand Book and Other Specification of the MJP/Corporation or as directed.

2) Rates quoted include clearance of site (Prior to commencement of work and site moisture weather etc.)

SCHEDULE "B"

MIRA BHAYANDER MUNICIPAL CORPORATION
Water Supply Department

Name of Work - Operation & Maintenance of SBR STP- 6C & 8 in Mira Bhyander Municipal corporation area.

Shedule B

Quantity as per Sanction	Item of Work	Estimated Rate		Unit	Total Amount according to Estimate	Specification		Additional Specification
		In Figures	In Words			Clouse No	Page No	
1	2	3	4	5	6	7	8	9
	Item No.1 :- Manpower							
12.00	Providing all nesessory skilled, semi-skilled and unskilled manpower for round-the-clock operation and routine and preventive maintenance of 13 MLD and 11 MLD SBR Sewage Treatment Plant (STP) including all statutory compliances such as latest applicable minimum wages, EPF, ESIC, bonus, gratuity, insurance, PPE, uniforms, ID cards, Leave wages and all other as per labour law, Central/State Government Rules, Acts and Regulations, complete.	865546.00	Rs.Eight lac sixty five thousand five hundred forty six only	MONTH	10386552.00			As per the Direction given by the Engineer in Charge
	Item No.2 :- Routine And Preventive Maintenance							

12.00	Carrying out routine and preventive maintenance, minor repairs of all mechanical, electrical, instrumentation, civil components and painting of all structure of 13 MLD and 11 MLD SBR Sewage Treatment Plant including supply of nesessory electrical part, lubricants, grease, consumable oils, nuts, bolts, gaskets, fasteners, cleaning materials, stationery, hand tools, Fire extingusher and all other minor consumables required for smooth operation of the plant, complete.	281804.00	Rs.Two lac eighty one thousand eight hundred four only	MONTH	3381648.00			As Above
	Item No.3 :- Polymer							
4.38	Providing, supplying and dosing cationic polyelectrolyte (Polymer) for sludge dewatering at 13 MLD and 11 MLD SBR Sewage Treatment Plant, including transportation, loading, unloading, storage, preparation of polymer solution etc. and all incidental charges,complete.	673500.00	Rs.Six lac seventy three thousand five hundred only	MT	2949930.00			As Above
	Item No.4 :- Chlorine Gas							
43800.00	Providing, supplying and dosing chlorine gas for disinfection of treated sewage at 13 MLD and 11 MLD SBR Sewage Treatment Plant, including transportation, loading, unloading, storage, handling, connection of chlorine cylinders/tonners, leak testing, operation of chlorination system, safety measures, all necessary accessories etc. and all incidental charges,complete.	18.63	Rs. Eighteen & sixty three paisa only	KG	815994.00			As Above
	Item No.5 :- Transportation							
48.18	Transportation charges of Polymer and Chlorine gas from Factory to Corporation STP-6C & 8, including loading, unloading, stacking etc complete for a lead of 90 km etc complete.	1528.39	Rs.One thousand five hundred twenty eight & thirty nine paisa only	MT	73637.83			As Above
	Item No.6 :- Laboratory Chemical							

12.00	Providing and supplying all laboratory chemicals, glassware, consumables and all other consumables at 13 MLD and 11 MLD SBR Sewage Treatment Plant required for analysis of raw sewage, treated effluent and process samples as per CPCB/MPCB guidelines, including transportation, loading, unloading, storage and all incidental charges complete.	30000.00	Rs. Thirty thousand only	MONTH	360000.00			As Above
	Item No.7 :- Sludge Disposal							
1127.00	Providing all labour, vehicles, Trolley, tools and tackles for collection, loading, transportation, unloading and scientific disposal of dewatered sludge generated from 13 MLD and 11 MLD SBR Sewage Treatment Plant, including all leads, lifts, fuel, tipping charges, permissions, royalties (if applicable), statutory compliances and all incidental charges complete.	513.90	Rs. Five hundred thirteen & ninety paisa only	MT	579165.30			As Above
				Total Rs.	**18546927.13**			

I/we herby agree to execute the above work at % below/above/estimated cost.

Contractor/Agency No. of Correction Executive Engineer

Operation & Maintenance Manual

Contractor/Agency No. of Correction Executive Engineer

O & M Manual

UNIT OPERATIONS

4.1. SBR TREATMENT

1. Inlet Chamber

Raw domestic sewage from the underground sewer network is received at the inlet chamber of the STP through gravity or pumping. The inlet chamber serves as the first collection point where the incoming sewage flow is measured and distributed to the preliminary treatment units. The chamber shall be designed to facilitate smooth hydraulic flow without excessive turbulence.

Purpose:

Receive raw sewage.

Uniform distribution of influent.

Flow measurement and monitoring.

Isolation of treatment units during maintenance.

2. Mechanical Bar Screen

The incoming sewage first passes through a coarse/fine mechanical bar screen where large floating and suspended materials such as plastics, cloth pieces, wood, bottles, paper, leaves, sanitary waste and other debris are removed.

The screening equipment shall operate automatically through differential level sensing or timer control, with manual override facility.

Purpose:

Protect downstream pumps and equipment.

Prevent clogging of pipelines and diffusers.

Improve operational reliability.

3. Grit Removal System

After screening, sewage enters the grit chamber where heavy inorganic particles like sand, grit, gravel, stones, broken glass and other dense materials settle due to reduced flow velocity.

Collected grit shall be periodically removed and disposed of safely.

Purpose:

Prevent abrasion of pumps.

Prevent deposition in pipelines.

Reduce wear of mechanical equipment.

4. Oil & Grease Trap (Where Provided)

Oil, grease and floating scum are separated by gravity flotation. Mechanical skimmers remove floating materials and prevent them from entering the biological treatment process.

Purpose:

Protect biological microorganisms.

Prevent diffuser clogging.

Improve oxygen transfer efficiency.

5. Equalization Tank

The screened sewage is collected in the Equalization Tank where hydraulic and organic load fluctuations are balanced.

Mechanical mixers or coarse bubble aeration prevent septic conditions and maintain sewage in suspension.

The Equalization Tank provides continuous and uniform flow to the SBR basin.

Functions:

Equalize flow variations.

Equalize BOD loading.

Prevent septic conditions.

Maintain homogeneous sewage quality.

6. SBR Basin (Biological Reactor)

The SBR Basin is the heart of the treatment plant. Unlike conventional activated sludge systems, all biological treatment processes occur within the same reactor.

Each basin operates in programmed cycles controlled by PLC and SCADA.

The biological treatment is carried out by activated sludge microorganisms which consume dissolved and suspended organic matter.

Phase 1 – Fill Cycle

During this phase, sewage from the Equalization Tank enters the SBR basin.

Depending upon the process requirement, filling may occur under:

Static Fill

Mixed Fill

Aerated Fill

The microorganisms immediately start consuming biodegradable pollutants.

If aeration is not provided during filling, denitrification begins due to anoxic conditions.

Main activities

Sewage filling.

Initial biological degradation.

Equal distribution.

Denitrification (where applicable).

Phase 2 – React (Aeration) Cycle

This is the main biological treatment stage.

Air is supplied through fine bubble diffusers installed at the bottom of the basin using high-efficiency air blowers.

The microorganisms utilize oxygen to oxidize organic pollutants.

During this stage:

Carbon Oxidation

Organic pollutants responsible for BOD and COD are converted into carbon dioxide, water and new biomass.

Nitrification

Ammonia nitrogen is converted into nitrite and finally nitrate by nitrifying bacteria.

Biological Phosphorus Removal

Where designed, phosphorus accumulating organisms absorb phosphorus from wastewater.

DO concentration is generally maintained between 2.0 and 3.0 mg/L.

Aeration timing is automatically controlled through PLC based on cycle programming.

Phase 3 – Settle Cycle

After completion of aeration, all blowers and mixers are stopped.

The reactor remains completely undisturbed.

Activated sludge settles naturally under gravity.

Within this period:

Clear treated water forms at the top.

Dense sludge settles at the bottom.

Excellent sludge blanket develops.

Since there is no inflow during settling, superior clarification is achieved compared to conventional clarifiers.

Phase 4 – Decant Cycle

Once settling is complete, the floating decanter slowly lowers into the clarified water layer.

Only the clear supernatant is withdrawn.

The sludge blanket remains undisturbed.

The floating decanter automatically rises after completion of decanting.

The decanted treated water flows to tertiary treatment.

Phase 5 – Idle / Sludge Wasting Cycle

Excess biological sludge is removed from the reactor to maintain required MLSS concentration.

Sludge wasting frequency depends upon:

MLSS

Sludge age

SRT

Plant loading

The reactor is then ready for the next Fill Cycle.

6. Disinfection System

The filtered water is disinfected using either:

Chlorine Gas

UV System

The purpose is to destroy pathogenic bacteria, viruses and microorganisms before discharge or reuse.

Residual chlorine shall be maintained as per CPCB/MPCB norms.

7. Sludge Handling System

Waste sludge from the SBR basin is pumped to a sludge holding tank.

The sludge is conditioned using polymer and dewatered through centrifuges, belt filter presses, or screw presses (as applicable).

The dewatered sludge cake shall be transported and disposed of in accordance with CPCB/MPCB guidelines.

The filtrate generated during dewatering shall be returned to the Equalization Tank or inlet chamber for retreatment.

4.2. INTRODUCTION TO WASTEWATER TREATMENT

Characteristics of Wastewater

It is very important for plant operators to be familiar with the characteristics of wastewater. This composition refers to the actual amounts of physical, chemical and biological constituents present in the wastewater.

The source of wastewater entering a Treatment Plant (called plant influent) is the combination of water supplied for communal use & industrial use in the industry. Plant influent may also comprise storm water and groundwater, which has inadvertently been allowed to enter the wastewater collection system.

a) Solids

The solids in wastewater can be divided into two general groups:

1. Organic Solids: Organic solids come from animals or plants, and include the waste products of plant and animal life. These solids will decompose.

2. Inorganic: Inorganic Solids usually will not decompose and comprise sand, silt, salts and so on. Both organic and inorganic solids can be broken down further into Suspended Solids and

Dissolved Solids. The Suspended Solids which are mainly organic in nature, are visible and are separated from the wastewater by physical/mechanical means e.g. screening and sedimentation.

Dissolved Solids are the ones actually in solution, similar for example to sugar mixed into hot coffee - the sugar dissolves into the coffee. Dissolved solids generally pass through the system
unaffected.

b) Gases

Besides solids, wastewater may contain small and varying amounts of dissolved gases depending on the age of the wastewater. The most important of these gases in wastewater treatment is oxygen. Other gases such as carbon dioxide, CO2 and hydrogen sulphide, H2S are produced as a result of decomposition of organic matter. H2S is produced under septic conditions and causes offensive odor.

c) Microorganisms

Wastewater may carry a full spectrum of microorganisms which are too small to be seen without an aid of a microscope. The microorganisms can be classified in four groups: bacteria, viruses, protozoa, and helminths.

Out of the four groups, bacteria play the major role in biologicaltreatment. Bacteria degrade the soluble organic matter present in thewastewater and utilize it as food necessary for growth and reproduction. Each of the four groups of microorganisms contains some pathogenic species which can cause diseases. The presence of pathogens in wastewater or treated effluent may adversely affect public health if the wastewater is not managed properly.

Natural Treatment Process

Traditionally, man has dumped the wastes directly into the environment, expecting nature to take care of these wastes. However, there is a "limited amount" of waste that the environment can deal with naturally. If the polluting load is too high (or the waste

discharged is too much) the natural purification process will not be able to cope. This causes undesirable growths and nuisance conditions and possibly health hazards.

The composition of waste commonly discharged varies considerably. However, in municipal or domestic wastewater there is a large amount of organic material present. This organic material is the major food source for countless numbers of living microorganisms, hereafter called "bugs" as a matter of convenience.

In the natural treatment process, it is the naturally occurring bugs which perform the main task of biodegrading the organic material commonly found in wastewater, in other words these bugs purify the wastewater. Decomposable organic material in wastewater is broken down into less harmful by-products by the action of the bugs present in the system. Bacteria are the most important of the bugs available for this stabilization process. They use the organic material as food.

When the bugs eat the organic material, they obtain the energy required to reduce.

BUGS + FOOD + OXYGEN = NEW CELLS + ENERGY +STABLE END-PRODUCTS

When the bugs have consumed the pollutants present in the wastewater, they can be removed by settling. Now the dissolved organic matter has been converted to a form (called sludge) which can be removed by settling.

Just like human beings, the bugs need a healthy environment in which to live and grow: Enough oxygen (1-2 milligrams per liter), the right number of bugs for the food coming in, suitable pH, adequate temperature and enough time to digest the food. If these conditions are maintained, and proper sludge wasting and return sludge flow procedures are followed, the bugs will give us a cleaner wastewater.

On the contrary, conditions such as too much food for the number of bugs, high flows, lack of wasting, or too much air may prevent the production of a good clear effluent.

This is the basic mechanism by which all biological wastewater treatment systems operate, i.e biological conversion of organic material to energy, new cells and stable end-products.

The strength of the wastewater is often determined by measuring the amount of oxygen consumed by bacteria in biodegrading the organic matter. This measurement is known as

the BIOCHEMICAL OXYGEN DEMAND (BOD) and is usually performed over a 5 days period at a constant temperature of 20°C. The measurement is sometimes referred to specifically as BOD5.

Another test known as the CHEMICAL OXYGEN DEMAND (COD) is usually carried out instead. This test can be made within a 2 hour period and is therefore more practical to undertake compared to the BOD5 test.

For specific domestic wastewater there is some correlation between BOD5 and COD, and the BOD5 can therefore be calculated simply by using a factor.

A Dissolved Oxygen (DO) level between 1.0 mg/L and 3.0 mg/L should usually be maintained in the Aeration Tank for this to occur. Ideally, sufficient air shall be added to the mixed liquor to maintain this level. In practice however, an Operator should ensure that there is never less than 0.5 mg/L of O2 while in some cases 3.0-4.0 mg/L O2 is necessary to achieve satisfactory results. Any less than 0.5 mg/L can result in septic conditions with deterioration of the quality of the activated sludge and a serious reduction of plant efficiency. The use of excessive amounts of air is not only wasteful but may result in a sludge so finely dispersed that it becomes difficult to settle.

Apart from the quantity of air supplied (for diffused aeration systems), the number, location, and type of aeration equipment , control the flow mixture pattern of the mixed liquor and the O2 transferred to the liquor, and consequently to the bugs.

Attached Growth Process

Fundamentally there is a difference between conventional activated sludge process (ASP) which is a suspended sludge growth process and an attached growth process of MBBR (Moving Bed Bio Reactor). In the conventional process, which is widely accepted and practiced, although the construction of the plant is simple and in-expensive, there is a great demand on the operating personnel in order to maintain F/M ratio and MLSS levels by properly recycling the settled activated sludge in right quantities. This need continuous monitoring 24 hrs/day. Also due to constraints on maximum MLSS levels the plant has

limitations in terms of organic loading rates which are generally between 1 to 1.5 kg COD/m3/day.

In attached growth process (MBBR), the phenomenon is entirely different, bacterial culture gets attached to and grows on the surface area submerged in the effluent. It is possible to provide larger surface areas, which is responsible for higher organic loading rates, making the plant compact. As no sludge needs to be recycled for controlling MLSS, as in activated sludge process, it does away for the need of a skilled operator.

The settled sludge can de pumped to a "Sludge Dewatering Sr" for further concentration. After that, sludge may possibly be transferred to Sludge Drying Beds or other facilities for further dewatering.

With the bugs settled to form a sludge blanket and the scum removed, the clarified wastewater flows over weirs for disposal or to another tank for disinfection/further treatment, depending upon the discharge requirement.

4.3. EFFECTS OF WEATHER

Environmental factors that affect the wastewater treatment process include temperature and precipitation. The wastewater temperature affects the activity of the microorganisms or bugs. During cold winter weather the reduced activity might lower the efficiency of the treatment system. Besides the biological effects of temperature, the flocculation and sedimentation of the mixed liquor solids are not as effective at lower temperatures. The infiltration of rainwater into the wastewater line may cause the wastewater flow to increase. This is generally accompanied by a weaker wastewater in terms of Biochemical Oxygen Demand (BOD) due to the dilution effect of the stormwater. These occasions might cause the treatment system to be hydraulically overloaded. This results in reduced time spent by the wastewater in the treatment system; thus treatment efficiency is reduced.

Without Plant modifications, there is not much the Operator can do to offset the changes in treatment efficiency caused by temperature changes and high flows during storms. It will normally be necessary to vary the amount of sludge as seasons change.

Notes

- The Plant will not provide the designed performance until sufficient bacteria have developed. This usually takes three to four weeks in warm climates. Until that time, the Plant will not be able to process the full load of wastewater and therefore alternative wastewater disposal may be necessary.
- The processes are limited mainly by the peak flow and the BOD5 load.
- The biological nature of the process relies on the absence of concentration of materials that are toxic to the bacteria such as heavy metals (Cr, Ni, Zn, Hg, Cd, Sn), hydrocarbons, chlorine and chlorinated hydrocarbons, antibiotics, cyanide, and pH values outside the range of 6-9.

4.4. OPERATION GUIDELINES

In general terms, the duties of a Plant Operator may be described as below:

- TO ENSURE THAT THE PLANT CONSISTENTLY PRODUCES AN EFFLUENT OF NO LOWER QUALITY THAN IT WAS DESIGNED TO PRODUCE.
- TO SEE THAT ALL OPERATING DETAILS ARE PERFORMED PROMPTLY AND EFFICIENTLY. THIS IS BEST ACCOMPLISHED BY ESTABLISHING A ROUTINE SCHEDULE OF OPERATION.
- TO SYSTEMATICALLY MONITOR AND RECORD DIFFERENT PROCESS PARAMETERS INCLUDING CHEMICAL CONSUMPTION.
- TO CARRY OUT OR ARRANGE FOR ALL REQUIRED LABORATORY ANALYSIS AND TESTS OF THE SEWAGE PASSING THROUGH THE PLANT AS TO MAINTAIN PROPER EFFICIENCY IN OPERATION.
- TO MAINTAIN ALL EQUIPMENT AND STRUCTURES OF THE PLANT IN GOOD ORDER AND CONDITION
- TO KEEP PROPER RECORDS OF OPERATION & MAINTENANCE JOBS INCLUDING SPARE PART COSTS AND CONSUMED MANHOURS
- TO ENSURE THAT ALL PRECAUTIONS NECESSARY FOR THE SAFETY OF PERSONNEL AND PROPERTY ARE OBSERVED

- TO BRING THE NOTICE OF THE ENGINEER ANY ALTERATION WORK, OR FACILITIES WHICH MAY BE NECESSARY TO PLACE OR MAINTAIN THE PLANT IN EFFICIENT OPERATION
- TO PLACE AND MAINTAIN THE SURROUNDINGS OF THE PLANT IN A CONDITION AS ATTRACTIVE AS POSSIBLE.

The contractor may require a more specific Operator job-description to be worked out. This may be based on information contained in this Manual as well as local requirements for this particular Plant.

Discussion of Operation Parameters

General

A number of parameters may influence the treatment efficiency in a Wastewater Treatment Plant. Some of these factors are shortly discussed below and some counteractions suggested.

Hydraulic Overload

Increased flows may be due to an increase in the production or inordinate spills. Even if the plant is operating at or near its hydraulic capacity, the efficiency of the settling is not affected and does not result in loss of sludge over the effluent weirs.

Organic Overload

Organic overload usually occurs when the Treatment Plant is receiving its heaviest load due to a strong waste being dumped into the sewer. If this is suspected, the Operator should make a survey of the production premises and try to educate the concerned personnel to avoid such dumping.

High or Low Aeration Rate

Sufficient Dissolved Oxygen (DO) is essential to the biological process employed in Extended Aeration. The desirable DO concentration is between 1.0 and 3.0 mg/L, (never lower than 0.5 mg/L and seldom over 4.0 mg/L).

Insufficient aeration (low DO) is detrimental to proper treatment. This problem, if allowed to continue will result in the Plant becoming septic. When a septic condition

occurs, or when objectionable wastewater is being received, the Operator must initiate any action necessary to determine the source and eliminate it. Indications of insufficient aeration are the absence of DO and grey, murky colors accompanied by a slight septic odor resembling rotten eggs.

Over aeration (high DO) can also be a problem. This may be caused by air excessive supply. Usually it is the result of plant influent much below the level (or strength) for which the Plant was designed. A reddish color is likely to appear in all areas of the system with the exception of the influent. A reddish brown, slimy scum will often be present on the surface of the Settling Tank.

High or Low pH

The pH value is a measure of the acid or alkaline condition of a solution. The center of the scale is neutral and is given a value of 7.0. Values smaller than 7.0 indicate acidic conditions. The smaller the value the more acidic the solution is. Values larger than 7.0, up to a maximum of 14, indicate the presence of alkali. The larger the value, the more alkaline the solution is. The most favorable pH for a biological system is between 6.5 and 7.5, but the MBBR Reactor may have a range of 5.0 to 8.5. Extreme changes of pH in the raw wastewater feed are undesirable.

Septic Influent

Incoming septic wastewater can cause the contents of the entire Plant to become septic if sufficient air is not provided. Septic wastewater is generally acidic and may have a pH possibly as low as 6.0. Common causes of septic wastewater are long and flat sewer lines in which the wastewater flow is so low that solids settle and decompose. High wastewater temperature adds to the problem.

Counteraction

Manholes should be inspected for buildup of sludge and/or sand. These lines and manholes require periodic flushing. Chlorine may also be used to reduce the odors from septic influent wastewater. Care must be taken not to chlorinate the influent to a level that

will kill the biomass in the MBBR Reactor. A proper dosage to be added over a 24 hour period is 0.25 kg chlorine for every 40 m^3 of wastewater (» 6 mg/L).

Growth of filamentous organisms

Swelling of bacterial cells due to bound water - non filamentous bulking The first form is the predominant one. Operational causes of filamentous bulking include low DO in Aeration Tank, insufficient nutrients (nitrogen and phosphorus), widely varying organic loading, low F/M ratio and insufficient soluble BOD gradient. Operation causes of non-filamentous bulking are improper organic loading, over aeration or the presence of toxics. In almost all cases, all of the aforementioned conditions represent some sort of adverse operation condition.

In the control of bulking the following items needs to be checked :

(1) wastewater characteristics,

(2) DO-content,

(3) process loading,

(4) sludge return and wasting rates,

(5) process microbiology,

(6) Internal plant overloading,

(7) operation of Settlement Tank.

Counteraction:

Depending on the reason for the sludge bulking, various counteractions are recommended. Limited oxygen level has been reported to be the most common cause. Check capacity of aeration system. It should be able to maintain at least 2 mg/L of dissolved oxygen in the Aeration Tank under normal loading condition.

Operation of Settling Tank should preferably not leave sludge for more than 30 minutes. If sludge withdrawal is not uniform, i.e. if parts of the sludge are retained for many hours, sludge bulking can occur. In this case changes must be made to the sludge withdrawal equipment.

Clumping/Rising Sludge

At times large masses of sludge, possibly 100 mm in diameter may be seen rising, then bursting and finally spreading over the water surface. This is sometimes referred to as "Clumping" or "Rising Sludge" and is caused by denitrification. In this process nitrites and nitrates in the wastewater are converted to nitrogen gas which will be trapped by the sludge and eventually force the sludge to rise or float to the surface. Rising sludge can be differentiated from bulking sludge by noting the presence of several gas bubbles attached to the floating solids.

Turbid Effluent

Turbid effluent can be caused by various factors. Pin flocs are mentioned above resulting from high sludge age and over oxidization. Excessive agitation in Aeration Tank may be another cause, but anaerobic condition in the Aeration Tank or toxic shock loads can also cause a turbid effluent in the Settlement Tank. If toxic loads are received, re-seeding from other Plant may be required.

5.1. LABORATORY TESTS AND INTERPRETATIONS

LABORATORY TESTS

Field and laboratory tests give the operator an idea about the performance of the treatment plant, and are necessary to evaluate process performance. In addition to physical observations such as color and odor, instrument readings and field and laboratory tests should be performed to ensure proper operation. Testing and recording the result shall be an integral part of the Operator's routine work at the Plant.

Testing will assist in evaluation of the operating conditions and help to pinpoint trouble spots and give possible remedies and advance information for process control.

Test: A procedure to be followed to find a specific chemical/physical water parameter through tests in a Laboratory or by use of a Portable Instrument (to be used in the field if found convenient).

Recommended Tests regarding sewage quality control are:

- Total Suspended Solids (TSS) Test
- pH Test
- COD Test
- Dissolved Oxygen (DO) Test
- BOD5 Test

During Plant start-up more frequent tests may be required. When the Plant has been properly run in and the Operator has gained experienced on how to operate the process, and knows the sensitivity of different operational parameters, tests may be taken less frequent if the analysis gives stable results with small variations. Table ahead, shows readings and tests that shall be carried out on samples taken from different parts of the Plant.

5.2. SAMPLING AND ANALYSIS

Sampling and analysis of the effluent should be done to check the uality of waste and performance of each unit. Samples should be taken and analysed at the following points –

1. At Stilling Chamber
2. At the inlet of MBBR reactor – I
3. At the outlet of Final Tube settler
4. At the outlet of Chlorine Contact Tank.

METHODS OF SAMPLING

Samples collected must be representative in nature otherwise laboratory analysis will be misleading. Careless collection of samples would lead to wrong conclusions. Sampling point should be selected where wastewater is homogenous in nature. Care should be taken to avoid entry of extraneous material such as scum and floating matter into sampling bottles.

GRAB SAMPLES

Grab samples are collected when changes in concentration are likely to occur and influence the treatment. Representative samples should be taken and analyzed within 2-3 hours of sampling.

COMPOSITE SAMPLES

Composite samples are required to see performance of the units. Composite samples should be collected over a period of 12 to 24 hours.

SAMPLE VOLUME

About one to two liters of sample are adequate for the parameters required for process control. Samples should be immediately transported to laboratory for analysis. In case there is some delay, proper preservation like keeping the samples in ice should be done.

ANALYSIS

For simplified analytical procedures for the major parameters, please refer to analytical tests.

.3.DAILY SAMPLING SCHEDULE

SR. NO.	SAMPLE STATION	SAMPLING TYPE	pH	SS	O&G	BOD	COD
1.	At Stilling Chamber	Composite					

	Composite						
2	Effluent at the inlet of SBR Composite	Composite	**Yes**	**No**			
3	At the outlet of Final Tube Settler Composite _ _ _	Composite					
4	At the outlet of Chlorine Contact Tank Composite	Composite					

NOTE - The parameters from different sampling points shown above are required to be tested minimum twice a day.

5.4. TEST PROCEDURES

A. Total Suspended Solids

OUTLINE OF THE METHOD

Suspended matter is determined by filtering the sample through an asbestos pad in a Gooch crucible.

REAGENT

ASBESTOS CREAM

Make a cream of acid-washed medium-fibre Gooch asbestos with water. Add one litre of water for every 15 g of asbestos. If the asbestos contains too much fine powder, remove the latter by repeated decantation.

PROCEDURE

Make carefully an asbestos mat in the Gooch crucible by adding sufficient asbestos cream to produce a mat about 3mm thick. In preparing the mat, first fill the crucible with well-

mixed asbestos cream, let stand for about two minutes to allow the heavier particles to settle and then apply suction to the same extent as will be used for filtering the sample. Wash the mat with water with the suction on by filling and drawing through. Dry the crucible with the asbestos mat in an oven at 103 Deg.C. to 105 Deg.C. for one hour, cool in a desiccator and weigh.

Filter the sample through the weighed Gooch crucible after moistening with a few drops of water. Add successive increments of 10 ml of the well-shaken sample for filtration using suction. Add each increment of sample before the mat becomes dry. The use of a pipette with an orifice wide enough to prevent clogging with suspended matter is recommended. Continue successive 10ml additions of the sample until the filtration becomes inconveniently slow or until about 10 to 20 mg of suspended matter has Been filtered. Carefully wash the mat with 10ml of water to remove soluble salts. Continue suction until draining is complete. Dry the crucible in an oven at 103 Deg.C. to 105 Deg.C. for one hour, cool to room temperature in a desiccator and weigh.

CALCULATION

$$\text{Total suspended solids, mg/l} = \frac{1000\ w}{V}$$

where,

W = weight in mg of the suspended matter, and

V = volume in ml of the sample taken for filtration.

Express the result to the nearest 5 mg/l.

B. pH TEST

The pH shall be recorded for Influent, before MBBR Reactor, for 1st Stage Effluent and for final Effluent. As mentioned earlier, the generally accepted safe operating range for the is between pH 6.5 and 8.5.

The pH of a solution is the negative logarithm of the hydrogen-ion concentration of the same. It is determined directly by the pH meter. Equipment required:

- pH-meter/pH paper
- Beaker, 100 Ml
- Reagents required:
- Deionised water / Distilled Water
- Standard pH 4.0 buffer solution
- Standard pH 7.0 buffer solution
- Standard pH 10.0 buffer solution

Procedural Summary

Power on the pH-meter. Allow 10 minutes for instrument stabilization.

Press the pH key Calibrate the instrument with standards pH bufffer solution.

Rinse the electrode and dry with soft tissue paper.

Place the electrode in a beaker containing sample. Press dispenser button. Allow for 30 seconds for a steady result. Note down the result as a number to one decimal place, for instance 8.2

Note: Before each reading rinse the electrode with demonized water and with soft tissue paper.

C. Biochemical Oxygen Demand (BOD)

OUTLINE OF THE METHOD

Bio chemical oxygen demand (BOD) is the quantity of oxygen required by a definite volume of the liquid effluent for oxidizing the organic matter contained in it by micro-organisms under specified conditions. For its determination, the dissolved oxygen content of the sample, with or without dilution, is measured before and after incubation at 20 Deg.C. for 5 days.

TEST PROCEDURE:

1. APPARATUS REQUIRED

Glass stoppered bottles, narrow neck bottles of about 300 ml capacity, with suitable water sealing.

2. REAGENTS REQUIRED

- Sodium Hydroxide Solution - approximately 1 N.
- Hydrochloric acid - approximately 1 N.
- Sodium sulphite solution - Dissolve 5 g of anhydrous sodium sulphite in 1 liter of water. Prepare fresh solution daily for use.
- Dilution water - Distilled water of good quality, free from metals, particularly copper, and aerated.
- Phosphate buffer solution - Dissolve 5g of potassium de-hydrogen phosphate (KH_2PO_4), 2.75g of dipotassium hydrogen phosphate (K_2HPO_4), 3.4 g of di sodium hydrogen phosphate (Na_2HPO_4 $7H_2O$) and 7 g of ammonium chloride in about 500 ml of water and dilute to 1 liter. The pH of this solution should be
- Magnesium Sulphate Solution - Dissolve 22.5 g of magnesium sulphate in water and dilute to 1 liter.
- Calcium chloride solution - Dissolve 27.5 g of anhydrous calcium chloride in water and dilute to 1 liter.
- Ferric Chloride Solution - Dissolve 0.25 g of ferric chloride ($FeCl_3$. $6H_2O$) in water and dilute to 1 liter.
- Seeding Material - Supernatant liquor of domestic sewage stored for 24 to 36 hours at 20 Deg.C. In the case of industrial effluent containing organic compounds which are not easily oxidized by sewage seed, the receiving water collected about 3.5 km below the discharge point may be used.

TEST PROCEDURE

- Samples containing acidity or caustic alkalinity should be neutralised to pH about 7.0 with sodium hydroxide solution or hydrochloric acid respectively by adding a predetermined quantity.

- Samples containing residual chlorine or chloramines should be dechlorinated if chlorine is not dissipated on standing for 2 hours. To dechlorinate, first determine the quantity of sodium sulphite solution required for a known aliquot of the sample by titration to starch-iodide end point. After acidifying the sample with acetic acid (1:1) or sulphuric acid (1:50) followed by 10ml of 10 percent potassium iodide solution. Then add to the requisite volume of the sample the predetermined quantity of sodium sulphite, avoiding any excess, and check for the absence of chlorine after 20 minutes.
- Samples containing toxic substances in large amounts would require special treatment. However, the effect of small amount may be overcome by using the proper dilution so that toxicity is removed and the maximum BOD value is obtained. If increasing dilution's show increasing BOD, the dilution should be increased to a level where BOD levels off at a maximum.
- To check the quality of the dilution water and the effectiveness of the seed, determine the BOD of a standard solution of 300 mg/l either glucose or glutamic acid in the dilution water. Standard glucose solution should show a BOD of 224± 10mg/l and glutamic acid 217 ± 10 mg/l.
- Store the dilution water at 20 Deg.C. and use when near that temperature. Take the desired volume of dilution water required for the test sample and add, for every 1 liter of water, 1 ml each of phosphate buffer solution, magnesium sulphate solution, calcium chloride solution and ferric chloride solution. Seed the dilution with seeding material. The quantity of seeding material (0.1 to 1 percent of settled sewage or 1 to 5 percent receiving water) added should be such that oxygen depletion in the dilution water control is between 0.2 and 0.8 mg/l after incubation at 20 Deg.C. for 5 days.
- Prepare as follows several dilution's of the sample (usually 0.1 to 0 percent for strong industrial effluents and 5 to 25 percent for treated effluent) so as to obtain a depletion of at least 2 mg/l of dissolved oxygen after incubation for 5 days. In the

case of dilution's greater than 1:100, prepare a 10 percent primary dilution in a volumetric flask and from this make the final dilution's.

- Siphon carefully the prepared seeded dilution water into a graduated 1000 ml measuring cylinder and fill to the 500 ml mark. Add the requisite quantity of the carefully well mixed sample to make the particular dilution and fill with dilution water to 1 liter. Mix thoroughly but gently with a plunger type of rod without entraining air. Siphon the dilution into two glass stoppered bottles, fill completely and stopper. Prepare succeeding dilutions of lower concentrations in the same manner. Determine the initial dissolved oxygen concentration in one of the two bottles of each dilution. Water seal the other bottles and incubate at 20 Deg.C. for 5 days. At the same time, siphon the dilution water alone into two glass-stoppered bottles and determine the blank in one and incubate the other at 20 Deg.C, for 5 days. After incubation for 5 days, determine the dissolved oxygen in the dilution's and the blank in the same manner as the initial dissolved oxygen content.

- CALCULATION

Biochemical oxygen demand

(5 days at 20 Deg.C.), mg/l = $\frac{(D1 - D2) - (C1 - C2)\,F}{P}$

Where

D1 = Initial dissolved oxygen content of the diluted sample,

D2 = Dissolved oxygen content of the diluted sample after incubation.

C1 = Initial dissolved oxygen content of the seeded dilution water,

C2 = Dissolved oxygen content of the seeded dilution water after incubation,

F = ratio of the seed in the sample to that in the control, that is, percent seed in D1 divided by percent seed in

C1, and P = Decimal fraction of the sample used.

D. CHEMICAL OXYGEN DEMAND (COD)

OUTLINE OF THE METHOD

This is determined by refluxing the sample with an excess of potassium dichromate in acid conditions and estimating by titration the amount of dichromate consumed.

INTERFERENCE

Unstable samples should be tested without delay and samples containing settleable solids should be homogenized by suitable means for ease of representative sampling. Initial dilution's in volumetric flasks should be made on those samples having a high COD, in order to reduce the error which is inherent in measuring small sample volumes. Chlorides are quantitatively oxidized by this procedure when silver sulphate is not used as a catalyst. In this case, a correction should be applied by determining chlorides on a separate sample and subtracting the calculated oxygen demand of the chlorides from the result. Since 1 mg/l of chloride will consume 0.23 mg/l of oxygen, the correction is mg/l of chloride x 0.23

REAGENTS REQUIRED

Standard Potassium Dichromate Solution - 0.25 N. Concentrated Sulphuric Acid. Standard Ferrous Ammonium Sulphate Solution - 0.25 N. The solution shall be standardised daily against standard potassium dichromate solution.

Ferroin Indicator Solution - Dissolve 0.485 g of 1,10 phenanthroline (monohydrate), together with 0.695g of ferrous sulphate ($FeSO_4 - 7H_2O$) in distilled water and dilute to 100 ml. Silver Sulphate Mercuric Sulphate

TEST PROCEDURE

Place a 50ml sample, or an aliquot diluted to 50 ml with distilled water, in a 300 - ml round-bottom flask fitted with ground-glass joint for attaching a condenser, and add 25 ml of standard potassium dichromate solution. Carefully add 75 ml of concentrated sulphuric acid, mixing after each addition.

CAUTION

The mixture shall be thoroughly mixed before heat is applied. If this is not done, local heating occurs in the bottom of the flask and the mixture may be blown out. Attach the flask to the condenser and reflux the mixture for 2 hours. Pumice granules or glass beads should be added to the reflux mixture to prevent bumping. Cool and then wash down the condenser with about 25ml of distilled water. In many cases, the 2 hour reflux period is not necessary. Therefore, with particular samples, the reflux period necessary to give the maximum COD should be determined and the shorter period of refluxing may be permissible.

Transfer the contents to a 500-ml conical flask, washing out the reflux flask 4 to 5 times with distilled water. Dilute the mixture to about 350 ml and titrate the excess potassium dichromate with standard ferrous ammonium sulphate solution, using ferroin indicator. Generally 2 to 3 drops of the indicator are used. The colour change is sharp, changing from the blue-green to a reddish-blue. The end point, however, will not be as sharp as in the standardisation of the reagents because of the lower acid concentration. For this reason, it is necessary that the sample be diluted to atleast 350 ml before the titration is carried out.

A blank consisting of 50 ml of distilled water instead of the sample, together with the reagents, is refluxed in the same manner.

CALCULATION

$$\text{Chemical oxygen demand, mg/l} = \frac{(A - B)\ N \times 8000}{V}$$

Where,

A = volume in ml of ferrous ammonium sulphate solution used in the titration in the blank.

B = volume in ml of ferrous ammonium sulphate solution used in the titration with the sample,

N = normality of standard ferrous ammonium sulphate solution and ,

V = volume in ml of the sample taken for the test.

E. DISSOLVED OXYGEN

OUTLINE OF THE METHOD

The dissolved oxygen in the sample oxidizes manganous hydroxide to manganic hydroxide, which, in turn, oxidizes iodide to free iodine in an acid medium. The iodine liberated is determined by titration.

INTERFERENCE

The method given here is most suitable for waters containing not more than 0.1 mg/l of nitrite nitrogen and not more than 1 mg/l of ferrous iron. Other reducing or oxidizing materials should be absent. If 1 ml of potassium fluoride solution is added before acidifying the sample and there is little delay in titration, the method is also applicable in the presence of 100 to 200 mg/l of ferric iron.

REAGENTS REQUIRED

1. Manganous sulphate solution Dissolve 480 g of manganous sulphate ($MnSO_4.4H_2O$) in distilled water, filter and dilute to 1 litre. The solution should liberate not more than a trace of iodine when added to an acidified solution of potassium iodide.
2. Iodide-azide reagent Dissolve 500 g of sodium hydroxide (or 700 g of potassium hydroxide) and 135 g of sodium iodide (or 150 g of potassium iodide) in distilled water and dilute to 1 litre. The reagent should not give a colour with starch solution when diluted and acidified. Dissolve 10 g of sodium azide in 40 ml of distilled water and add to 950 ml of the first solution, with constant stirring.
3. Concentrated sulphuric acid - approximately 36 N. One millilitre of the acid is equivalent to about 3 ml of iodideazide reagent.
4. Standard sodium thiosulphate solution - exactly 0.025 N, freshly standardized against potassium dichromate. One millilitre of this solution is equivalent to 0.2 mg of oxygen (as O).

5. Starch indicator. Titrate 5 g of starch and 0.01 g of mercuric iodide with 30 ml of cold distilled water and slowly pour it with constant stirring into 1 litre of boiling distilled water. Boil for 3 minutes. Allow to cool and decant off the supernatant clear liquid.

PROCEDURE

1. To the sample as collected in a 250 to 300 ml bottle, add 2 ml of manganous sulphate solution, followed by 2 ml of iodide-azide reagent well below the surface of the liquid.
2. Stopper with care to exclude air bubbles completely and mix by inverting the bottle several times. When the precipitate settles leaving a clear supernatant above the manganese hydroxide floc, repeat the shaking a second time.
3. When settling has produced at least 100 ml of clear supernatant, carefully remove the stopper and immediately add 2 ml of concentrated sulphuric acid, allowing the acid to rundown the neck of the bottle; re-stopper and mix by gentle inversion until solution is complete. The iodine should be uniformly distributed throughout the bottle before decanting the amount needed for titration. This should correspond to 200 ml of original sample after correction has been made for the loss of sample by displacement with the reagents. Thus, when a total of 4 ml, 2 ml each of the monogamous sulphate solution and the iodide-azide reagent, is added to a 300ml bottle, the volume taken for titration should be

$$200 \times \frac{300}{300 - 4} = 203 \text{ ml}$$

Titrate with standard sodium thiosulphate solution to a pale straw colour. Add 1 to 2 ml of starch solution and continue the titration to the first disappearance of the blue colour. Subsequent recolourations due to the catalytic effect of nitrites or to the presence of traces of ferric salts, which have not formed fluoride complexes, should be disregarded.

CALCULATION

Dissolved oxygen, mg/l = V

Where,

V = volume in ml of standard sodium thiosulphate solution used in the titration.

5.5. LABORATORY EQUIPMENT

Please note the laboratory is common for all the STPs at MBMC.

A. INSTRUMENTS LIST

S. No	Description
1	BTI-29 Hot Air Oven 18"x 18 " 18 " with digital temp display
2	BTI-36 Digital Muffle Furnace 6 "x 6 " 12" with digital temp display
3	BTI-06BOD Incubator Cap. 90L
4	BTI-12 COD DIGESTORS (DIGITAL) (15 TUBES)
5	Refrigerator 220-240L
6	Analytical Balance Scaletech Model SAB285DR Cap. 80/220gm, readability 0.01mg/0.1mg Pan size 80mm, Internal
7	calibration
8	Flitration assembly for 47mm dia filter

9	Vacuum Pump for above flitration assembly
10	Multi parameter (TDS & Conductivity) Labtronics LT 25
11	GFC filter paper (47mm Dia , 2.0 μm Pore size) 1822-047 Whatman, 100/
12	Petri plates 100mm
13	Crucibles (50 ml)
14	BOD Bottles (300 ml)
15	COD Tubes (for Close reflux)
16	Glass Beads 500gm
17	Buckner funnel assembly
18	Distilled water plant (wall mounted) BTI-59, 2l/per hour
19	Magnetic Stirrer with magnet set Remi, Model 1ml, cap.
20	3021 Measuring Cylinders 10 ml
21	3021 Measuring Cylinders 25 ml
22	3021 Measuring Cylinders 50 ml
23	3021 Measuring Cylinders 100 ml
24	3021 Measuring Cylinders 250 ml
25	3021 Measuring Cylinders 500 ml
26	3021 Measuring Cylinders 1000 ml
27	7080/7060 Pipette 1 ml
28	7080/7060 Pipette 2 ml
29	7080/7060 Pipette 5 ml

30	7080/7060 Pipette 10 ml
31	7080/7060 Pipette 25 ml
32	2122 Burette 50 ml
33	4980 Conical Flask 50 ml
34	4980 Conical Flask 100 ml
35	4980 Conical Flask 250 ml
36	4980 Conical Flask 500 ml
37	1501 Sample Bottles 250 ml
38	1501 Sample Bottles 500 ml
39	1501 Sample Bottles 1000 ml
40	1501 Sample Bottles 2000 ml
41	5641 volumetric flasks 25 ml
42	5641 volumetric flasks 50 ml
43	5641 volumetric flasks 100 ml
44	5641 volumetric flasks 250 ml
45	5641 volumetric flasks 500 ml
46	5641 volumetric flasks 1000 ml
47	1000 glass Beaker 50 ml
48	1000 glass Beaker 100 ml
49	1000 glass Beaker 250 ml
50	1000 glass Beaker 500 ml
51	1000 glass Beaker 1000 ml

52	Desiccator (glass) 200mm

LABORATORY CHEMICALs:-

1	447700500 MAGNESIUM SULPHATE HEPTAHYDRATE 99% Extra Pure 500Gm Loba
2	246400500 CALCIUM CHLORIDE (FUSED) 95% Extra Pure 500Gm Loba
3	381700500 FERRIC CHLORIDE ANHYDROUS 98% Extra Pure 500Gm Loba
4	451000500 MANGANESE (II) SULPHATE MONOHYDRATE 98% AR/ACS 500Gm Loba
5	589800500 SODIUM HYDROXIDE PELLETS 97% Extra Pure 500Gm Loba
6	539000250 POTASSIUM IODIDE 99% Extra Pure 250Gm Loba
7	578000100 SODIUM AZIDE 99% Extra Pure 100Gm Loba
8	002892500M SULPHURIC ACID 98% Extra Pure 2x500ml Loba
9	604900500 SODIUM THIOSULPHATE PENTAHYDRATE 99% Extra Pure 500Gm Loba
10	535600500 POTASSIUM DIHYDROGEN ORTHOPHOSPHATE ANHYDROUS 98% Extra Pure 500Gm Loba
11	612500500 STARCH SOLUBLE (EX POTATO) Extra Pure 500Gm Loba
12	542900500 POTASSIUM PHOSPHATE DIBASIC ANHYDROUS 98% Extra Pure 500Gm Loba
13	597100500 SODIUM PHOSPHATE DIBASIC ANHYDROUS 98% Extra Pure 500Gm Loba
14	113800500 AMMONIUM CHLORIDE 99% Extra Pure 500Gm Loba
15	535400500 POTASSIUM DICHROMATE 99.5% Extra Pure 500Gm Loba
16	458400250 MERCURIC SULPHATE 98% Extra Pure 250Gm Loba
17	575000025 SILVER SULPHATE 98.5% Extra Pure 25Gm Loba
18	119000500 AMMONIUM FERROUS SULPHATE HEXAHYDRATE 98.5% Extra Pure 500Gm Loba
19	384500100 FERROIN SOLUTION 0.025 M 100ml Loba
20	5172D00125 PHENOLPHTHALEIN INDICATOR 0.375% SOLUTION 125ml Loba
21	580900500 SODIUM CARBONATE ANHYDROUS 99.5% Extra Pure 500Gm Loba

22	Ethanol 500ml Zenith
22	002232500M NITRIC ACID 69% Extra Pure 2x500ml Loba
23	17100500 HYDROCHLORIC ACID 35% Extra Pure 500ml Loba
24	537800500 POTASSIUM HYDROXIDE PELLETS 85% Extra Pure 500Gm Loba
25	533900500 POTASSIUM CHLORIDE 99% Extra Pure 500Gm Loba
26	545100500 POTASSIUM SULPHATE 98.5% Extra Pure 500Gm Loba
27	LA405-10NO Buffer Capsule, pH : 4.0 Colour of solution : Orange 10no Himeda
28	LA406-10NO Buffer Capsule, pH : 7.0 Colour of solution : Green 10no Himeda
29	LA407-10NO Buffer Capsule, pH : 9.2 Colour of solution : Blue 10no Himeda
30	tissue paper roll 200gm
31	Nylon hand gloves
32	Asbestos hand gloves
33	Safety Goggles
34	S.S. (Stainless steel) Tongs 8” 1No
35	S. S. Spatula 8” 1No
36	Evaporation discs 3” 1No
37	FPB589420125 filter paper no. 42 12.5cm 1Pk Borosil
38	S.S. Fork

Note : Chemical from MERK , Himedia , Glaxo , Ranchem in L.R. Grade.

DETAILED ITEMWISE SPECIFICATION

Contractor/Agency No. of Correction Executive Engineer

MIRA BHAYANDER MUNICIPAL CORPORATION

Water Supply Department

Name of Work - Operation & Maintenance of SBR STP- 6C & 8 in Mira Bhyander Municipal corporation area.

1. INTRODUCTION

1.0 General

The contractor has to maintain SBR STP- 6C & 8 as specified. The contractor is to operate, maintain and monitor STPs. This contract includes Comprehensive operation and maintenance of the treatment plant including supply of chemicals.

The scope of work described in this tender is indicative in nature and not exhaustive. The items, activities, responsibilities and specifications mentioned herein are intended to provide general guidance and shall not be construed as limiting the Contractor's obligations. The Contractor shall be fully responsible for carrying out all works, services, operation, maintenance, repairs, replacement of minor consumables, testing, monitoring, calibration, housekeeping, safety measures, statutory compliances, documentation, reporting and all other incidental, ancillary or allied works necessary for the safe, efficient, continuous and satisfactory operation and maintenance of the Sewage Treatment Plant, Sewage Pumping Stations, associated machinery, equipment, pipelines, electrical and mechanical systems and all allied facilities, whether

specifically mentioned in this tender document or not, without claiming any extra cost.

Any work, service, material, labour, equipment, consumable or activity which is essential for achieving the intended performance of the plant, maintaining statutory compliance, ensuring public health and environmental protection, or as directed by the Engineer-in-Charge, shall be deemed to be included in the scope of this contract, irrespective of whether it is specifically mentioned elsewhere in the tender documents.

No omission, ambiguity, discrepancy or lack of specific description in this tender document shall relieve the Contractor from performing any work necessary for the successful operation and maintenance of the system. No additional payment, compensation or claim shall be admissible on the ground that such work was not specifically described or included in the tender. The rates quoted by the Contractor shall be deemed to include all such incidental and allied works required for complete and satisfactory execution of the contract.

1. The contractor shall ensure proper running of the plant to give the desired effluent standards as under CPCB and MPCBs latest Norms in force And his responsible to all MPCB office related documentation work like consent for STP, compliance of plant, reports all other related work.

3. The contractor shall also be responsible for overall comprehensive maintenance of the plant

i.e. civil, electrical, electronic, mechanical and all system. The contractor shall also be

responsible for replacement of spare parts, consumable material of related equipment / machinery to keep all system in working condition 24 x 7.

4. The contractor shall monitor the quality of raw and treated sewage. The contractor shall intimate and take adequate action to ensure smooth and satisfactory running of the plant. The contractor shall make raw and treated sewage analysis for pH, SS, BOD and oil & grease shall be carried out on daily basis during O & M period at MBMC lab and once in a month from MPCB Testing lab.
5. The contractor shall prepare and implement an effective plant maintenance program in consultation with Engineer-in-Charge. It shall be absolutely contractor's responsibility to look after all sorts of maintenance whether preventive or break down. The contractor shall maintain the operational activity record as prescribed.
6. The contractor shall be responsible for keeping updated record of documents including History Card for equipment and maintaining every day logbook relating to running of machinery, consumption of energy, and other consumables etc. and various analysis performed. In addition to above the contractor shall maintain the operation and maintenance data for the following.

- Daily status record of STP
- Daily flow record
- Daily analysis record
- Operation records of mechanical screens
- Operation record of grit channel
- Operation record of Surface aerators
- Operation record of Secondary clarifier
- Operation record of Return sludge pumps
- Operation record of chlorination system
- Record of quantity of sludge generation
- Operation record of Centrifuge unit
- Performance data of Aeration System.
- Performance data of Chlorination system
- Any other allied works required during O&M.

7. The Contractor shall submit a monthly report to MBMC, about the operation and maintenance indicating the manpower, electric power, chemicals and other consumables consumed, problems faced and rectified along with various analysis performed for raw and treated sewage.
8. The contractor shall be responsible to carry out day to day as well as periodic maintenance necessary to ensure smooth and efficient performance/running of all equipment/instruments installed at the Sewage Treatment Plant..

9. The contractor shall also be responsible for proper upkeep of administrative block of the Sewage Treatment Plant.
10. He shall be responsible for timely removal and safe disposal of the dried sludge including transportation, loading and unloading etc.
11. He shall be responsible for maintenance of streetlight, poles & fixtures also in STP area.
12. The sewerage system in the STP premises, roads and pathways provided at the sewage treatment plant shall be maintained properly.
13. Round the Clock watch and ward of the entire premises including plants/machinery etc. will also be the responsibility of the contractor.
14. The entire STP premises including Administration building will be kept neat and clean.
15. The records maintained by the contractors shall be produced periodically to the Engineer-in charge for proper monitoring as desired by him.
16. Operation & maintenance of boundary wall of STP, Landscaping and Forestation done in the Sewage Treatment Plant premises etc. shall be carried out.
18. The Contractor shall operate and maintain the entire plant within its Contract price for a total operation and maintenance period
19. All necessary repairs, maintenance, replacements etc., shall be made during the comprehensive O & M to maintain the plant at the status of formal handing over. Contractor shall be responsible for preventive repair, breakdown repair, for operation and maintenance during the period of O&M.

20. At the end of O & M period the plant shall be handed over to the MBMC in fully functional condition except normal wear and tear expected during the period of operation and maintenance.
21. During O & M period cost of power consumed shall not be in the Contractor price and bills of electric power shall be paid by the MBMC as per actual consumption.
22. Sampling and testing of influent wastewater based on the tests and frequency desired by the MBMC'S representative and in general in accordance with the CPHEEO manual on Sewerage and Sewage Treatment.
23. Sampling and testing of additional samples for the day to day O & M of the STP and as mutually agreed from time to time between the Contractor and the MBMC representative.
24. MPCB or any other laboratory effluent treatment charges shall be borne by the Tenderer.
25. Sampling of final treated sewage to ensure that the guarantee Parameters are as stipulated in the Bid document.
26. The sampling frequency to be as per relevant norms of Maharashtra pollution Control Board or higher as decided by MBMC representative. The MBMC reserves right to collect samples at random at the will of the MBMC through any agency nominated by him.
27. The MBMC shall have right to seek part of sample collected by the Contractor without any prior intimation to cross check the result on random basis, however the analysis charges of such samples shall be borne by Contractor.
28. Maintenance of log books of all the equipment's/instruments connected to the PLC/SCADA shall forwarded at monthly intervals in the form of a hard copy as monitored by the PLC. Such records should be available on respective plant.
29. The reports shall contain sufficient appropriate and adequate data to make the records meaningful and amenable to analysis for evaluating the performance of the plant as well as to help in O & M decisions.
30. Security of the campus and contents therein shall be Contractor's responsibility.
31. The Contractor shall also maintain history sheets of overhauling, maintenance, replacement of all the important electrical and mechanical equipment.
32. The O &M shall include the appropriate preventive maintenance and calibration of all equipment as per the Manufacturer's recommendation.
33. All the equipment even standby supplied, installed and commissioned by the Contractor should be in operational/ functional condition throughout the O & M period. The Contractor shall take all preventive measures to maintain them in working condition.

34. The frequency of break downs of various equipment shall be the least as far as possible. The total number of such re-occurrences shall not exceed three times per annum otherwise penalty shall be levied on the Contractor at the discretion of Engineer-in-charge.
35. The operation, maintenance and repairs services shall be performed according to the following.

36. The Operator shall also liaise with Competent Authorities such as MSEDCL, MIDC, any other electricity supplier as required.

37. The ownership of all scrap and replaced equipment or the parts that are supplied by the Corporation shall be that of the Corporation. All these scrap material should be stake properly as per direction of Engineer-in-charge.

38. All the spare parts required for the maintenance of equipment's shall be provided by the Contractor. The Contractor shall warrant to the effect that all the spares shall be procured from the authorized sources and be of the best quality and fit for the purpose for which it is being used.

39. The Contractor shall provide, maintain, clean, repair, and replace whenever required, all statutory and non-statutory signboards, display boards, safety and precautionary boards, process flow charts, emergency contact boards, directional signages, equipment identification tags, pipeline identification markings, water conservation messages, environmental awareness boards, treatment process information boards, Water Plus/Swachh Survekshan awareness boards, and all other information display systems within the STP premises.

40. All boards shall be clearly visible, properly fixed, neat, legible, and maintained in good condition at all times. Any faded, damaged, missing, rusted, broken, or illegible board shall be replaced immediately by the Contractor at no additional cost to the Municipal Corporation.

41. The contractor is expected to carry out the work in such a manner as not be cause any damage to public property on account of negligence or otherwise. The Contractor shall be fully responsible for making good the damages so caused by him entirely at his own cost.

42. The assets/works/Facilities/Systems of the Corporation shall be at the risk and in the sole charge of the Contractor and the Contractor shall be responsible for making good any loss or damage there to arising from any cause whatever including that due to a theft or robbery.

43. The Contractor shall provide adequate engineering equipment, maintenance staff, inventories, plant and machinery, Vehicle, and all other things, whether of a temporary or permanent nature required for carrying out Operations under the Contract.

44. The Contractor shall take all necessary measures to minimize the power consumption in carrying out its Operations. The energy audit Operations shall include, but not be limited to, the following:

1. Reducing electricity consumption by regulating pumping, through suitable modifications to the operating schedules
2. Maintaining power factor at unity and demand to avoid penalty;

3. Contractor shall carry out the inspection of all electrical installation once in a six month period in said zone through Govt. approved / registered Class-I electrical Supervisor or Certified Energy Auditor

45. If for any reason the sewage standards are not met and the penalty is imposed by MPCB, the same shall be recovered from the Contractor's payable amount. However MBMC reserves right to terminate the Contract on statutory ground or default of the Contractors.

2. DETAILED ITEMWISE TECHNICAL SPECIFICATIONS

ITEM NO 1 :- MANPOWER

1. Scope

The contractor shall provide all necessary skilled, semi-skilled, and unskilled manpower for continuous operation, preventive maintenance, breakdown maintenance, housekeeping, sludge handling, laboratory work, record keeping, and all activities necessary for satisfactory operation of the STP. The plant shall operate 24 hours a day and 365 days a year.

The scope shall include, but not be limited to:

- Manpower shall be provided in sufficient numbers for 24×7 operation.
- Contractor responsible for wages, statutory compliances, safety gear, insurance as per minimum wages.
- Training program should be done in quarterly basis about safety training, chemical handling, soft skill and other related to work.
- The Contractor shall not employ in connection with the Operations any child who has not completed his/her eighteenth year of age. It shall also not employ an adolescent who has not

completed his/her eighteenth year unless he/she is certified fit for carrying out Operations as an adult as prescribed under clause (b) of sub-section (2) of Section 69 of the Factories Act, 1948.

- The Contractor shall provide its staff, a minimum of two sets uniform, Each worker on duty shall wear a clean uniform whenever on duty.
- The Contractor shall, if required by the Competent Authority, deliver to it, in such form and at such intervals as the Competent Authority may prescribe, a return showing the numbers of the several classes of staff employed by the Contractor on the Site and such other information as the Competent Authority may require.
- If the Competent Authority asks the Contractor to remove a person who is a member of the Contractor staff stating the reasons, the Contractor shall ensure that the person leaves the Site within seven (7) days and has no further connection with Operations under this Contract.
- At all times during continuance of the Contract, the Contractor and its Subcontractors shall abide by all existing and future labor enactment and rules made the re under, regulations, notifications and bye-laws of the Central, State or Local Government. The Operator shall keep the Corporation indemnified in case any action is taken against the Corporation by any Authority on account of contravention of any of the provisions of any Act or rules made the re under, regulations or notifications including amendments.
- The Contractor shall include in his cost medical and accident insurance expenses of all the staff employed by him along with all provision of the labor welfare acts prescribed from time to time by the state and central government
- Adequate insurance cover shall also be maintained during O &M period for all MBMCs as well as casual temporary employees and visitors.
- MBMC is not liable for any compensation on arising due to any accident/ mishap of any nature occurring in the plant premises.
- The contractor will have to pay the wages before 10th of every month.
- The Contractor shall provide all necessary superintendence while carrying out its Operations and as long thereafter as the Competent Authority may consider necessary for the proper fulfilling of the Contractor obligations under the Contract. The Contractor shall nominate a

competent and authorized representative ("Contractor Representative") approved of by the Competent Authority, which approval may at any time be withdrawn. The Contractor Representative shall give its whole time to the superintendence of the Operations. The Operator's Representative shall receive, on behalf of the Contractor, instructions from the Competent Authority, which shall be deemed received by the Contractor.

2. Qualification

All manpower shall possess:

- Relevant educational qualification
- Experience in STP operation
- Knowledge of pumps, blowers, valves, SBR process
- Electrical safety knowledge
- Chemical handling knowledge
- Confined space safety

3. Duties

- The contractor's manpower shall carry out:
- Continuous operation of complete STP
- Operation of SBR reactors
- Operation of pumps and blowers
- Operation of sludge dewatering system
- Chemical dosing
- Chlorination/Disinfection system
- Daily inspection of all equipment
- Routine lubrication
- Preventive maintenance
- Breakdown maintenance
- Cleaning of tanks
- Cleaning of screens
- Removal of floating materials

- Sludge handling and disposal
- Maintaining housekeeping
- Record keeping
- Laboratory testing
- Online monitoring
- Energy monitoring
- DG operation
- Electrical panel operation
- Flow meter monitoring
- CCTV monitoring wherever installed

4. Laboratory Work

Chemist shall perform testing as per PCB norms including:

- pH
- DO
- MLSS
- SVI
- COD
- BOD
- TSS
- Residual Chlorine
- Oil & Grease
- Ammonia
- Nitrate
- Phosphate and others
- Maintain all laboratory records.

5. Attendance

- Own Biometric attendance shall be maintained by contractor
- Attendance register shall be submitted every month.

- Any absentee shall be replaced immediately.

4. Uniform & PPE

- Contractor shall provide:
- Uniform
- Safety shoes
- Helmet
- Gloves
- Reflective jacket
- Raincoat
- Face shield
- Goggles
- Gumboots
- Gas mask (where required)
- Safety harness and all other safety gears

5. Statutory Compliance

Contractor shall comply with all applicable labor laws, including:

- Minimum Wages
- EPF
- ESIC
- Bonus
- Gratuity
- Leave wages
- Insurance
- Professional Tax
- Labour Welfare Fund
- Contract Labour Act
- Factory Act (where applicable)

- All Central and State Government Rules

6. Training

Contractor shall train all manpower in:

- Plant operation
- Safety procedures
- Emergency response
- Chemical handling
- Confined space entry
- Electrical safety
- Fire safety
- First Aid and all other necessary trainings related to operation of plant and safety

7. Records

Contractor shall maintain:

- Attendance Register
- Shift Log Book
- Equipment Log Book
- Breakdown Register
- Preventive Maintenance Register
- Lubrication Register
- Chemical Consumption Register
- Sludge Register
- Laboratory Register
- Safety Register
- Visitor Register

ITEM NO 2 :- MAINTENANCE

Carrying out routine, preventive and breakdown maintenance of all Mechanical, Electrical, Instrumentation, Automation (PLC/SCADA), Civil and allied components of 13 MLD & 11 MLD SBR Sewage Treatment Plants, including daily inspection, cleaning, lubrication, greasing, tightening, alignment, servicing, testing, calibration coordination, painting touch-up, housekeeping of equipment and plant premises, replacement of minor consumables such as lubricants, grease, oils, fuses, indicator lamps, nuts, bolts, gaskets, gland packing, fasteners, cable lugs, cleaning materials, stationery, hand tools, PPE, fire extinguishers and other miscellaneous consumables required for smooth operation of the plant. The Contractor shall maintain preventive maintenance records, coordinate with the OEM for warranty-covered repairs and ensure uninterrupted operation of all plant equipment. Major repairs and replacement of equipment covered under OEM warranty shall be excluded from the Contractor's scope and shall be attended by the OEM; however, the Contractor shall provide all necessary assistance during such works. The rate shall include all labour, tools & tackles, transportation and incidental charges complete.

The scope shall include, but not be limited to:

1) Mechanical Maintenance

Preventive and breakdown maintenance of with replacement of all necessary parts to keep in smooth running of :

- Pumps & motor

- gates, valves and actuators
- air blowers
- pipelines, diffusers
- Gearboxes, couplings, bearings
- Lubrication, alignment and tightening.
- Replacement of worn-out mechanical parts.
- Anticorrosive painting and cleaning.
- And all other mechanical machinery/equipment in the plant.

1.1)The following points should be observed while operating the pumps:

- Dry running of the pumps should be avoided.
- Centrifugal pumps if installed with negative suction should be primed before Starting.
- Pumps should be operated only within the recommended range of the head-discharge
- If pump is operated at a point away from duty point, the pump efficiency normally reduces.
- Operation near the shut-off point should be avoided, as it causes substantial recirculation within the pump, resulting in overheating of sewage in the casing and consequently, overheating of the pump.
- Voltage during operation of the pump-motor set should be within ±10 % of the rated voltage. Similarly, current should be below the rated current shown on the name plate of the motor.
- When parallel pumps are to be operated, the pumps should be started and stopped with atime lag between two pumps to restrict change of flow

velocity to minimum and to restrict the dip in voltage in the incoming feeder and should be adequate to allow the pump head to stabilize.

- When the pumps are to be operated in series, they should be started and stopped sequentially, but with minimum time lag. Any pump next in sequence should be started immediately after the delivery valve of the previous pump is even partly opened. Due care should be taken to keep open the air vent of the pump next in sequence, before starting that pump.
- The running of duty pumps and standby pumps should be scheduled so that no pump remains idle for a long period and all pumps are in ready-to-run condition. Similarly, the running schedules should be ensured so that all pumps do not wear equally needing simultaneous overhaul.
- If any undue vibration or noise is noticed, the pump should be stopped immediately and the cause for vibration or noise should be checked and rectified.
- Generally, the number of starts per hour shall not exceed four. Frequent starting and stopping should be avoided as each start causes overloading of motor, starter, contactor and contacts. Although overloading lasts only for a few seconds, it reduces the life of the equipment.
- Troubles in a sewage pumping station can be mostly traced to the design stage itself. This is all the more true when too much grit is likely to come into the sewage pumping stations from sewage at monsoon time, which is difficult to handle. Hence, sewers should not collect any storm water.

1.2) The following points should be observed while operating the pumps

Sluice gates :

- Operate inactive sluice gates by smearing grease on stem threads.
- Clean sluice gate with wire brush and paint with proper corrosion-resistant paint.
- Ensure unobstructed operation of gate and headstock.
- Ensure that the spindle is not touching the stem guide.
- Remove foreign matter like paint, concrete, etc. in the fully open position of gate. Do's for sluice gates
- Operate the gate at least once in every three months.
- Check the nuts of all construction and foundation bolts once in a year. Tighten the bolts, if loose.
- Examine the entire painted surface for any signs of damage to the protective paint. Don'ts for sluice gates
- Do not remove lock plates until the gate has been properly installed.
- Do not keep the gate out of operation for more than three months.
- Do not forget to set the stop nut in the correct position.
- Do not disturb the adjustment of wedge block bolts/studs.
- Do not over torque the crank handle/hand wheel.

1.3) The following points should be observed while operating the air blowers :

General Operation the Contractor shall operate the Air Blowers to ensure adequate Dissolved Oxygen (DO) levels are maintained in the MBBR/Aeration

tanks as per the process requirements. The operation shall ensure that the standby blower is rotated into service regularly to ensure all equipment remains in functional condition.

Pre-Start & Start-up Checks

- Ensure the inlet air filter is clean and free from choking.
- Check the oil level in the gear side and drive side oil sumps; top up if necessary using the recommended grade of oil.
- Ensure the discharge valve is in the open position before starting (unless a bypass line is provided for starting).
- Check the belt tension (for belt-driven units) or coupling alignment (for direct-coupled units).
- Rotate the blower manually (hand-cranking) to ensure free rotation of the lobes/impellers and to check for any internal friction or abnormal sound.
- Ensure all safety guards for belts/couplings are securely in place.

1.4) Operational Checks

The following points must be observed while operating the blowers:

- **Discharge Pressure:** Monitor the pressure gauge on the discharge line. A gradual increase in pressure over time often indicates clogging of the underwater diffusers or the air filter.
- **Amperage:** Continuously monitor the motor current (Amperes). It should remain below the rated current shown on the motor nameplate.

- **Temperature:** Check the discharge air temperature and bearing housing temperature. Excessive heat indicates friction or oil starvation.
- **Vibration & Noise:** If any knocking sound, abnormal squealing, or high vibration is noticed, the blower must be stopped immediately and the cause rectified.
- **Oil Splash:** Ensure the oil splash/lubrication system is functioning (visible through sight glass if applicable).

1.5) Routine Maintenance

To operate and maintain the sewage treatment plant and equipment in accordance with the aim and

purpose of treatment. The plant and equipment covered under the above contract will be promptly

attended by the contractor including any "Trouble shooting" to ensure smooth and trouble free

operation. The contractor will be responsible for smooth and satisfactory operation and maintenance of the Sewage Treatment Plant on the round the clock basis for 1 year period from the date of taking over the plant. A Technical expert of the contractor shall visit the plant on every fortnight and will suggest if required, to improve the efficiency and working of the plant.

Below routing maintenance shall be carried out as a minimum and as applicable for the type of plant / process but not limited to:

Below routing maintenance shall be carried out as a minimum and as applicable for the type of plant /process:

- Regular cleaning of screens in all shifts depending upon load
- Cleaning of screens by high pressure water jet on daily basis
- Cleaning of belt conveyor
- Checking Alignment, tightening of fasteners, and lubrication of gear and other moving parts of

  screens, conveyor belt, detritor, classifier units, PST/SST bridge &scrapper, scum removal system, railalignment etc.
- Checking and inflating types of all trolleys
- Checking of all aerators for their submergence and making necessary adjustments if found necessary, based on the DO analysis and cleaning/maintenance of diffusers, as applicable.
- Checking of all pumps, motors, gears etc for its proper operation.
- Checking of gas mixing system, gas holder unit for its proper operation.
- Observing/monitoring sludge level in digester unit.
- Setting SV& Telescopic valve on sludge withdrawal line of PST/SST to suit with the sludge

  consistency by sample analysis.
- Checking all the pipelines for preventing choking, water tightness etc.
- Monitoring parameters in incoming and treated effluent/water.
- Checking development of foam in Aeration tank and diminish it by water spraying.
- Safe disposal of screening, grit and dry sludge cake generated on daily basis at a site indicated by

  Employer.
- Avoid strictly the accumulated sludge decomposing in the settling tanks and buoyed to the surface.

  Septic condition should not arise in the tanks.
- Watering of plants and trees

General routine maintenance schedule for various plant units shall be adopted from O&M Manual.However, the general routine maintenance to be carried out by the Contractor's personnel will include but not limited to the following:

- Regular watering in the earth-pits.
- Check for any oil leak in the transformer and intimating and repairing of the same.
- Opening of end cover & cleaning of dust by Air blowing of induction motors, PMCC and other panel &PCC
- Checking and replacement of bulbs, tubes, chokes, starters, switches, control etc. Throughout the plant and including outdoor lights and high mast pole installation.
- Replacement of LT panel fuse base, links, fuse, relay, contactor kit (main and auxiliary) and timer.
- Replacement of HT panel C/T or PT whenever required.
- Check for any loose connection in electrical equipment and rectification of the same.
- Monitoring power factor, take corrective steps and ensure optimum power consumption.
- Replacement of gland packing for the pump, sluice valves etc. whenever required.
- Greasing of bearings and lubricating all moving parts as per the schedule
- Tightening of all loose nut-bolts and other fasteners
- Cleaning of sump tanks
- Lubricating and test operation of the valves
- General cleaning of all equipment and building
- Replacement of pump rubber bush, gland packing, sleeve, bearing, oil seal, shaft, liquid ring and impeller.
- Replacement of motor bearings and terminal plate and rewinding of motor when needed.
- Replacement of non-return valve T bolt, hinge pin, flap/ gate.

1.6) The following points should be observed while operating the Sludge Feed Pump:

- Inlet and outlet flow rate

- Noise or vibration
- Bearing housing temperature
- Running amperage
- Pump speed
- Pressure
- Check the level and condition of the oil in the gear reducer
- Check the shaft alignment
- Check the condition of all painted surfaces
- Visually inspect mounting fasteners for tightness
- Clean dirt, dust or oil from equipment surfaces
- Check all electrical connections
- Stop and start equipment, checking for voltage and amp draw and any movement restrictions because of failed bearings, improper lubrication or other causes
- Check the drive motor for any unusual heat, noise or vibration
- Check mechanical seals and packing for leakage or wear

1.7) Operational check

During operation, the operator should check for the following:

- The oil level and the flow of oil to the bearings in circulating oil systems
- Flow of cooling water and oil temperature, to ensure it is operating in the proper range
- Machine vibration

- Ammeter reading on the bowl motor
- Bearing temperatures, by touching them
- System for leaks
- Centrate quality
- Because the centrifuge will shut itself down in the event of a fault, the operator typically only looks at the mechanical parameters once per shift.

1.8) Awareness & Cleanliness

- The Contractor and their personnel shall maintain a high degree of awareness in operation and maintenance of the plant and all relevant safety codes and procedures.
- At all times the plant, its equipment and surrounding shall be kept clean and in order inducing the buildings, floors, walls, roofs, windows and garden etc.
- Control smell coming out from RSS.

1.9) Preventive maintenance

The preventive maintenance shall be carried out according to the standard preventive maintenance schedule respective all machinery And make its log sheet. The regular staff may be reinforced with short-term specialists by the Contractor for special maintenance tasks, after duly informing the MBMC representative of the need and the schedule.

preventive maintenance check but not limited to:

The following checks as a minimum to be performed daily by the Contractor's personnel:

- Whether there is a change in the sound of a running pump, abrupt changes in bearing temperature and seal leakage?
- The pump capacity, pressure, power consumption and vibration level to check if outage is required to address deterioration of specified performance values.
- Rise in temperature of bearings in motor, in moving parts and other units, etc.
- Working of gauges, sensors and other flow measuring devices
- Average power factor, kVARH, kWh consumed

The following checks as a minimum to be performed weekly by the Contractor's personnel

- Pipeline and valve leakage
- Functioning of non-return valve
- Tightness of all electrical connections of PMCC, APFC, PLC panel etc.
- Tightness all cable connections
- Temperature rise due to loose connections
- Operation of valves and sluice gates.
- Current and voltages in all electrical equipment
- Average power factor, kVARH, kWh consumed

The following checks as a minimum to be performed monthly by the Contractor's personnel

- Battery voltage, battery charger, topping of distilled water, tightness of terminations etc.
- Gland packing
- Wear and tear of moving parts
- Adoption of Electrical energy conservation methods and energy consumption
- Electrical contacts
- Motors

- Meggering of electrical equipment
- Watering of earthing pits

The following checks as a minimum to be performed quarterly by the Contractor's personnel

- Relay testing and calibration if possible of meters, gauges, instruments
- Speed of motors
- Level gauges and flow meters signals
- Cleaning, checking/tightening of L.T. Circuit/Panel
- Tightening of PMCC components
- Auxiliary DB, Capacitor bank
- Battery and Battery charger

The following checks as a minimum to be performed annually by the Contractor's personnel

- Free movement of stuffing box glands, gland bolts to be cleaned & lubricated and packing to be inspected to determine whether it requires replacement.
- Pump and motor alignment should be checked and corrected if necessary.
- Grease lubricated bearings should be checked to see that they contain the correct amount of grease and that it is still of suitable consistency.

The following checks as a minimum to be performed annually by the Contractor's personnel

- Vibration should be reviewed. If the pump is tending towards unacceptable vibration levels:

  i. The bearing should be removed, cleaned and examined for flaws and wear.

  ii. The bearing housing should be carefully cleaned.

iii. Rolling element bearings should be examined for scratches and wear.

iv. Immediately after cleaning, rolling element bearings that are considered acceptable for

reinstallation should be coated with grease. If the bearings are damaged it shall be replaced with new bearing of the correct size and type as per O&M manual.

- Shaft sleeve and shaft should be examined for wear.
- When coupling halves are disconnected for an alignment check, the vertical shaft movement of a pump with sleeve (journal) bearing should be checked at both ends with packing or seals removed. Any movement exceeding the original design clearance should be investigated to determine the cause. Endplay allowed by bearings should also be checked. If it exceeds that recommended by the manufacturer, the cause should be determined and corrected.
- Stuffing boxes should be repacked and the pump & motor should be realigned and reconnected
- Overhauling requirement of all equipment
- Improvement required if any in operation of plant
- Testing and Calibration of all instruments
- Transformer cleaning, checking silica gel, oil checking filtering/replacing

2.0 Repairs

- Repairs shall be made as and when needed very promptly on the spot or at the Contractor's / Manufacturer's workshop. The need of repair on the spot or at the Contractor's workshop has to be defied in co-ordination with

the MBMC representative and according to the status of spare parts availability.

2.1 Spare parts

- The Contractor shall keep a reasonable stock of spare parts so that the down time of equipment can be kept within the limits specified.
- The contents of the stock and the reorder level of the inventory have to be approved by the MBMC representative.

2.2 Transportation

All necessary transportation shall be arranged and made by the Contractor at his own expense. For better communication internet facility is provided throughout the entire operation & maintenance period on his own cost.

2.3 Oil, Grease, Lubricants, Chemicals and Consumables

The Contractor has to ensure that there is always sufficient stock of 15 days of Oil, Grease, Lubricants consumables, treatment chemicals, laboratory chemicals.

and any other consumable's as required.

2.4 Electrical & Electronic Maintenance

Preventive and breakdown maintenance of with replacement of all necessary parts to keep in smooth running of:

- Panels, MCCs, starters, VFDs
- Cables, switches, control wiring
- Instruments, sensors, meters
- Rectification of faults and short circuits.
- Replacement of damaged, faulty electrical items immediately.
- Maintenance of HT/LT panels, MCC, PCC, starters, VFDs, transformers, DG sets and lighting systems and other related system.
- Periodic checking of insulation resistance, earthing resistance and cable health.
- Maintenance of power supply system including cables, bus bars, breakers, contactors, relays and meters.
- Compliance with CEA Safety Regulations, IS 732, IS 3043 and Electricity Act provisions.
- Replacement of defective electrical items including cables, glands, lugs, MCB/MCCB, contactors, relays, switches, indication lamps, meters, earthing, lighting fittings and all other related material, involving dismantling, supply, installation, testing and commissioning of approved make materials, complete as per IS/BIS standards, CEA safety regulations and CPWD/PWD specifications, as directed by the Engineer-in-Charge.
- Panel Air-Conditioned Environment: All electrical control panels, PLC/SCADA panels and MCC/PCC panels shall be installed, operated and maintained in a continuous air-conditioned environment, ensuring suitable temperature and humidity as per OEM recommendations, including operation and maintenance

of panel room air-conditioning system at all times, complete as directed by the Engineer-in-Charge.

- Replacement of damaged circuit breakers;
- Replacement of capacitors/ Installation of New Capacitors to avoid penalty
- Replacement of damaged cables

2.5 Civil Structures

- repairs to tanks, chambers, platforms, walkways and all other civil structure in plant with compound wall.
- Cleaning, painting and keep of civil structures always in well condition.
- Maintaining safe access and housekeeping.
- The total maintenance of building and all electrical, ventilation, plumbing and drainage installation in the building.
- Housekeeping and cleaning of all buildings
- Preventive and breakdown maintenance of the site water and wastewater services, cabling and earthing systems, air conditioning and the site road lighting system., The upkeep of landscaped areas, tree plantation and flower pots etc.,
- Maintenance of the communication system of the plant.
- Routine housekeeping maintenance shall be carried out in accordance with procedures.
- Normal breakdown maintenance shall be attended to within a period of 3 working days.

2.6 Supply of Spares, Consumables & Materials

This item shall include supply, storage and use of all required:

- All mechanical spares

- All Electrical materials
- All electronic parts
- All civil material
- All Lubricants, oils, greases and other necessary consumable.
- Nuts, bolts, gaskets, washers
- Chemicals and consumables required for treatment
- Tools & tackles for operation and maintenance
- All materials shall be of approved quality and as directed by the Engineer-in-Charge.

2.7 Testing, Monitoring & Reporting

- Daily in-house monitoring of process parameters.
- Regular testing of influent and treated effluent.
- Monthly testing from approved laboratory like NABL and MPCB.
- Sampling and testing of influent wastewater based on the tests and frequency desired by the MBMC'S representative and in general in accordance with the CPHEEO manual on Sewerage and Sewage Treatment.
- Sampling and testing of additional samples for the day to day O & M of the STP and as mutually agreed from time to time between the Contractor and the MBMC representative.
- MPCB or any other laboratory effluent treatment charges shall be borne by the Tenderer.
- Sampling of final treated sewage to ensure that the guarantee Parameters are as stipulated in the Bid document
- The sampling frequency to be as per relevant norms of Maharashtra pollution Control Board or higher as decided by MBMC representative. The MBMC reserves right to collect samples at random at the will of the MBMC through any agency nominated by him.
- The MBMC shall have right to seek part of sample collected by the Contractor without any prior intimation to cross check the result on random basis, however the analysis charges of such samples shall be borne by Contractor.

Maintain of:

- Daily logbooks
- Chemical and power consumption records
- Maintenance and breakdown records

2.8 Treated Effluent Quality Assurance

Ensuring treated effluent consistently meets:

- MPCB / CPCB standards
- Municipal reuse/discharge norms
- Immediate corrective actions in case of deviation.

2.9 Safety, Health & Environmental Compliance

- Compliance with all safety rules and labor laws.
- Providing PPE and safety equipment.
- Safe handling of chemicals and sludge.
- Maintaining hygienic and clean plant premises.
- The Contractor shall be responsible for safety of his staff during O & M of the plant and shall procure, provide and maintain all safety equipment necessary for satisfactory O & M such as gloves, boots, mats, safety belts, masks, respiratory system for chlorine operation, etc.

- The Contractor shall utilize awareness procedures in every element of operation and maintenance.
- The Contractor shall emphasize site safety including adoption of maintenance.

- Safe working procedures, cleanliness and care of the plant as a whole
- Accident and hazardous conditions prevention and reporting
- Shall impart safety training to all members at regular intervals, especially for new comers
- Shall provide Notice Boards and display boards at appropriate locations, detailing precautions to be taken by O & M personnel to Work in conformity to regulations and procedures and by the visitors to the plant.
- Shall notify the MBMC representative immediately if any accident occurs whether on-site or off site in which Contractor is directly involved and results thereof any injury to any person, whether directly concerned with the site or a third party. Such initial notification may be verbal and shall be followed by comprehensive report within 24 hours of the accident.
- The Contractor may refuse entry into the plant, to all personnel's including MBMC representative on grounds of safety and person not carrying proper identification.
- Personnel shall be permitted entry into the plant only on disclosing their identity and those authorized personnel including MBMC representative shall be issued identity cards with photographs by the Contractor, this also includes casual visitors who shall beissued a temporary visitors entry permit.

3.0 Improvement And Maintenance of Green Area (Gardening):

Carrying out necessary works to develop, improve and maintain green areas within and around the STP premises including cleaning of area, soil preparation, lawn development, planting of shrubs and trees (as approved), regular watering, trimming, pruning, removal of weeds, application of manure/fertilizer, replacement of dried plants, maintenance of pathways and overall upkeep to ensure a clean, green and aesthetically pleasing environment, complete with supply of required labour, tools, water, consumables and all other material.

3.1 Maintenance and Cleaning of Washrooms:

Regular cleaning, upkeep and maintenance of all washrooms/toilets at the STP including daily cleaning, washing and disinfection of floors, walls, sanitary fittings and drainage, ensuring proper water supply, lighting and hygiene at all times, complete with supply of necessary labour, cleaning materials and consumables.

3.2 Transportation & Incidental Charges

- All transportation of materials, spares, chemicals and sludge.
- Loading, unloading and handling.
- All incidental charges required for smooth operation are included in the item rate.

ITEM NO 3:- POLYMER

The contractor shall provide, supply, load, unload, store, prepare, and dose cationic polyelectrolyte (polymer) required for efficient sludge dewatering at the 13 MLD and 11 MLD SBR Sewage Treatment Plants.

The scope shall include, but not be limited to:

- Supply of approved make, high-quality cationic polymer suitable for sewage sludge dewatering.
- Transportation, loading, unloading, stacking, safe storage, and handling of polymer at site.
- Preparation of polymer solution in the polymer preparation unit as per manufacturer's recommendations.
- Continuous and optimum dosing of polymer to achieve effective sludge conditioning and maximum dewatering efficiency.
- Adjustment of polymer dosage based on sludge characteristics, MLSS, sludge concentration, and performance of sludge dewatering equipment.
- Operation, cleaning, and routine maintenance of the polymer dosing system, preparation tank, agitator, dosing pumps, pipelines, and accessories.
- Maintenance of adequate stock of polymer at site to ensure uninterrupted plant operation.
- Recording of daily polymer consumption, stock register, batch number, dosage rate, sludge quantity treated, and dewatering performance.
- Disposal of empty polymer bags/containers and housekeeping around the chemical storage and dosing area.
- All labor, tools, tackles, transportation, consumables, safety equipment (PPE), testing, incidental charges, and statutory compliances required for complete execution of the work.
- The contractor shall optimize polymer consumption while ensuring the required sludge cake dryness and filtrate quality without affecting STP performance.

ITEM NO 4:- CHLORINE GAS

The contractor shall provide, supply, load, unload, store, handle and dose chlorine gas for disinfection of treated sewage at the 13 MLD and 11 MLD SBR Sewage Treatment Plants. The work shall include all labour, equipment, tools, consumables, testing, statutory compliances and incidental charges necessary for safe and uninterrupted operation.

The scope shall include, but not be limited to:

- Supply of ISI/BIS approved chlorine gas in cylinders/tonners suitable for disinfection of treated sewage.
- Transportation, loading, unloading, safe storage and handling of chlorine cylinders/tonners at site in accordance with the Gas Cylinder Rules, PESO guidelines and other applicable statutory provisions.
- Installation, connection, disconnection and replacement of chlorine cylinders/tonners whenever required.
- Operation, monitoring and routine maintenance of chlorination systems including chlorinators, vacuum regulators, ejectors, rotameters, manifolds, valves, pipelines and all associated accessories.
- Leak testing of chlorine cylinders, pipelines and fittings before commissioning and during operation using approved methods.
- Maintaining the required chlorine dosage and residual chlorine at the outlet as as per CPCB/MPCB discharge standards.
- Maintaining adequate stock of chlorine cylinders at site to ensure uninterrupted disinfection.
- Daily recording of chlorine consumption, cylinder inventory, residual chlorine test results, dosing rate, operating hours and logbook entries.
- Safe return of empty cylinders to the supplier and maintenance of complete records thereof.
- Providing all necessary safety equipment including SCBA set, chlorine leak detection system, emergency chlorine leak arrest kit, gas masks, PPE, eye wash station, first aid box and all other safety measures required for handling chlorine gas.
- Immediate action in case of chlorine leakage or emergency and compliance with all applicable safety regulations.

- Housekeeping of the chlorine storage room and chlorination system area and proper disposal of waste generated during operation.
- Contractor is fully responsible for any accident, injury, loss of life, environmental damage or property damage arising out of improper handling, storage or operation of chlorine gas.
- Deploy trained and experienced personnel for handling chlorine gas.
- Display Safety Instructions, Emergency Contact Numbers, SOPs and MSDS prominently in the chlorine room.
- Conduct leak testing after every cylinder change and before commissioning the system.
- Ensure proper ventilation, illumination, warning signs, fencing and restricted entry in the chlorine storage area.
- Immediately attend to any chlorine leakage, inform the concerned authorities wherever required, and take all emergency measures to prevent accidents.
- Conduct periodic mock drills and safety training for all operating staff.
- Maintain all statutory safety records, inspection registers and emergency response records.
- Ensure uninterrupted availability and proper functioning of all safety equipment throughout the contract period. Failure to maintain the required safety arrangements shall be treated as a serious breach of contract and may attract penalties or termination of the contract.

ITEM NO 5:- TRANSPORTATION

The Contractor shall arrange transportation of all treatment chemicals, including Polymer, Chlorine or any other chemicals required for operation of the 13 MLD and 11 MLD SBR Sewage Treatment Plants from the manufacturer's works, authorized dealer, or designated storage location to the STP site.

The scope shall include, but not be limited to:

- Loading, transportation, unloading and stacking of chemicals at designated storage locations.
- Transportation through approved vehicles complying with all applicable safety regulations.

- Safe handling of hazardous chemicals during transit.
- Proper packing and protection to prevent leakage, damage or contamination.
- Compliance with Motor Vehicle Rules, Hazardous Chemical Transportation Rules and other statutory provisions.
- Providing trained manpower for loading and unloading.
- Arranging cranes, forklifts or lifting equipment wherever required.
- Delivery within stipulated time without affecting plant operation.
- Maintaining delivery challans, invoices, gate entries and stock records.
- Replacement of damaged or leaked material at Contractor's own cost.
- No extra payment shall be made for waiting charges, loading, unloading, toll tax, fuel, labour, insurance or incidental expenses.
- Contractor shall ensure uninterrupted availability of chemicals throughout the contract period.

ITEM NO 6:- LABORATORY CHEMICAL

The Contractor shall supply all laboratory chemicals, reagents, glassware, instruments, consumables and accessories required for operation of the laboratory of 13 MLD and 11 MLD SBR Sewage Treatment Plants.

The scope shall include, but not be limited to:

- Supply of AR grade laboratory chemicals.
- Standard solutions and reagents.
- Buffer solutions and calibration standards.
- pH indicator solutions.
- BOD, COD, TSS, MLSS, MLVSS, Ammonia, Nitrate, Phosphate, Chloride, Sulphate and other testing chemicals.
- Microbiological testing consumables wherever required.
- Glassware including beakers, conical flasks, volumetric flasks, pipettes, burettes, measuring cylinders, funnels, watch glasses, reagent bottles etc.

- Filter papers, membranes, sample bottles, gloves, tissue papers and cleaning materials.
- Distilled water, deionized water and laboratory gases if required.
- Calibration chemicals for laboratory instruments.
- Safe storage of chemicals.
- Proper labeling of all chemicals.
- Maintenance of stock registers.
- Replacement of expired chemicals before expiry.
- Disposal of expired laboratory chemicals as per applicable rules.
- Supply shall conform to CPCB, MPCB, APHA and IS Standards.
- Contractor shall ensure uninterrupted availability of all laboratory consumables.
- No additional payment shall be made for transportation, loading, unloading, taxes, storage or incidental charges.

ITEM NO 7:- SLUDGE DISPOSAL

The Contractor shall collect, load, transport and scientifically dispose of all dewatered sludge generated from the 13 MLD and 11 MLD SBR Sewage Treatment Plants throughout the contract period.

The scope shall include, but not be limited to:

- Collection of sludge from sludge drying beds, centrifuge, filter press or sludge storage area.
- Loading using labour and machinery wherever required.
- Transportation through covered vehicles/trolleys to prevent spillage.
- Disposal only at authorized locations approved by competent authorities.
- Compliance with CPCB, MPCB, Solid Waste Management Rules and applicable environmental regulations.
- Obtaining necessary permissions, passes and disposal receipts.
- Payment of tipping fees, royalty or disposal charges wherever applicable.

- Cleaning of sludge handling areas after each lifting.
- Preventing nuisance, odour and environmental pollution during transportation.
- Immediate removal of spilled sludge from roads.
- Maintaining daily records of sludge quantity generated and disposed.
- Submission of weighbridge slips, disposal receipts and vehicle movement records.
- Provision of PPE such as gloves, masks, gumboots, helmets and safety jackets to all workers.
- Compliance with labour laws and safety regulations.
- Arrangement of vehicles, trolley, fuel, labour, tools, tackles and all required equipment.
- No sludge shall remain accumulated within the STP premises without permission of the Engineer-in-Charge.
- Contractor shall be fully responsible for environmental compliance and any penalties arising from improper disposal.
- The rate shall include all labour, transportation, fuel, loading, unloading, handling, statutory approvals, tipping fees, royalties, insurance, taxes and all incidental expenses.

PENALTY CLAUSES

1. **Failure to Operate STP**

   If the Contractor fails to operate the STP continuously as per the prescribed schedule, a penalty of ₹10,000 per incident, in addition to actual losses incurred by the Corporation, shall be recovered.

2. **Treated Effluent Quality**

   The Contractor shall maintain treated effluent quality as per CPCB/MPCB consent conditions.

   If any parameter exceeds the permissible limit due to negligence:

First instance - Written Warning

Second instance - ₹10,000

Third instance - ₹25,000

Repeated violations - Corporation may terminate the contract at the Contractor's risk and cost.

Any environmental compensation imposed by MPCB due to Contractor's negligence shall be recovered from the Contractor.

3. Failure to Coordinate with OEM

Delay in informing or coordinating with the OEM for warranty repairs resulting in interruption of plant operation shall attract ₹5,000 per day.

4. Manpower Deployment

If required manpower is not deployed:

₹2,000 per person per day for operators.

₹1,500 per person per day for helpers/labour.

Repeated default may lead to additional action.

5. Laboratory Testing

Failure to carry out prescribed laboratory testing, sampling or maintain laboratory records:

₹2,000 per day.

Submission of false laboratory reports:

₹25,000 per incident.

6. **Chemical Stock**

Failure to maintain adequate stock of Polymer, Chlorine, laboratory chemicals or lubricants resulting in interruption of treatment:

₹10,000 per incident.

7. **Sludge Disposal**

Failure to lift and dispose sludge scientifically or illegal dumping:

₹10,000 per incident plus recovery of all statutory penalties imposed by authorities.

8. **Housekeeping**

Poor housekeeping, foul smell, accumulated sludge, weeds, garbage or dirty premises:

₹2,000 per observation.

9. **Safety Violations**

Failure to provide PPE, gas detector, barricading, safety signs or safe working conditions:

₹5,000 per incident.

Any accident caused due to Contractor's negligence shall be entirely the Contractor's responsibility.

10. Log Books & Records

Failure to maintain operational log books, maintenance records, chemical consumption records, power consumption records, sludge records and all other necessary records:

₹1,000 per day.

11. SCADA / Instrumentation

Failure to maintain online monitoring equipment, PLC/SCADA data or instruments due to negligence:

₹5,000 per incident.

12. Power Failure Response

Failure to operate DG set or restore operation after power failure within prescribed time:

₹5,000 per incident.

13. Attendance During Inspection

Failure to remain present during inspections by Municipal Corporation, MPCB, CPCB, Swachh Survekshan, Water Plus or any Government authority:

₹10,000 per incident.

14. Complaint Handling

Failure to attend complaints or directions issued by the Engineer-in-Charge within the prescribed time:

₹2,000 per complaint per day.

15. Damage to Equipment

Any damage caused due to negligence or improper operation shall be repaired or replaced by the Contractor at his own cost.

16. General Default Clause

For any default not specifically covered above, the Engineer-in-Charge may impose a penalty up to ₹25,000 per incident