

**CHENNAI METROPOLITAN WATER SUPPLY  
AND  
SEWERAGE BOARD**



CONTRACT NO: CNT / SEW / MWB /2031/ 2010-11

**TENDER FOR**

**OPERATION AND MAINTENANCE OF 23 MLD  
SEWAGE TREATMENT PLANT  
AT NESAPAKKAM FOR 3 YEARS**

**SUPERINTENDING ENGINEER (CONTRACTS & MONITORING)  
CHENNAI METROPOLITAN WATER SUPPLY AND SEWERAGE BOARD**

No.1, Pumping Station Road, Chintadripet, Chennai – 600 002.

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# CHENNAI METROPOLITAN WATER SUPPLY AND SEWERAGE BOARD

## (CONTRACTS AND MONITORING)

CONTRACT NO. : CNT / SEW / MWB /2031/ 2010-11

NOTICE INVITING TENDER, LETTER OF TENDER, AGREEMENT,  
SPECIFICATIONS AND PRICE SCHEDULE.

**NAME OF WORK : OPERATION AND MAINTENANCE OF 23 MLD SEWAGE  
TREATMENT PLANT AT NESAPAKKAM FOR 3 YEARS.**

### NOTE:

1. EMD shall be in the form of Demand Draft or Banker's Cheque or Pay Order drawn from Nationalised / Scheduled Bank / TNSC Bank in favour of Managing Director, CMWSS Board.
2. Tenders with conditions are liable for rejection.
3. The present tender document contains detailed estimate and price schedule. The tenderers are requested to quote the percentage variation over the departmental value in words and figures in any one of the forms in price schedule. If there is any discrepancy between words and figures, the lower among the words and figures will be taken into account.
4. Corrections if any should be made by neatly scoring out the unwanted matter and rewriting legibly. Every such correction should be attested by the full signature of the tenderer.

Price : Nil

Tender due on : 03.09.2010

Last date for sale : 02.09.2010

**SUPERINTENDING ENGINEER (C & M)**

### **Address:**

No.1, Pumping Station Road,  
Chindadripet,  
Chennai – 600002.

**CHECKLIST FOR THE GUIDANCE OF THE CONTRACTOR  
FOR FILLING UP THE FORM**

I DETAILS TO BE FILLED UP:

SECTION I PART II (LETTER OF TENDER)

1. P.12 Para 2: D.D. No. \_\_\_\_\_ Receipt No. \_\_\_\_\_  
Pay Order No. \_\_\_\_\_ Dated \_\_\_\_\_  
For Rs. \_\_\_\_\_
2. P.13 Para 2: Rs. \_\_\_\_\_
3. P.14 Para 1: This Day \_\_\_\_\_ of \_\_\_\_\_

II PLACES TO BE SIGNED

1. P.15 – at the bottom of letter of tender signature, name and address.

2. SECTION II - PART VI

SCHEDULE: To be signed.

## CONTENTS

### SECTION – I

Part – I	NOTICE INVITING TENDER	5
	INSTRUCTIONS TO TENDERERS	6
Part – II	LETTER OF TENDER	13
Part – III	AGREEMENT	16

### SECTION – II

Part – I	GENERAL STIPULATION AND CONDITIONS	19
Part – II	GUIDELINES FOR ELECTRICAL/MECHANICAL WORKS	39
Part – III	NOTES REGARDING WORKS	41
Part – IV	OBLIGATIONS OF THE BOARD	44
Part – V	MANDATORY DUTIES OF THE CONTRACTOR	45
Part – VI	SCHEDULE	48
Part – VII	LIST OF ASSETS HANDED OVER	50
ANNEX – I	SCHEDULE OF WORKS ON SPECIFIED INTERVALS	54
ANNEX – II	TASK FREQUENCIES	56
ANNEX – III	LIST OF SAFETY EQUIPMENT AND LOOSE TOOLS	60
ANNEX – IV	SAFETY MEASURES TO BE ADHERED	61
ANNEX – V	DUTIES AND RESPONSIBILITIES OF SITE ENGINEER (DEGREE HOLDER) FOR SEWAGE TREATMENT PLANT	64
ANNEX – VI	DUTIES AND RESPONSIBILITIES OF OPERATOR	65
APPENDICES 1		66
APPENDICES 2		68
APPENDICES 3		72
ANNEXURE – VII	RECOVERY TO BE MADE FOR DEFAULT	73

**CHENNAI METROPOLITAN WATER SUPPLY AND SEWERAGE  
BOARD**

**NO.1, PUMPING STATION ROAD, CHINTADRIPET, CHENNAI-600 002.**

**NOTICE INVITING TENDER  
LOCAL COMPETITIVE BIDDING**

Sealed tenders are invited from the eligible tenderers for the following works:

Sl. No	Name of Work and Contract No.	Due Date and time of bid submission	Approximate value of Tender Rs/ Lakh	E.M.D. in Rs.	Tender schedule available From - To	Eligibility	Contract Period
1.	Operation and Maintenance of 23 MLD capacity Sewage Treatment Plant at Nesapakkam for 3 years CNT/SEW/MWB/2031/2010-11	03.09.2010 up to 3.00 PM	39.00	29,500/-	12.08.2010 to 02.09.2010	Class II B and above	3 years
2.	Date & time for opening of tenders	on 03.09.2010 after 3.00 PM					
3.	Availability of Tender Schedule in person	Information & Facilitation Officer, CMWSS Board, No.1, Pumping Station Road, Chintadripet, Chennai-600002, (Telephone: 044-28451300, Extn. 227 )					
4.	Through Website	<a href="http://www.chennaietrowater.tn.nic.in">www.chennaietrowater.tn.nic.in</a> & <a href="http://www.tenders.tn.gov.in">www.tenders.tn.gov.in</a>					
5.	Cost of Tender Schedule	Free of cost. The document will also be sent by surface mail on an extra advance payment of Rs.500/- per set.					
6.	Address for information and clarifications and for receipt of tenders	Office of Superintending Engineer, Contracts & Monitoring, 4 <sup>th</sup> Floor, CMWSS Board, Chennai – 600 002 Phone No. 044-2845 1300, Extn. 253 FAX : 044-2845 4336					
7.	e-bid submission & portal	Permitted through portal <a href="http://www.tntenders.gov.in">www.tntenders.gov.in</a>					

SUPERINTENDING ENGINEER (C&M)

## **INSTRUCTIONS TO TENDERERS**

1. No alternation whatever may be made in the text of the Tender form. Any remarks or explanations should be set out in a covering letter. The form of agreement is bound up with other documents, so that the tenderers may know what their liabilities and duties are and the entire tender form should be submitted to the Board when submitting the tender.
2. Tenderers must comply with instructions contained in the notice inviting tender. They must also agree to comply with all the conditions and specifications of the Contract. Otherwise their tenders are liable for rejection.
3.
  - a) The rates quoted should be firm and no variation in rates or prices is admissible.
  - b) The rates should be quoted in Indian Rupees and payment will also be made only in Indian Rupees.
4. The tenderer shall be solely responsible for the payment of the Central or State Govt. Taxes and levies etc. and the rates for the various items of work shall remain unaltered by any change that may be made from time to time in the rate at which such taxes and levies are payable. If any changes in the prevailing tax component, increase in taxes will be borne by the Board. If any decrease in tax component the same will be deducted from the contractor's payment.
- 5.0 This tender has been called for in the percentage tender system. In the work schedule, the departmental rates and the total value of the work is also furnished towards Operation & Maintenance of Nesapakkam Sewage Treatment Plant.
- 5.1 The tenderers are requested to quote the percentage variation over the total departmental value, which will be applicable for all items of works, individually and uniformly at which they are willing to execute the works, in the following format. In case any discrepancy / correction are found between figures and words furnished for the percentage, then the LOWER percentage among them ALONE will be taken as correct.

6. A certificate of Income-Tax Clearance from the income tax authorities as required in Govt. Order No.1867, Finance Budget General, Dt: 16.08.1949 in the form appended there in will have to be furnished by the successful tenderer within 14 days from the date of receipt of communication of the acceptance of his tender by the Board or at the time of execution of agreement whichever is earlier.
7. The Tenderers while submitting their tender should furnish their sales tax registration certificate number in a separate letter along with the tender. They must also produce the sale tax clearance certificate from the Commercial Tax Department of this State before execution of the agreement.
8. As this is purely a Maintenance work, Joint venture will not be accepted.
9. The tender must be accompanied by a bank draft or pay order payable at CHENNAI drawn on a Nationalized bank in favour of "The Managing Director, CMWSSB" for Rs.29,500/- otherwise, the tender will not be considered. EMD Should be enclosed in a separate cover superscribed as "E.M.D. for Contract No. CNT / SEW / MWB /2031/ 2010, due at 3.00 P.M on 03.09.201. Tender not accompanied by a separate cover containing E.M.D in the specified form, will not be opened. The EMD shall not be kept in the cover containing the tender document.
10. The tenderer shall be deemed to have inspected and examined the site and its surroundings and to have satisfied himself before submitting his tender as to the nature of the site, the extend and nature of the work and men and materials necessary for the completion of the work, the means of communication with and access to the site, the accommodation he may require and in general to have obtained for himself all necessary information (subject as above mentioned) as to the risks, contingencies and all other circumstances influencing or affecting his tender.

11. Any further information that may be required can be obtained from the S.E(C&M) on any working day during working hours.

12. The Tender shall be valid for acceptance for a period of 90 days after the due date for the receipt of tenders.

13. (a) The attention of the tenderer is drawn to the following declaration, which forms part of the letter of tender to be signed by the tenderer.

I/We agree that I/We will not withdraw the tender during the period that will be required for intimation of acceptance or non-acceptance as stipulated in Clauses 8 above during such extended period as agreed to by me/us, such period to date from the last date by which Tenders are due to be submitted to the Board and if I/we do so withdraw, I/We shall forfeit the EMD to the Board.

(b) Failure to sign the letter of tender will result in the rejection of the tender.

14. No allowances shall be claimed by or made to the tenderer whose rates may be accepted for any error in rates of whatever description that may be discovered after his tender is sent in.

15. The Tenderer or his Authorized Agent is expected to be present at the time of opening tenders. The tender receiving Officer will on opening each tender prepare a statement of the attested and unattested corrections therein and hand it over to the tenderer concerned and initial all such corrections in the presence of the tenderer. If any tenderer or his agent is not present at that time, when the tender receiving officer on opening the tender of the absentee tenderer make out a statement of the unattested corrections and communicate them to him which he or they shall accept without any question whatsoever.

16. The Board reserves to itself the right to reject all or any of the Tenders or to accept any tender or part thereof without assigning any reason for so doing.

17. The acceptance of the tender by the Board shall be deemed to result in and constitute a valid and concluded contract binding on the tenderer notwithstanding the non-execution of the Contract Agreement.

18. The Board will not accept letters authorizing the Board to adjust amounts towards EMD, S.D either from pending bills of the tenderers or from the deposits held by the Board for other works.

19. The Successful tenderer, within 14 days after notification of the acceptance of his tender by the Board shall deposit an amount computed at the rates stated below in the shape of small savings scripts / deposits / accounts valid for the required contract period and pledged in favour of “The Managing Director, CMWSSB”, as security deposit for the due fulfillment of the contract. The Small savings scripts / deposits/ accounts to be pledged shall have the necessary transfer endorsement of the post office concerned; bank guarantee is not generally acceptable towards SD. In addition to the above, the successful tenderer shall deposit the S.D. in the form of (1) DD and (2) FD for the required period, obtained from Nationalised bank / Scheduled Bank / TNSC Bank in favour of M.D., CMWSSB.

- a). For contracts with any plus percentage and upto minus 5% over departmental value, a deposit of 2% of the contract value.
- b). For contacts between (-) 5% and (-) 15% - a deposit of 4% of the contract value.
- c). For contracts which are above (-) 15%, a deposit of 5% of the contract value.

20. The Contractor shall furnish a with O&M of STP experience of minimum 1 year for skilled personnel proposed to be employed by him with their name, educational qualification and experience in years at the time of taking over the operation activities of the plant. The

Contractor shall change any body from this list with person of equal or higher qualification and experience after obtaining specific approval of the Engineer incharge of the plant.

21. The EMD of the unsuccessful tenderer will be returned to them as soon as possible after the final disposal of Tenders. The EMD of the successful tenderer will be returned to him after he deposits his Security Deposit and executes the agreement within the required time.

22. The successful tenderer shall pay all stamp charges on the Contract.

23. Should the successful tenderer fail to furnish such security or execute the contract agreement within the time specified for the purpose in the notice inviting tender required in Clause 15 above his EMD is liable to be forfeited to the Board and concluded that the contract in such cases be considered as having been rejected or abandoned by him and he may also be liable for damages, cost, charges and expenses arising from or for reason of such failure.

24. It must be clearly understood that the prices quoted in the tender are to include everything required to be done by the conditions of Contract and specifications or by any drawings therein referred to and also all such works as are necessary for therein referred to and also all such works as are necessary for the proper completion of the contract though special mention thereof may have been omitted in the specification or drawings.

25. If the Board consider that any tender is unworkably low or very exorbitant indicating that tenderer has not understood the implications in the Contract or is attempting either to frustrate the object of the Board or exploit the Board, it can debar such tenderer permanently or for such period as it may deem fit from entering into any contract with the Board.

26. Tenderer is referred to the description of work given in the accompanying specifications which is to be read as part of the schedules. The rates and prices entered in the schedules are to cover all the works and details described in the specification or shown in the drawings and it is to be distinctly understood that no claim will be entertained which is based on that circumstances that works may be described in the specifications to which apparently no corresponding item is given in the schedules.

27. Should the Contractor fail to undertake to commence the work within 7 days from the date of handing over the site by the Board, the security deposit will be forfeited and the Contract is liable to be cancelled or terminated and the Board may thereupon at such terms as it may think fit, arrange through any other person or person to undertake or perform, provide, execute and do all works, materials or matter and things described in the tender schedule at the risk and cost of the Contractor.

**28. The Operation and Maintenance of 23 MLD Sewage Treatment Plant at Nesapakkam shall be for a period of 3 years from the date of handing over the operation activities.**

29. Whenever detailed specifications for various items of work included in this Contract are not found in the tender TNDSS which is now revised and called as Tamil Nadu Building Practice (TNBP) or the relevant Indian Standard specifications or code of practice or the instructions and requirements of the Engineering shall apply in that order.

30. Tenderers should give full postal address of their office in their tender. The delivery at the above named place or positing in a post box regularly maintained by the postal department or sending by letter registered for acknowledgement of any notice, letter or other communication to the tenderer or contractor shall be deemed sufficient service thereof upon the tenderer or Contractor in writing. The address may be changed at any time by an

instrument executed by the tenderer or contractor and delivered to the Contract Engineer of the Board.

Nothing contained in the agreement and its contract conditions shall be deemed to preclude or render in operative the service of any notice, letter or communication upon the Contractor personally.

**SECTION – I**

**PART – II**

**CHENNAI METROPOLITAN WATER SUPPLY AND SEWERAGE BOARD**

**(CONTRACTS AND MONITORING WING)**

Contract No. : CNT / SEW / MWB /2031/ 2010

Name of work : OPERATION AND MAINTENANCE OF 23 MLD SEWAGE  
TREATMENT PLANT AT NESAPAKKAM FOR 3 YEARS.

**LETTER OF TENDER**

To be delivered to the SUPERINTENDING ENGINEER (C& M) Chennai  
Metropolitan Water Supply and Sewerage Board at or before 3.00 P.M.

On \_\_\_\_\_ Day of \_\_\_\_\_ 2010

To

The Managing Director  
Chennai Metropolitan Water Supply & Sewerage Board,  
Chennai – 600 002.

Sir,

I/We the undersigned do hereby tender and undertake to perform, provide and execute and do all the works, matters and things described or mentioned in the Schedule hereto annexed and the specifications thereto and the drawings therein referred to (which have been produced to and carefully examined by me/us) in strict accordance with and under and subject to the terms, provisions and conditions set forth or mentioned in the said schedule, specifications and the drawings therein referred to at the rates given and as stated in the Bills of quantities.

I/We herewith enclose D.D.No. ....or pay order no. .... or Receipt No. .... dated .....for having remitted Rs..... into the Board's Cash Section as a guarantee for the due fulfillment of my/our tender, and if successful, undertake and agree to forward to the Board within fourteen days after the notification of the acceptance by the Board of this tender has been received by me/us, the sum as demanded in the Form and manner required as security for the due fulfillment of my/our contract.

I/we undertake and agree that I/We will not withdraw this tender during the period that will be required for intimation of acceptance or non-acceptance as stipulated in Clause.15 of the Notice inviting tender or during such extended period as agreed to by me/us, such period to date from the last date by which tenders are due to be submitted to the Board and if I/We do so withdraw, I/We shall forfeit the Earnest Money Deposit to the Board.

I/We further undertake to produce the Income-tax Clearance Certificate and the certificate and the Sales Tax Clearance Certificate from the Commercial Tax Department of this State and agree to execute at my/our cost the agreement attached and to sign the plans therein referred to within 14 days after the notification of the acceptance of my/our tender has been received by me/us. In the event of my/our failing to make the Security Deposit or to execute the agreement in the said manner and sign the plans within the time specified for the purpose, the sum of Rs. .... accompanying this tender shall be forfeited to the Board and this concluded contract shall in such case be considered, as having been cancelled or terminated and you may thereupon at such time or times, in such manner and so such terms as you may think fit, arrange either departmentally or by any other person or persons to carry out the works and provide, execute and do all works, materials, matters and things described

or mentioned herein and I/We agree to be liable irrespective of the forfeiture aforesaid for all damages, losses, costs, charges and expanses arising from or by reason of such failure and arrangements.

I/We undertake to assume full responsibility for the stability and soundness of the structures that will be entrusted to me/us as per this contract.

I/We also undertake to do all extra or varied works which may be ordered as part of this contract upon the terms provided for in the conditions and specifications.

In case my/our tender for **Operation and Maintenance of 23 MLD Sewage Treatment Plant at Nesapakkam for 3 years** is accepted, I/We agree and guarantee to commence the said Operation and Maintenance of the above works within a period of 7 days and continue it for a period of 36 months from the date on which the plant installations are handed over to me/us. I/We also agree that time is the essence of contract. I/We have actually inspected the Plant installations and have tendered for the works after such inspections.

As witness my/our hand this .....day of .....2010.

Signature:

Name and Address:

**SECTION – I**

**PART – III**

**CHENNAI METROPOLITAN WATER SUPPLY AND SEWERAGE BOARD  
(CONTRACT SECTION)**

**AGREEMENT**

**ARTICLES OF A AGREEMENT** made this \_\_\_\_\_ Day of \_\_\_\_\_  
Between \_\_\_\_\_ (There in after  
referred to as ‘the contractor’) on the one part and the Metropolitan Water Supply and  
Sewerage Board of the Chennai Metropolitan Area (there in after called ‘the Board,.) on the  
other part:

WHEREAS the contractor delivered to the Board the tender attached dated \_\_\_\_\_  
day of \_\_\_\_\_ Two thousand and Seven here by the contractor offered and the  
undertook to carry out the works specified under this contract and accessory work in the work  
of Operation and Maintenance of Sewage Treatment Plant at Nesapakkam for 3 years at  
Chennai in the state of Tamil Nadu in India, and provide the works, materials, matters and  
things described or mentioned in these presents at the prices set forth in the schedule  
annexed to such tender and might be ordered as part of the Contract on the terms provided  
for in the conditions and specifications here to annexed and the Board accepted such tender in  
pursuance whereof the parties here to have entered in to this contract for a contract value of  
Rs.....

AND WHEREAS the contractor in accordance with the terms of the said Tender has  
deposited in the Office of the Board as Security for the due and faithful performance by the  
Contractor of this contract, the Sum of Rs \_\_\_\_\_

NOW THESE PRESENTS WITNESS THAT for the consideration here in after mentioned the Contractor covenants and agrees with Board and their successors in manner following that is to say: that the Contractor shall and will within the time specified in his letter of tender thoroughly and efficiently and in a good works and workman like manner perform, provide, execute and so all the works, materials, matters or things incidental to or necessary for the entire completion of works specified under this contract and necessary works including all works shown in the drawings herein after referee to or described or set form in the sad Specification, and schedule hereto annexed and in accordance with such further drawings and instructions as the superintending Engineer of the Board or other Engineer duly authorized in that behalf (here in after and in the annexed documents referred to as the Engineer) shall at any time in accordance with the said Schedule (Bills of Quantities) and specifications provided and give altogether with any alternations in the works or additions thereto, in the time and manner in such schedule (bills of quantities) and specifications stipulated to the entire satisfaction of the Engineer, and the Board for themselves and their successors covenant and agree with the Contractor that during the Progress of the works and on the completion of the contract to the satisfaction of the Engineer, the Board shall and will from time to time on receiving the certificates in writing of the Engineer pay to the contractor according to such certificates and the terms of this contractor according to such certificates and the terms of this contract the price or sum mentioned in such certificates as due to the contractor under the terms of this Contract subject nevertheless to deductions or additions there to or there from which may be lawfully made under terms of this contract .

IT IS HEREBY MUTUALLY AGREED AND DECLARED AS FOLLOWS:

- a. All certificates or notices or orders for time or for extra or varied or altered works which are to be the subject of an extra or varied charge shall be in writing whether so described in the Contract or not and unless in writing shall not be valid or binding or be of any effect what so Ever.
- b. The term 'Contract' shall include these presents and the Notice inviting Tender, Letter of Tender, General conditions, schedule (Bills of Quantities) and specifications here to be annexed and the plans and drawings herein and hereinafter referred to:

IN WITNESS WHERE OF THE CONTRACTOR \_\_\_\_\_

and the Contracts Engineer on behalf of the Board have caused their common seal to be affixed the day and year first above written.

Signed, sealed and delivered

By the said contractor in the presence of:

Signature of contractor

Name and Seal

Name and Designation of witness:

In Witness whereof I here unto affix my signature.

CONTRACTS ENGINEER – I  
CMWSS Board,  
Chennai – 600 002.

## **SECTION - II**

### **PART – I**

#### **GENERAL STIPULATIONS AND CONDITIONS**

##### **1. INTERPRETATION**

In this Contract the following works shall be understood as having the meanings herein assigned to them.

- a) “The Board” means the Chennai Metropolitan Water Supply and Sewerage Board, a statutory body constituted under Chennai Metropolitan Water Supply and Sewerage Act 1978 having its office at No.1, Pumping Station Road. Chindatripet, Chennai – 600 002 and any Officer duly authorized by this Board to act on its behalf.
- b) Contractor means the persons or firm or company contracting for the work specified including his or their executors or administrators or legal representatives or successors.
- c) Engineer means Superintending engineer or any other Engineer appointed from time to time by the Board to such in connection with these works. Whenever the work is specified to be done or material supplied to the satisfaction of the Engineer it shall be taken as including his properly authorised Assistants and duly Authorised Representatives.
- d) Works means Operation and Maintenance of the Sewage Treatment Plant at Nesapakkam.

##### **2. WORKS COMPRISED IN THE CONTRACT**

This Contract comprises the Operation and Maintenance of 23 MLD Sewage Treatment Plant for 3 years at Nesapakkam described or mentioned in these specifications and in the schedule hereto, annexed and all extra works which may be ordered under the powers herein contained. The specifications, schedules etc., are to

be considered as explanatory of each other and no advantage shall be taken if any omission in any these documents.

### **3. DISCREPANCIES**

Should any discrepancy appear in any of the documents included in the contract or between different parts of the same document or any ambiguity or insufficiency or information, the contractor shall point-out the same to the Engineer in writing and receive his instructions, explanation or decision in the matter before beginning the work in question.

### **4. OMISSIONS**

In the event of anything reasonably necessary or proper to the due and complete performance of the work (of which the Engineer shall be sole judge) being omitted to be shown or described in the specifications and schedules the contractor shall notwithstanding execute and provide at the rates noted in the bills all such omitted works and things as if they had been severally shown and described and according to the directions of the Engineer and to his satisfaction.

### **5. SCHEDULE (BILLS OF QUANTITIES)**

The Contractor shall not be held responsible for the accuracy of the schedules here to attached but only for the accuracy of the prices, amounts and totals there in appearing. The rate for each item of the work in the schedule shall be inclusive of the costs and charges of all material, labour, tools and plant necessary for the full and complete execution of the work as described in the specification and schedule unless otherwise specified and for the due fulfilment of all the requirements relating thereto as specified in the contract. If any error, omission or misstatement shall be discovered in the said quantities the same shall not vitiate the contract for release the contractor from the execution and completion of whole or any part of the said works or from any

of the obligations or liabilities of the contractor under this contract or entitle the contractor to any damages or compensation from the Board.

#### **6. PREPARATION OF CERTIFICATES**

In preparing the interim or final certificates of payment to the Contractor the Engineer shall take into account the total included in this Contract as set out in the priced bills and should it appear after measurement that these works have been exceeded, he shall certify for the amount so executed in excess at the several appropriate prices or rates in the said bills of quantities.

#### **7. NET MEASUREMENT**

Should the final measurement of work show that the various works executed are less than those set out in the bills the Engineer shall in like manner deduct at appropriate rates the value of such difference from the total sum of the Contract.

#### **8. CONTRACT GENERAL EXPLANATION**

The work under this contract and every addition, alternation or deviation directed to be executed under this contract or that may be necessary or proper to be done in order to perfect and complete the same, shall be executed by the contractor in the best and most substantial and work man like manner, with materials of the best and approved quality of their respective kinds, according to the particular contained in or implied by the specifications and schedules hereto attached or such other additional particulars explanations as may be given or approved by the Engineer, according to the instructions and directions from time to time given by the Engineer. The Engineer shall have full liberty from time to time and at all times to inspect, examine and test the materials and workmanship and may at any time reject any or all of the materials or workmanship which may seem defective or unfit or improper for the several purposes they are applied or not in accordance with the said bills, specifications instructions or directions.

## **9. CONTRACTOR'S LIABILITY**

The contractor shall be absolutely and solely responsible for any and all kinds of injuries or damages to person and property of any description whatever may be caused by or result from the execution of the works, whether these may have been carried out skillfully and carefully and strictly in conformity with the provisions of the specifications or not.

## **10. POWER TO VARY WORK**

The description of work required to be executed by the Contractor are set forth in the specification, schedules. But the Engineer reserves the power to vary, extend or diminish the quantities of work, change or decreases the size, quality, description, character or kind of any work, or order the Contractor to execute the works or any part thereof, by day or night work or to add to or take from the work included in the contract as he may think proper without violating the Contract and the Contractor shall not have any claim upon the Board for any such variation, extension, diminution, alteration, increase, change or decrease other than for the work actually done, calculated according to the prices tendered and accepted in this contract.

## **11. EXTRA OR VARIED WORKS**

If the Engineer uses the power reserved to him under Clause 10 above, an order, an order in writing signed by the Engineer, shall be given to the Contractor to that effect and any works executed under such order shall be paid for at the rates set forth in the schedule of prices where such rates in the opinion of the Engineer apply but if such rates do not apply; a rate or price shall be agreed upon but if such rates do not apply; a rate or price shall be agreed upon between the Engineer and the Contractor in writing and failing their agreement, the Contractor shall forth with execute such order and the Engineer shall determine the rate or price at which the work shall be paid of.

## **12. CONTRACTOR TO BE RESPONSIBLE FOR ALL TRESSPASSES AND DAMAGES**

In the event of accidents to any person including employees of Board on duty, damages to property, trespass on land, injury to cattle, horses or other animals or damage injury of any description to any person or thing arising out of the execution of the works, the contractor shall be held responsible for and make good the same and shall indemnify the Board from all claims or expenses on account thereof and if the Board has to pay any money in respect thereof the sum so paid and the costs incurred by the Board shall be charged to the Contractor as so much money paid to him on account of his contract and the Contractor shall not be liberty to dispute or question the right of the Board to make such payment for him or on his account not withstanding the same may have been made without his consent of authority and decision or determination in law or otherwise to the contract not withstanding. The Board shall not be liable to or for in respect of any damages or compensation or claim therefore, under any Act for the time being in force or common law because or by reason or in consequences of any accident or injuries to workmen or others in the employment of the Contractor or any sub Contractor or any a person acting under him or on his behalf or the Staff/person employed by the Board for supervision of the work under his contract and the contractor shall save the Board harmless and indemnify in respect thereof and any all costs and expenses incident there to consequent thereon.

The Contractor shall confirm to and comply with the regulations and by-laws of the State or Central government or the Board and of all other local authorities such as Corporation of Chennai, The TamilNadu Electricity System, The Chief electrical Inspector to Government of TamilNadu, The Government Customs and Police Departments, Fire Services, the provisions contained in the various Labour Acts

enacted by the State Legislature and Central Parliament in force and rules made there under including those under Minimum Wages Act, Factories Act, The Indian Electricity Act and rules framed under it, Workmen Compensation Act, Provident Fund Regulations Act, Employees Provident Fund Act, Factories Act, The Indian Electricity Act and rules framed under it, Workmen Compensation Act, Provident Fund Regulations Act, Employees Provident Fund Act 1961 and scheme made under the said Act, Healthy and Sanitary Arrangement for workers etc., and the Contract Labour(Regular and Abolition ) Central Act 1970 and the Contracts (Regulation and Abolition) Central Rules 1971 etc; for Welfare and protection of works, workers or for the safety of the public and other insurance provisions.

The Board shall not be liable for failure of the Contractor in conforming to the provisions of the Act, Rule and Regulation etc., referred to in the above Para and in case of any contravention of the provisions of the Acts, Rules and Regulations etc. the Contractor shall keep the Board indemnified against any loss, cost and damages in the event of any action being taken for contravention.

### **13. ACCESS TO WORK**

The Contractor shall inform himself of the number and nature of the existing road and cart tracks available for access to the site of the work and make due provision in the rate for any difficulty involved in carting labours and materials.

### **14. TEST**

Every part of the works and all the materials to be used therein shall be subjected to such tests from time to time during the execution of the work as the Engineer may direct and the whole of such tests shall in all cases be made at the Contractor's sole expense.

## **15. WORKS UNDER THE CONTROL OF THE ENGINEER WHO MAY REJECT MATERIALS OR WORKMANSHIP**

The work shall be carried on the completed under the exclusive control direction and supervision and to the satisfaction of the Engineer. The Engineer shall likewise have full power to reject or condemn any workmanship or materials that he may deem unsuitable. In case of any workshop of materials being rejected by the Engineer, the Contractor shall immediately remove and replace the same to the satisfaction of the Engineer or the Engineer is hereby authorise to remove and replace the same, deducting the value of the work rejected or material removed or the cost of replacing the same, as he may think proper, from any amount due or that may become due to the Contractor.

## **16. MAINTENANCE STAFF PATTERN**

- i) The Contractor shall give or provide all necessary superintendence during the execution of the works and as long thereafter as the Engineer may consider necessary. Such superintendence shall be given by sufficient person having adequate knowledge of the operations to be carried out (including the methods and techniques required, the hazards likely to be encountered and methods of preventing accidents) as may be requisite for the satisfactory construction of the works.
- ii) The employment of technical staff and No. of labour staff per shift and the rate of penalty for the failure of the Contractor to employ the technical staff and labour staff for the work be as indicated below:

Class of the Treatment Plant	Scale of Employment of minimum Technical staff and field workers	Penalty
H.T 3 shift	<p><b>TECHNICAL STAFF</b></p> <p>(I) One Technical Assistant Grade-I B.E (Electrical) or equivalent degree with one year experience.</p> <p>(II) 5 Nos. of Technical Assistant Grade-II with a min. qualification of diploma in Electrical Engg. awarded by the State Board of Technical Education and Training or its Equivalent.</p> <p><b>FIELD WORKERS</b></p> <p>(III) 4 Nos. of skilled Field workers to be posted in each shift</p>	<p>Rs.500/- per Day for each person.</p> <p>Rs.300/- per Day for each person</p> <p>Rs.100/- per Day for each person.</p>

- iii) The above Technical Assistants, and Field workers should be employed in three shifts as conveniently as possible. One of the Technical Assistant should possess 'C' certificate issued by CEIG for maintaining the electrical system in the Plant.

#### iv) SKILLED WORKMEN TO BE EMPLOYED

The contractor shall employ only competent and skilled persons to do the work as stated.

The contractor shall furnish a list of skilled personnel proposed to be employed by him with their name, educational qualification and experience in years before starting the work. The list shall change with any of the persons only with persons of equal or higher qualification and experience after obtaining prior approval of the Engineer.

Whenever the Engineer has to inform him in writing that any person on the work is in his opinion unsatisfactory or incompetent or unfaithful or dishonest, untruthful or disorderly or otherwise unsuitable such person shall be discharged from the work and shall not be employed again on it.

v) In the event of the penalties accrued exceeds 10% of the contract value, the contract will be terminated.

#### **17. ORDER BOOK**

An Order book will be kept by the Junior Engineer / Asst. Engineer-in-Charge at the site of works, orders entered in this book by the Engineer, Executive Engineer, Asst. Executive Engineer, Asst. Engineer or Junior Engineer shall be held to have been formally communicated to the Contractor. The Asst. Engineer or Junior Engineer will sign each order as it is entered and will hand over the duplicate to the Contractor or his agent, who shall sign the original in acknowledgement of having received the order.

#### **18. EXCLUDED MATTER**

It is to be distinctly understood that the specifications are to receive their strict literal interpretations and that the works are in all respects to be carried out in accordance with them to the satisfaction of the Engineer. The decision, opinion certificate of

valuation of the Engineer with respect to all or any of the following matters shall be final and without appeal.

- a. The quality of the work carried out or materials supplied by the Contractor, and
- b. Any requirements of the Engineer under Clause 21.

#### **19. BOARD MAY OCCUPY THE SITE AND EMPLOY OTHER CONTRACTORS**

The Board expressly reserve to themselves the right to occupy for their own purposes of whatever kind, at writing to the Contractor require, any portions of the site of the works whether the works to be executed thereon be commenced or be in progress or completed and to employ thereon be agents and the workmen other than the Contractor in the exertion of matter not the subjects of the contract and the Contractor shall not obstruct such agents and workmen, but without extra charge and without relief from any liabilities or responsibilities incurred under the Contract shall allow and provide them unmolested access thereto and such facilities as in the judgment of the Engineer may, by him be reasonably demanded.

#### **20. COMMENCEMENT OF WORK AND RATE OF PROGRESS**

The Contractor may commence, execute and complete with such expedition as the engineer shall require and in a manner satisfactory to the Engineer all works for which he accepted orders.

#### **21. ABSENCE OF THE ENGINEER**

If and so often as it may happen that the Engineer shall be absent from the works for any cause whatsoever the Executive Engineer/STP(S) shall act as the Engineer during his absence or until the Board shall appoint some other person to act as such Engineer and Executive Engineer or other person appointed as a foresaid as the case may be shall during the said absences of the Engineers, have all the powers and duties relating to all the matters and things in connection with the works or any disputes and

difference arising there from or in any connection there with as are conferred on the Engineer by virtue of his contract

## **22. NIGHT WORK**

The works shall without extra charges be carried on day and night without intermission.

## **23. MATERIALS, IMPLEMENTS AND LABOUR PROVIDED**

Expected for such materials as are herein stated to be supplied by the Board, the Contractor shall at his cost and charges furnish all materials and labour and everything necessary for the full complete performance of this Contract.

## **24. ENGINEER TO HAVE RIGHT TO INSPECT PLACES FROM WHERE MATERIALS ARE OBTAINED**

All places wherein any materials are being made or obtained for the works and the whole of the process connected there with and all the other operations of the Contractor or any authorised sub-contractor, manufacturer or tradesman shall be open to the inspection and control of the Engineer and all person authorised by him at all times. The Engineer in his discretion shall have the right for replacement of Contractor's staff who found to be unfit for discharge of the duties.

## **25. MATERIALS AND WORKMANSHIP INFERIOR WORK TO BE AMENDED PROCEEDING ON REFUSAL**

If any materials bought upon the site of works or to the places where any operations have been or are being carried out in connection with or for the purposes of the works, be in the judgment of the Engineer, of an inferior or improper description or improper to be used in the works, the said materials or workmanship shall where required by the said Officer be removed or amended by the contractor forthwith or within such period or periods as the said Officer may direct. In case of each and every breach by the Contractor of this Clause, the Engineer is hereby authorised to remove or cause to

be removed, the materials and workmanship so objected to or any part thereof, and replace the same with such other materials and workmanship as shall be satisfactory to him and there upon the Contractor or shall on demand repay to the Board the expense incurred thereby or to which the Board may be put or be liable in connection there with, the amount thereof to be certified by the Engineer whose certificate shall be final.

**26. CONTRACTOR NOT TO OCCUPY LAND ETC. AFTER NOTICE FROM THE ENGINEER**

In no case, shall the contractor continue to use or occupy or allow to be used or occupied any land or property either for the deposit of materials or Plant or for any purpose whatever after written notice from the Engineer shall have been addressed to the Contractor at his usual or last known place or abode or business and sent through the post offices or other mode of delivery requiring the Contractor to remove or cause to be remove do all such materials or plant from any such land or property as aforesaid or to fix up vacant possession of such land or property to the Engineer and should any such materials or Plant remain upon any such land or property or shall any such land or property remain occupied or be used after such notice for any purpose whatsoever as aforesaid, then and in every such case and so often as the same shall happen the Contractor shall forfeit and on demand pay to the Board the sum of Rs.1,000/-(One Thousand Only) per day as and for liquidated and ascertained damages for each and every day during which the said lands or property are so used and occupied as aforesaid from the time such notice has been given.

**27. RESPONSIBILITY FOR ACCIDENTS, DAMAGES ETC.**

The care of the whole of the permanent works shall remain with the contractor who shall be responsible for all accidents or damages from whatever cause arising and chargeable for anything that may be stolen, removed destroyed or damaged to

whomsoever belonging and also for making good all defects and damages to the said works or to any property adjoining or any cause whatever whether such damages to the said works or to any property adjoining or any cause whatever whether such damage or defects were occasioned by the negligence of the Contractor or not or may be or might have been discovered during the progress of the work so or in consequences thereof, or shall appear to be known after the completion whereof or whether payment may wholly or partially have been made or the works approved as supposed to have been properly done and no certificate of approval of any works by any officers or members of the Board against that Contractor or be considered or held as at all conclusive as to the sufficient of any works or materials.

## **28. SUSPENSION OF PROGRESS**

The Contractor shall without recompense claim or demand, delay or suspend the progress of the works or any part thereof, if and when and so often as required by the Engineer and for such time or times as may in the judgment of the Engineer be necessary for the purposes or advantages of the undertaking and shall whenever directed by the Engineer and upon all needful occasions whether directed or not at the Contractor's expense properly cover down and secure so much of the works as may be liable to the sustain damage from whether or any other cause and shall at all times and forthwith when required properly make good to the satisfaction of the Engineer all damages or injury which such works or any part thereof may have sustained.

## **29. RECOVERY ETC. OF MONEY PAYABLE TO CMWSSB**

All losses, costs damages and expenses and other money payable to the Board by the Contractor under any stipulation in this Contract, may be retained out of any money then due or which may subsequently become due from the Board to the Contractor under this or any other contract or otherwise howsoever and incase such money then due or to become due to the Contractor by damages and other money payable to the

Board by the Contractor it shall be lawful for the Managing Director of the Board without any further consent on the part of the Contractor to sell and dispose of any or all of the Govt. promissory notes or securities deposited with the Board by the Contractor as aforesaid and with and out of the proceeds of such sale, after payment of all expenses connected therewith or reimburse and pay to the Board all such losses costs, damages and expenses and other money payable to the Board by the Contractor and in case such proceeds of sale of the said Govt. Promissory notes or securities shall be insufficient for such purpose then and in that case, shall be lawful for the Board to recover the residual thereof. If necessary by legal proceedings against the Contractor.

**30. CMWSSB MAY TERMINATE THE CONTRACT IN CASE OF INSOLVENCY OR WANT OF DUE DILIGENCE**

Should the Contractor during the continuance of the Contract did or become bankrupt or insolvent or go into liquidation or should he suspend payment or compound with his creditors or from any other cause wherever become unable or fail to carry on the contract with efficiency or should he not progress with any portion of the work assigned to him in the program given by the Engineer from time to time in the manner intended by the Contract or not have work ready for delivery in conformity with the terms of the Contract or should his preparation for commencement and his subsequent rate of progress be slow from any cause whatever that in the opinion of the Engineer or his representative he shall be unable to carry out the work by the specified period or should he be unable to carry out the work by the specified period or should he reuse or the terms of the Contract, the Board respect act contrary to the terms of the Contract, the Board shall have power to declare the Contract at an end in which case the Contractor shall only be paid for such portion of the work as shall have been actually delivered in serviceable condition at the date of such declaration after due deduction of any sum that may be leviable under this

Contract. The Contractor shall in addition be liable to pay to the Board or the Board at their option shall be entitled to further deduct the amount of all losses, damages or expenses (including any excess difference between the Contract or such portions thereof as may not have been delivered at the date of such declaration as aforesaid and the price which the Board may have to pay for the similar work provided in lieu of such portion as may not have been so delivered) which the Board may be put to or sustain by reason of or in consequence of the Contractor's breach of contract. The above liability shall be in addition to forfeiture of the retention money and the security deposit specified in Clause 34 hereunder.

### **31. MEASUREMENT OF WORK**

The work will be measured by the A.E /J.E (O&M) and monthly payment may be made based on the monthly rate as per the agreement and based on the satisfactory compliance of the contract as per the schedule in the agreement. The Contractor will be at liberty to schedule in the agreement. The Contractor will be at liberty to accompany the A.E/J.E (O&M) in order that they may agree on measurement but should be neglect to do so, the measurement as recorded by the said Officials shall be taken as final and conclusive.

### **32. CERTIFICATES**

So long as he is satisfied with the works and with the manner in which they are being carried out, the Engineer shall subject to the provisions herein contained, certify each month payments on account based on the actual work executed by the Contractor calculated according to the prices in the schedule hereto attached and measured in accordance with the provision contained herein and final certificate will be issued except for work which has been completely finished.

### **33. PAYMENTS & RETENTION**

Payments will be made by the Board to the extent of 95 percent of the value of the finished work done by the Contractor on bills to be prepared and submitted by him for the work done for every month and that said bills are certified for and passed for payment by the Engineer or by any person appointed by the Board for this purposes subject nevertheless to any fines deducted cost or charge on the Contractor to be made there from as provided for herein. The balance of 5% of such bills will be retained in the hands of the Board without interest and this amount together with the security deposited by the Contractor for the due fulfillment of this Contract will be forfeited to the Board wholly or in a part at the discretion of the Engineer if in his option the contractor fails to comply with the contract requirements 5% of the total value of works executed by the Contractor less deduction if any will be paid to the contractor along with final bill.

### **34. LIMITATION OF CERTIFICATES**

No certificates made by the Engineer or other person appointed as aforesaid upon any bill submitted by the Contractor be taken or deemed as certifying that the Contractor has duly executed his contract or any portion thereof and no certificate thereof given by the Contractor of any obligation he would have been under, in the absence of such certificate, but the certificate given by the Engineer or other Officer aforesaid shall be deemed to mean no more than that at the time such certificate is given, the Engineer or other Officer aforesaid believed that the Contractor had work other than temporary such certificate. No payment or certificate shall protect or be deemed to shall at any time appear that the works or any part of them have not been executed in accordance with this contract.

### **35. FINAL CERTIFICATE**

When the works of this Contract are completed, the Contractor, shall submit a demand that the Engineer shall make a final measurement of the Board and take over the whole of the works on behalf of the Board and issue a final certificate to enable him to submit a final bill for payment. The Engineer shall there upon, unless he shows reasons in writing to the contrary make a final measurement of the works and take them over on behalf of the Board and sign a certificate purporting to be a final certificate. Nothing in this Clause or in the agreement shall prohibit the Board taking over and using any portion the works at any time.

### **36. PAYMENT OUT OF PUBLIC FUNDS**

The payment to the Contractor shall be made out of the funds under the control of the Board in Public capacity and no member or officer of the Board shall be personally responsible to the Contractor.

### **37. REPAYMENT OUT OF SECURITY**

After the expiry of 2 months from the date of completion of works and grant of final certificate referred to in Clause 35 the Board shall repay to the Contractor the Security deposit detailed in the preamble here to or the remainder of the proceeds of such sums after the Board has deducted any sums due the Board and recoverable from the said security in accordance with the terms of the contract or withheld as security for any portions of works repaired during this period.

### **38. SUBLETTING, TRANSFERRING OR ASSIGNING CONTRACT**

The Contractor shall not sublet the whole of the works, except where otherwise provided by the Contract, the Contractor shall not sublet any part of the works without the written consent of the Engineer and such consent if given shall not relieve the Contractor from any liability or obligation under the Contract and he shall be responsible for the act, defaults and neglects of any sub contractor his agents servants

or workmen as fully as if they were the acts defaults of neglect of the Contractor his agents servants or workmen provided always that the provision of labour on a piece of work basis shall not be deemed to be a subletting under this cause.

#### **39. BOARD TO HAVE POWER TO DEFEND OR COMPROMISE ACTION**

The Board shall have full power in their absolute discretion to defend or compromise any action, suit or other proceeding brought against them by reason or arising out of the execution of the works or in connection there with without prejudice to the obligations of the Contractor under this contract to indemnify the Board against such action or proceeding and the Contractor shall be liable to repay to the Board any sums paid by them in any such action, suit or proceeding or in actions pursuance of any such compromise.

#### **40. PROTECTION AGAINST CLAIMS FOR THE USE OF PATENTS**

All fees for any patented invention, articles or arrangement, that may be use or in any manner connected with the maintenance of the works or any part thereof embraced in these specifications shall be included in the price mentioned in the bills of quantities and the contractor shall protect and hold harmless the Board against any all demand for such fees or claims and before the final payment and settlement is made on account of this Contract, the Contractor, if required must furnish acceptable proof or a proper and satisfactory release from all such claims.

#### **41. SERVICE OF NOTICE**

For the purpose of this Contract, any notice to Contractor from the Engineer shall be deemed to be served upon the Contractor if it be addressed to him or in which he signs the tender and be handed to him or in the case of a firm to any member of the firm personally or in the case of a Company to the Secretary personally or let as his usual place of business or posted to him by a prepaid registered letter properly

addressed to the name and address given in his letter of tender or such other address as the Contractor may notify in writing to the Engineer for this purpose.

**42. ARBITRATION:**

- A) In case any question, difference or dispute shall arise on matters (except any of the “excluded matters” mentioned in Clause No.18) touching the construction of any clause herein contained on the rights duties and liabilities of the parties hereto or any other way touching or arising out of presents, the same shall in cases where the total value of claims under the contract is less than and upto Rs.50,000/- be referred to the interpretation, decision and award of the Superintending Engineer of the CMWSS Board to be nominated by the Managing Director of that Board as the sole arbitrator whose decision shall be final and binding on the parties.
- B) In case where the value of claims is more than Rs.50,000/- the parties will seek remedy through the competent civil court.
- C) Provided always that the Contractor shall not except with the consent in writing of the Engineer, in any way delay carrying out works by reason of any such proceed with the work with all due diligence and shall until the decision of the arbitrator be given abide by the decision of the Engineer and now award of the arbitrator shall relieve the Contractor of his obligations to adhere strictly to the instructions of the Engineer with regard to the actual carrying out of the works.

**43. JURISDICTION:**

All disputes under the contract shall be subject to court in Chennai Jurisdiction only.

**44. STAFF WELFARE:**

- a. All labour and other of the contractor should be covered with comprehensive insurance against all risks including personal accident insurance policy covering the total number of workmen employed by him specifically for the

works pertaining to this contract in commensurate with the contract value, especially covered for jobs under hazardous conditions. A photo copy of the policy should be furnished to the Board. The policies should be kept alive till the completion of the contract period.

- b. The Contractor shall produce fitness certificate from any Authorized Medical Attendant (AMA) of Government Hospital for all the Technical staff and Labour staff to be employed.
- c. All employees should be covered with ESI and EPF and payment related to ESI and EPF should be borne by the contractor.

45. The contract will be responsible to make available the safety equipment and loose tools as listed in the Annexure III. If the contractor fails to keep the safety equipment and loose tools and consumable items as listed in Annexure, the above will be procured by the Board and the cost will be deducted immediately from the bill payable to be contractor with a penalty of Rs.2000/-.

## **SECTION II**

### **PART II**

#### **GUIDELINE FOR ELECTRICAL / MECHANICAL WORKS**

The Contractor should carry out minor Mechanical and Electrical works listed in Section II Part III upto a maximum of Rs.5,000/- per month. The payment towards minor repairs will be paid based on vouchers produced by the Contractor and after verifying the works carried out. The necessary entries have to be made in the Log Book / Minor Repair Register for the works carried out.

#### **I. ELECTRICAL WIRING AND INSTALLATION OF FITTINGS**

- a) The materials used shall conform to the relevant I.S.S. wherever applicable. The make and other details of material to be used should be furnished along with the tender.
- b) Continuous earth connections are to be made with 14 SWG TC Wire.
- c) The wiring work done shall be neat, true to line level etc. and in such a way that it gives an impressive and aesthetical appearance to the building.
- d) The actual location and number of points of lights, fans, power plugs etc., may be altered at the time of execution by the Engineer.
- e) The wiring and cabling work should be done as per I.E rules.
- f) Any damages or breakage, Chipping etc. caused by the electrification works to the structure have to be rectified by the Contractor at his cost to the satisfaction of the Engineer.
- g) The Contractor has to test each and every point after completion of writing to the entire satisfaction of the Engineer by taking temporary supply from the existing service.
- h) Wiring to light points (both internal and external) and fan points will be treated as complete only when supply as well as connection upto the ceiling rose is completed.
- i) Whenever conduit pipe wiring is done, cover for switchboards containing switches, plugs etc., and should be of hylam sheet or other specified sheet only.

## **II MACHINERY AND OTHER EQUIPMENTS**

- j) All the materials used shall conform to the relevant I.S.S. wherever applicable and should be delivered at site of work. The Contractor is responsible for safe custody of materials and equipment under this contract till handing over the Board.
- k) All necessary civil works for erection of all equipment and accessories offered by the Contractor under this contract should be done by the Contractor.
- l) Test certificates for machinery and equipment should be produced along with the supply.
- m) The Contractor should maintain one set of tools for the proper maintenance of the machinery and equipment supplied by them under this contract.

## **SECTION II**

### **PART III**

#### **NOTES REGARDING WORKS**

#### **LIST OF MINOR REPAIRS OF TEN ENCOUNTERED AT SEWAGE TREATMENT PLANT**

##### **I. ELECTRICAL WORKS**

1. Replacement of H.G. Fuses.
2. Replacement of lighting arrestor – any one of the phases.
3. Replacement of jumpers.
4. Replacement of insulator (Porcelain) – one phases.
5. Replacement of Breather.
6. Replacement of D.O. Fuse assembly in one phase.
7. Replacement of no-volt coil for A.C.B.
8. Replacement of jumper with socket inside the panel.
9. Replacement of cable plugs including terminations for Panel Board.
10. Replacement of burnt-out H.R.C. Fuses.
11. Replacement of moving and fixed contacts.
12. Replacement of Control Switches and isolators.
13. Replacement of starter contactor, relay and timer.
14. Replacement of motor terminal blocks.
15. Replacement of cable lugs including terminations for motor and starter.
16. Replacement of bulb, choke and starter.

##### **II MECHANICAL WORKS**

1. Replacement of Coupling bushes and pulley.
2. Replacement of base frame bolt & nut.
3. Replacement of impeller nut for submersible pump set.
4. Replacement of spindle nut in Sluice Valves and shutters.
5. Replacement of spindle in non-return valves.
6. Attending leak in pipelines.
7. Replacement of check-valve, wheel-valve and G.I. Pipes in Drain pump sets.
8. Replacement of hand rake.
9. Replacement of cooling fan and fan cover for gearbox and motor.
10. Replacement of Neopherene rubber pad and links chain for clarifier skimmer arms.

11. Replacement of link chain for Detritor Gear Box.
12. Replacement of Classifier Assembly – small bushes.
13. Replacement of special studs and fasteners wherever necessary.
14. Topping up gear box oil in aerator, classifiers
15. Top up of lube oil in detritors, classifier and aerator gear boxes.

### **III FOR D.G. SET AND BATTERY**

1. Replacement of generator lubricating oil.
2. Replacement of Generator air filter, fuel filter and oil filter etc.,
3. Replacement of Battery, cable, lugs and studs etc.
4. Charging of battery including replacing of battery acid, distilled water.

### **IV REGULAR MAINTENACE TO BE CARRIED-OUT BY THE CONTRACTORS**

1. De-weeding and cleaning of the Transformer yard.
2. Drying and refilling of Silica-jel in the Breather of the transformer.
3. Regular watering of the earth-pits.
4. Check for any oil leak in the transformer and intimating to the Board.
5. Check for any loose connection in all Electrical equipment.
6. Provide Gland packing for the pumps, sluice valve etc. whenever required.
7. Greasing of bearings and lubricating all moving parts once in a week.
8. Check for loosening of coupling bolt nuts and all other fasteners.
9. Check for oil level in D.G.Set.
10. Air blowing of motors, L.T.Panel etc.
11. Cleaning of screens with regular intervals.
12. Lubricating and test operating of the valves.
13. Test running of D.G.Set on Load for one hour once in a week.
14. General cleaning of all equipment and buildings.
15. The General Maintenance schedule for the various treatment units shall be as detailed in the annexes/appendices enclosed.
16. Check Radiator water level and battery distilled water level and top up as and when required.

## **V. DETRITORS & CLARIFIERS**

1. Top-up of lubricating oil in the gearbox as required.
2. Replacement of chain links in Drive wheels.
3. Removing the accumulated silt from the detritor area filling in the low lying area directed by the Engineer daily.

## **VI CLARIFIERS**

1. Top-up of lubricating oil in the gearbox as required.
2. Check and make it correct for Base frame bolt & nuts and alignments.

## **VII AERATORS**

1. Top-up of lubricating oil in the gearbox as required.
2. Replacement of coupling bolt and nuts.
3. Check and make it correct for Base frame bolt & nuts and alignments.

## **VIII PUMP SETS AND VALVES**

1. Check and make it correct for Base Frame bolt & Nuts and alignments.
2. Trial operation should be made for all valves and shutters once in a week.

## **IX GENERAL MAINTENANCE**

1. Monitoring of in-flow.
2. Maintaining of level in Balancing tank.
3. Regular removing and disposal of rags from screens.
4. Regular removing and disposal of accumulated grit.
5. Continuous operation of all units as required.
6. Regular disposal of scum from the Primary Clarifiers.
7. Regular cleaning of wires of Clarifiers.
8. Maintaining of low level in Filtrate pump house well.
9. Carting of Diesel for D.G. Set from the Board's bunk
10. Monitoring of Treatment Process as per prescribed Standard.
11. Monitoring of Energy meter reading, power factor reading.
12. Maintaining and monitoring of sufficient quantity of clear water and OHT in the sump required for back flushing operation.

## **SECTION II**

### **PART IV**

#### **OBLIGATIONS OF THE BOARD**

1. Cost of TNEB Power on actual will be borne by Board.
2. Supply of potable water in the Existing steel / Sintex tank with in premises.
3. Ensuring Available of Captive power source.
4. Ensuring that all equipments and wells / sumps are in good working conditions before handing over the site. This could be decided by the Joint inspection.
5. Ensuring that all major repairs are carried out swiftly and correctly.
6. To conduct surprise checks and to supervise the contract works.
7. Payment will be made monthly on receipt of bills from the contractor following Board's regulations.
8. Supply of Diesel and engine oil etc., for D.G Set and supply of 320grade oil for replacement of lube oil for gear box etc.,
9. Collection of samples and testing of influent and effluent standards.
10. Removal and disposal of drying bed sludges.
11. Periodical removal of jungles and bushes inside the STP site as and when required.

## SECTION II

### PART V

#### MANDATORY DUTIES OF THE CONTRACTOR

##### 1. RESPONSIBILITY OF MAINTAINING THE PARAMETERS UNDER PRESCRIBED QUALITY NORMS ON OPERATION AND MAINTENANCE

Process Parameter should be maintained within the limits as prescribed below:

- a. Dissolved Oxygen (in Aeration Tank) at 1.0 - 2.0 mg/L
- b. Rate of Return sludge to be maintained at 25 – 30% so as to have about Mixed Liquor Suspended Solids (MLSS) in Aeration Tank at 1500 – 3000 mg/L
- c. The Sewage influent into the treatment process should be controlled within 350 m<sup>3</sup>/hr to 1200 m<sup>3</sup>/hr by continuous monitoring and operation of equalization wedges in Detritor I & II and diverting excess influent into Equalisation tank during peak hours and pumping sewage from Equalisation tank to inlet chamber during lean hours all through the day. Also, sludge drawal and disposal into the digesters should be carried out with frequent intervals i.e. 10 min/hour all through the day.
- d. In order to hold the Contractor responsible for the maintenance of process quality as specified above, it is now proposed to impose a penalty of Rs.1000/- per day for the days on which any one or more of the conditions are violated.
- e. The effluent quality may not be under control during the period of any unexpected major breakdown of equipment. In those circumstances, the Contractor shall submit immediate report of breakdown to avoid any penalty.

- f. Further, in the event of the penalties accrued exceeds 10% of the total contract value, the contract will be terminated.
2. Operating three shifts/day and ensuring that back up teams would be available to take over during Sundays, holidays and in the event of regular operator / labour absence.
  3. Ensuring that the screens are cleaned daily at regular intervals to ensure free flow and to avoid overflow in inlet chamber.
  4. Maintaining all equipment within the plant as recommended by the manufactures, with proper logs and records of the work carried out, as prescribed by Metro Water Board.
  5. The power factor will not decrease or increase suddenly and if the contractor observes daily and find any decrease in the power factor it should informed to the Department Engineers (concerned Area Engineers). The Department Engineers will take immediate steps in rectifying this
  6. Operating Plant during TNEB grid power failures by running the Diesel Generator.
  7. Operating Diesel Genset on no load / load for at least 1 hour a week as trial run.
  8. Keeping all tanks free from dirt and fat.
  9. Ensuring that premises are kept clean and tidy.
  10. Ensuring that adequate manpower is available round the clock to carry out the above tasks and to prevent entry of unauthorized persons.
  11. Carrying out all operations at intervals specified, shown on Annex sheets for the Plant.
  12. The Contractor should enclose the list of Operative staff to be employed with qualification certificate and with their passport size photograph affixing their signature.
  13. The workers employed should wear Khaki / blue uniforms.

14. Mandatory regulations prescribed by C.E.I.G. and Inspector of Factories shall be followed without any Laps.
15. Laminated Photo Identity Cards have to be issued to all employees and one set of these ID Cards should be furnished to Board.
16. All Registers such as Inspection Register, Daily Log Book, Attendance Register, Minor Repair Register, D.G.Set Log Book, Maintenance Schedule Register etc., should be maintained neatly and properly and to be available at the Plant Office.
17. The Name and qualification of the Personnel engaged should be prominently displayed at site.
18. Loose Tools as listed in the Annex should be available on the site.
19. The Contractor is responsible to make availability of the safety equipment as listed in the Annex.
20. The Contractor shall be made responsible to follow all safety procedure specified in the contract conditions.

**SECTION – II**  
**PART – VI**  
**SCHEDULE**

NOTE:

1. This tender has been called for in the percentage tender system. In the work schedule, detailed items of works involved in the work with specifications along with the quantity, the departmental rates and amount for individual items are furnished. The total value of the work is also furnished.
2. The tenderers are requested to quote the percentage variation over the total departmental value, which will be applicable for all items of works, individually and uniformly at which they are willing to execute the works, in the following format. In case any discrepancy / correction are found between figures and words furnished for the percentage, then the LOWER percentage among them ALONE will be taken as correct.

NAME OF WORK: OPERATION AND MAINTENANCE OF 23 MLD SEWAGE  
TREATMENT PLANT AT NESAPAKKAM 3 YEARS.

Sl.No	Description	Rate/month (Rs.)	Quantity	Amount (Rs.)
1	Operation and Maintenance of 23 MLD Sewage Treatment Plant at Nesapakkam for 3 years including all works specified.	1,06,685.36	36 Months	38,40,673.00

**Note:**

- a. The quoted percentage is inclusive of payment of service tax, and all other applicable taxes & duties.
- b. The contractor should produce the details of payment made towards the service tax and ESI & EPF other taxes and duties for this contract.
- c. If any changes in the prevailing tax component, increase in taxes will be borne by the Board. If any decrease in tax component the same will be deducted from the contractor's payment.

Signature of Tenderer.  
Name and Address.

FILL UP ANYONE OF THE FORM NO:A, B or C  
STRIKE OUT THE FORM WHICH IS NOT APPLICABLE.

FORM NO:A

I / We agree to execute the work of “**Operation and Maintenance of 23 MLD Sewage Treatment Plant at Nesapakkam for 3 years** ” with a tender percentage of (-) Minus-----  
------(in words) -----(in figures) over departmental value of **Rs.38,40,673.00** as furnished in the work schedule which is also applicable for all items of works, individually and uniformly over the departmental rates, furnished in the work schedule.

FORM NO:B

I / We agree to execute the work of “**Operation and Maintenance of 23 MLD Sewage Treatment Plant at Nesapakkam for 3 years**” at the department value of **Rs.38,40,673.00** for all items of work furnished in the schedule.

FORM NO:C

I / We agree to execute the work of “**Operation and Maintenance of 23 MLD Sewage Treatment Plant at Nesapakkam for 3 years** ” with a tender percentage of (+) Plus  
-----  
(in words) ----- (in figures) over departmental value of **Rs.38,40,673.00** as furnished in the work schedule which is also applicable for all items of works, individually and uniformly over the departmental rates, furnished in the work schedule.

NOTE:

1. The tenderers are requested to strike out the forms which are not applicable.
2. If any two or three forms are filled by the tenderers the LOWEST percentage quoted by the tenderer will be considered.
3. If there is any discrepancy in percentage quoted in words and in figures the lowest percentage quoted will be considered.
4. If the tenderer failed to fill/strike out any or all of the form, the department value will be taken as quoted price.

**SECTION – II**

**PART – VII**

**LIST OF ASSETS HANDED OVER**

Inspection Carried Out \_\_\_\_\_ Date: Hand over date \_\_\_\_\_

Metro Water (Signature) \_\_\_\_\_ Name : \_\_\_\_\_

Contractor (Signature) \_\_\_\_\_ Name : \_\_\_\_\_

OPERATION AND MAINTENANCE OF 23 MLD SEWAGE TREATMENT PLANT AT  
NESAPAKKAM FOR 3 YEARS.

**CONDITIONS OF ASSETS AT THE TIME OF HANDIG OVER**

NAME OF EQUIPMENT	OPERATIONAL DEFECTS	OBSERVED	COMMENTS
Out Door HT Structure			
HT Switch Gear			
Transformer			
M.V Panel/ L.T Panel and Switch Gear			
Motor No.			
1.			
2.			
3.			
4.			
Clarifier No.			
1.			
2.			

NAME OF EQUIPMENT	OPERATIONAL DEFECTS	OBSERVED	COMMENTS
Digesters			
Drying Beds			
Detritors			
Pump Set No.			
1.			
2.			
Gen. Set.			
1.			
2.			
Valves and Shutters			
Tower Lights			
Civil Structures			
Pump Houses			
Hand Rails			
Balancing Tank			
Pipe Lines			
Wells			
1.			
2.			
Screens			
Compound			
Roads			
Boundary Wall			
Trees			

## LIST OF ASSET HANDED OVER

1. Shutters and Pipelines in Inlet Chambers
  
2. Screens  
Accessories
  
1. Detritors - 2 Nos.  
Accessories
  
2. Primary Clarifiers - 2 Nos.  
Accessories
  
5. Raw Sludge Pump House - 1 No.  
Accessories
  
6. Primary Digester - 2 Nos.  
Accessories
  
7. Secondary Digester - 2 Nos.  
Accessories
  
8. Sludge Mixing Pump House - 1 No.  
Accessories
  
9. Drying Beds - 26 Nos.  
Accessories
  
10. Splitter Box  
Accessories
  
11. Aeration Tanks - 3 Rows  
Details
  
12. Secondary Clarifiers - 2 Nos.  
Details

- |     |   |   |        |
|-----|---|---|--------|
| 13. | Activated Sludge Pump<br>House Details                                | - | 1 No.  |
| 14. | Filtrate Pump House<br>Details  | - | 1 No.  |
| 15. | Balancing Tank<br>Details   | - | 1 No.  |
| 16. | Valves Details  |   |        |
| 17. | Main Panel<br>Details   |   |        |
| 18. | LT Panel<br>Details   | - | 5 Nos. |
| 19. | Two Pole & Four Pole Structure,<br>Transformer Details                |   |        |
| 20. | Diesel Generator Set<br>Accessories                                   |   |        |
| 21. | Street Light & Tower Lights<br>Details                                |   |        |
| 21. | Shutters and other fixtures ion<br>Elevated Channels Details          |   |        |
| 22. | Fixtures & Fittings<br>Details  |   |        |
| 23. | Compound Wall and other civil structures and Roads inside Plant Area. |   |        |

## ANNEX - I

### SCHEDULE OF WORK ON SPECIFIED INTERVALS

ITEM NO.	DESCRIPTION OF WORK	FREQUENCY					
		DAILY	WEEKLY	4 WEEKLY	8 WEEKLY	26 WEEKLY	56 WEEKLY
1.0	CHECK PUMP IS OPERATIONAL	*					
1.1	CHANGE OVER PUMPS	*					
1.2	PUMPOUT WET WELL	*					
1.3	RECORD HOURS RUN	*					
1.4	WHILE PUMP OPERATION CHECK						
1.4.1	PIPE WORK FOR LEAKS OR VIBRATION	*					
1.4.2	OIL (OR) FLUID LEAKS	*					
1.4.3	BEARING TEMPERATURE						
1.5	CHECK GLANDS/SEAL AND ADJUST/REPACK AS REQUIRED	*					
1.6.1	CHECK OPERATION OF AIR RELEASE PIPES	*					
1.6.2	CLEAN OUT AIR RELEASE PIPES		*				
1.7	CHECK LLUBRICATION POINT AND LUBRICATE AS REQUIRED	*					
1.8	CHECK NON RETURN VALUES FOR OPERATIONAL	*					
1.9	CHECK UNITS SECURITY, FIXING BOLTS		*				
1.10	CHECK ALL GUARDS AND OPERATIONAL		*				
2.0	WHILE PUMP OPERATINGCHECK						
2.0.1	MOTOR FOR NOISE OR VIBRATING	*					
2.0.2	BRUSH SPARKING	*					
2.0.3	SECURITY OF COOLING FAN	*					
2.0.4	SECURITY OF TERMINAL BOX	*					
2.0.5	SECURITY OF COMPUTING GU	*					
2.1	SPOT MOTOR & SWITCH OFF ISOLATOR	*					
2.1.1	SUCK OUT DUST AND DIRT				*		
2.1.2	TOPUP OIL				*		
2.2	CHECK CONDITION OF CABLING CONDUIT AND EARTH BONDING				*		
3.0	INSPECT AND CHECK THE FOLLOWING						
3.0.1	ALL AUXILLARY EQUIMPENT					*	

3.0.2	ALL TERMINALS					*	
3.0.3	PANEL ENCLOSURES AND INSTALLATIONS					*	
3.1	CARRY OUT ALL REQUIRED TESTS						
3.1.1	TO EARTHING / LOOPS					*	
3.1.2	CONTROL TRANSFORMERS					*	
3.1.3	POWER INDICATORS					*	
3.1.4	POWER SUPPLY PROTECTIVE DEVICES					*	
4.0	GENERATOR SET						
4.0.1	CHECK FUEL LEVEL TOP UP		*				
4.0.2	CHECK OIL LEVEL		*				
4.0.3	RUN GENERATOR FOR 15 MINUTES PER WEEK ON NO LOAD		*				
4.1	SERVICE GENERATOR AS PER MANUFACTURES GUIDELINES						
5.0	STARTERS						
5.1	TOP UP OIL DASH POT					*	
5.2	CHECK SECURITY OF CONNECTION					*	
5.3	CHECK FOR OVER HEATING/ DETERIOATION					*	
5.4	CHECK CONTACTS AND ARC SHIELDS					*	
5.5	CHECK OPERATION OF EMERGENC STOPS AND SAFETY DEVICES					*	
6.0	STRUCTURE AND EXTERIOR WORK						
6.1	RAKE SCREENS AND DISPOSAL OF WASTE	*					
6.2	DESILT WELLS IF EQUIPMENTS AVAILABLE	*					
6.3	MANUALLY DESILT WELLS NO EQUIPMENTS		*				
6.4	OPERATED PENSTOCKS FULLY		*				
6.5	CLEAN OUT PUMP HOUSE		*				
6.6	CLEAN WINDOWS		*				
6.7	OPERATE ALL VERTICALLY HUND DOOR AND LUBRICATE			*			
6.8	SWEEP AND TIDY UP GROUNDS ROOF WEED AS REQUIRED		*				
6.9	WATER EARTH PITS		*				

**\* INDICATES PERFORMANCE OF ACTIVITY**

## ANNEX - II

### TASK FREQUENCIES

All operational tasks must be carried out at specified frequencies

#### SECTION A: PRELIMINARY TREATMENT

Preliminary Treatment is considered to be the inlet area; the screens and the grit remove facilities.

The function of Preliminary Treatment is to collect the works influent, remove any matter that might be harmful to subsequent treatment processes and pass effluent to the Primary Clarifiers. Matter that could be this point includes rags and grit.

<b>TASKS</b>	<b>FREQUENCY</b>
<b>INLET AREA</b>	
Remove trapped floating debris	6 times per day
De-grit any Chambers and Channels	1 time per day
<b>SCREENS</b>	
Remove rag from hand raked screen	Continuous
Dispose of screenings	3 per day
<b>GRIT REMOVAL</b>	
De-rag deflector baffles & grit channels	1 per day
Check oil levels in the Gear assemblies and topup as necessary	1 per day
Dispose of grit upto a lead of 100m	1 per day
Grease points	1 per week
<b>GENERAL</b>	
Check that operation of Plant is satisfactory	1 per hour
Take readings (e.g) hours run and record	1 per hour
Clean all necessary channels, chambers etc. as not previously specified	1 per week
Remove rag from valves, penstocks and flow splitting devices etc.	1 per day

#### SECTION B: PRIMARY TREATMENT

Primary treatment is considered to be the removal of sludge in the Primary Clarifiers

<b>TASKS</b>	<b>FREQUENCY</b>
<b>DISTRIBUTION CHAMBER</b>	
Check that the distribution to the Clarifiers is not impeded	1 per hour
Check condition of Penstocks	1 per day
De-rag and /or clean Distribution chamber	1 per day

## **PRIMARY CLARIFIERS**

Clean overflow weirs and perimeter channels	1 per hour
Clean scum box	1 per day
Clean settled sewage collection channel	1 per day
De-sludge tanks	20 min per hour
Remove scum / solids off tank surface	every rev. of scrapper
Remove scum / solids from center stilling box	1 per day
Clean and flush out scum box	1 per day
Check oil level in the gear boxes	1 per week

## **GENERAL**

Check that operation of Plant is satisfactory	1 per hour
Take readings e.g hour run and record	1 per day
Check and top-up Gear box Oil	1 per week
Grease point (small amount)	1 per month
Clean all necessary channels, chambers etc. as not previously specified	1 per week
Remove rag from valves, Penstock and flow splitting device etc.	1 per day
Clean bridges and handrails	1 per year
Major clean of tank (dropping out)	1 per year

## **SECTION C: BIOLOGICAL TREATMENT**

### **TASKS**

### **FREQUENCY**

#### **DISTRIBUTION CHAMBER**

Check that the distribution to the Aerators is not impeded	1 per hour
Check condition of Penstocks	1 per day
De-rag and /or clean Distribution chamber	as necessary

#### **ACTIVATED SLUDGE PLANT (AERATORS)**

Visual check for faults	1 per hour
Check that all Aerators are running	1 per hour
Check condition of Aerators ( oil leaks etc.)	1 per day
Clean the Aerator Assembly	1 per week

#### **RE-CIRCULATION SYSTEMS**

Check/change duty of pumps to 30 to 50% Biomass recirculation	6 per day
---	-----------

#### **SECONDARY CLARIFIERS**

Clean over flow weirs and perimeter channel	1 per day
Remove scum from center stilling box	1 per day
Remove scum from feed chamber	1 per day

## **GENERAL**

Check that operation of Plant is satisfactory	1 per hour
Take readings e.g hour run and record	1 per day
Check and top-up Gear box Oil	1 per week
Grease point (small amount)	1 per month
Clean all necessary channels, chambers etc. as not previously specified	1 per week

Clean bridges and handrails	1 per year
Major clean of Secondary Clarifiers tank (dropping out)	1 per year

## **SECTION D: SLUDGE TREATMENT AND DISPOSAL**

Sludge from the Primary Clarifiers must be digested and dried before it can be removed from the site. If there is a problem on the sludge handling side of the works then it might not be possible to remove as great a volume of sludge as required from the Primary Clarifiers. This could and probably would have a knock on effect and cause STP effluent quality to deteriorate.

<b>TASKS</b>	<b>FREQUENCY</b>
<b>PRIMARY &amp; SECONDARY DIGESTERS</b>	
Operate valves to decant water	1 per day
Check condition of digesters	1 per day
Operate sludge mixing pump sets	8 hrs per day
<b>SLUDGE DRYING</b>	
Prepare beds for sludge	1 per day
Fill beds with sludge	1 per day
Check progress of drying	1 per day
Clean drainage Channels and Chambers	1 per month
Operate Filtrate Return Pump	as required
<b>GENERAL</b>	
Check that operation of Plant	1 per hour
Take readings e.g hour run and record	1 per day
Clean all necessary channels, chambers etc. as not previously specified	1 per day
Remove rag from valves, Penstock and flow splitting device etc.	1 per day
Clean ladders and handrails	1 per day
Weed drying beds and other surrounding area	1 per month

## **SECTION E: BUILDING AND GROUNDS**

It is essential on the STP the building and ground are kept in good order, leaks in roofs could cause damage to the contents of buildings, breaks in the perimeter fence could allow unauthorized entry to the site.

Staff often takes more pride in their work when the work when the workplace is clean and well ordered.

<b>TASKS</b>	<b>FREQUENCY</b>
--------------	------------------

**CLEANING**

General cleaning of the buildings	1 per day
Cleaning of items of Plant	1 per day

**MAINTENANCE**

Assessment of Building structures	1 per week
-----------------------------------	------------

**GENERAL**

Cut grass and jungle	as necessary
Clear pathways	as necessary
Remove litter and debris from the site	1 per day
Check boundary fences etc.	1 per week

**SECTION F: BALANCING TANK**

Clean inlet of the tank	Continuous
Operating of shutters	as required
Operate pumps	as required
De-rage the tank	as required
Cleaning the tank surface	as required
Operate pump-set	as required

**SECTION G : MONITORING**

Monitoring is one of the most important functions when attempting maintains effluent quality on a STP. The result from tests and analysis carried out often tell you where improvements in performance may be made. It is essential with many of these tests that they are done frequently in order to control, the works operation.

A member of staff should be made responsible for all STP monitoring. Results from tests and analysis must be given to the Operational Supervisor as soon as available in order that alterations to control settings may be made.

<b>TASKS</b>	<b>FREQUENCY</b>
--------------	------------------

**FLOW MONITORING**

Clean measuring channel	1 per day
Clean flume and any measurement boards	1 per day
Take readings and record	1 per day

**GENERAL**

Carry out additional checks	1 per day
Report all results to A.E/J.E (STP)	1 per day

## ANNEX III

### I. LIST OF SAFETY EQUIPMENTS

1. Safety belt with rope	-	2 Sets
2. Gas masks	-	2 Sets
3. Shock proof hand gloves	-	1Pair
4. Disposable hand gloves	-	100 Nos/month
5. Gum boot	-	4Pairs
6. Electrical line tester	-	2 Nos.
7. Earth discharge rod	-	1 No.
8. First aid box	-	2 Nos.
9. Emergency light	-	2 Nos.
10. Shook proof shoes	-	2 Sets

### II. LIST OF LOOSE TOOLS

1. Double end Spanners	-	1 Set
2. Screw Driver	-	1 Set
3. Pipe wrench	-	1 Set
4. Cutting – Pliers	-	1 Set
5. Long nose pliers	-	1 No.
6. Hammer	-	1 No.
7. Test lamp with holder	-	1 No.
8. Megger (1000A)	-	1 No.
9. Multimeter	-	1 No.
10. Tong Tester	-	1 No.
11. Hacksaw Frame	-	1 No.
12. Spade	-	4 Nos.
13. Crow Bar	-	1 No.
14. Chowl	-	2 Nos.
15. Chickes	-	4 Nos.
16. Ring spanner	-	1 set.
17. Grass cutter	-	1 No.
18. Manvetty	-	4 Nos.
19. Country Knife	-	2 Nos.
20. Iron chutty	-	4 Nos.
22. Grease gun	-	1 No.
23. 2 Ton chain pulley block	-	1 No.
24. Torch light	-	2 Nos.

## ANNEX IV

### SAFETY MEASURES TO BE ADHERED

1. All Electrical safety equipment and other electrical needs are to be provided at site.
2. Only experienced, skilled people have to be employed.
3. Safety belts, ropes, gas masks to be provided for labourers who get into well and tanks.
4. All should be covered in Insurance
5. Following should be covered I insurance:
  - a Workmen Compensation Act,1923
  - b Payment of wages Act, 1936
  - c Industrial Disputes Act, 1947
  - d Minimum Wages Act, 1948
  - e Factories Act, 1948
  - f Employees PF and Miscellaneous Act, 1952
  - g Payment of Bonus Act, 1965
  - h Payment of Gratuity Act, 1972
  - i Equal Remuneration Act, 1951
  - j Maternity Benefit Act, 1951
  - k Contract Labour (Regulation & Abolition) Act, 1970
  - l Industrial Employment (Standing Orders) Act,1970
  - m Trade Unions Act, 1926
  - n Child Labour (Prohibition & Regulation) Act, 1986
  - o Inter – State Migrant workmen’s (Regulation of Employment and conditions of service) Act, 1979

- p The Building and other construction workers (Regulation of Employment and conditions of service) Act, 1996 and the cess Act of 1996
- q Employee State Insurance Act, 1948
- r The Tamil Nadu Manual workers (Regulation of Employment and conditions of work) Act, 1982
- s The Bonded Labour System (Abolition) Act, 1976
- t The Employer's Liability Act, 1938.

**5. A. ELEMINATION OF CHILD LABOUR:**

- a. Attention of all contractor are invited to the child labour (Prohibition & Regulation) Act 1986, which prohibits employment of children below 14 years of age in certain occupations and process and provides for regulations of employment of children in all other occupations and progress. Employment of Child Labour is prohibited in building and construction industry.
- b. Hence all the contractors are requested to adhere to the provisions in the above Act and see that engagement of child labour in the operational activates of the Board are completely prohibited. Any violation of the provision will lead to penal action and removing of the contractor from the list of registered contractors.

**5. B. CONTRACT LABOUR WELFARE:**

The right and benefits conferred on the workmen employed by the contractor under the provisions of various Labours laws are the responsibility of the contractor. The contractor has to indemnify the CMWSS Board in case of loss or any damages. It is the responsibility of the contractor to take insurance policy under workmen's compensation Act, 1923 fir each labour engaged by the contractor. The contractor will be responsible for any deficiency of safety measures to be adhered as stipulated in Annexure-V. A photocopy of the insurance

under workmen's compensation policy should be furnished to the Board. The policies should be kept alive till the completion of the contract.

- 6 Those who get into wells, tanks and Chambers should do so after verifying the pressure of gas to avoid any mishaps.
7. Exhibit labels of **SAFETY FIRST**.
8. The following Operation and Maintenance should be carried only in the presence of JE/AE (O&M) or Plant Engineer:
  - a). Valve operation / repairs in digesters.
  - b). Raw sludge well cleaning and primary clarifier, sludge valve operation / repairs.
  - c). Plant by-pass valve operations.
  - d). Secondary digester, return sludge valve operations / repairs.
  - e). Any other valves operations/ repairs in deep chambers.

## ANNEXURE V

### DUTIES AND RESPONSIBILITIES OF SITE ENGINEER (DEGREE HOLDER) FOR SEWAGE TREATMENT PLANT

1. He should present between 8.30 AM and 5.30 PM as same as Dept. AE/JE (O&M) of S.T.P with one hour interval and also he/she show know the O&M manual of the STPs.
2. He shall hold full responsibility of maintaining Treatment process in standard prescribed by the Board and report it daily.
3. Inform minor/major repairs immediately and should be present at site until completion works of repair.
4. He shall have full responsibility for maintaining “Maintenance Schedule” such as daily, weekly and monthly programs.
5. He should organise the silt removal program and to follow as per safety rules.
6. He shall kept Safety Belt, Gas Mask and first Aid Box to his custody and utilise whenever requires.
7. He shall be responsible for overall cleaning and keeping the station neat and tidy.
8. To approach in TNEB authority when power fails in TNEB structure/ Board structure and to ascertain of early supply resumption.
9. He shall check the power factor everyday and to maintain at minimum 0.90 as prescribed by TNEB.
10. In-charge shall be sole responsible for carryout mandatory duties of contractor in the Treatment plant.
11. Arrange to transport Diesel and up keeping Plant such as air blowing Motors, control panels, gland packing, changing engine oil and maintaining battery.
12. Care has to be taken for workers to avoid double/ triple duties as per workmen Compensation Act and arrange to renewal of Insurance policy.
13. He shall be responsible to carry out any other works related to treatment Operation as directed by A.E/JE O&M (STP).

## ANNEX VI

### **DUTIES AND RESPONSIBILITIES OF OPERATOR**

1. Operating all the equipment as per the Operating Rules.
2. He should carryout the work as per preventive maintenance schedule daily.
3. Recording Log Book for every hour and including starting/stopping times of the equipment.
4. Check the temperature/Noise of running units and control panel.
5. Record daily shift activity in Log Book.
6. Follow the instruction given, if any, by A.E/ J.E (O&M) (STP) and chemist regarding Treatment Process.
7. Gone through previous shift activities and explain his shift activities to the releaver.
8. Arrange to remove of rags and grit with safety precautions.
9. Maintain all registers neatly and properly.
10. Operating D.G set when power fails and trial run to be made every week.

## APPENDICES I

### SEWAGE TREATMENT PLANT FLOW RECORDS

STP: Nesapakkam

Month / Year

Flow (Cum / Day)

Sl. No.	Date	Maximum	Minimum	Total	Comments
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					

Sl. No.	Date	Maximum	Minimum	Total	Comments
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					
31.					
Average	N/A		N/A		

Maximum Flow during the Month =

Average daily flow during the month =

## APPENDICES 2

### GENERAL NOTES FOR OPERATIONAL LUBRICATION

Operational practices should include any lubrication of Fixed Plant that is required on a more regular basis than planned preventive maintenance (i.e. Daily, Weekly, Monthly). On Sewage Treatment Plant these include:

Horizontal or mechanical centrifugal pumps

- Bearings must be greased weekly
- Glands with grease pots must be checked and filled up weekly
- Motor bearings should be greased by an authorised Electrician every 3 months.

Note: Too much grease will cause bearings to overheat.

### GEAR BOXES

- Oil levels should be checked weekly and filled to the high level mark, excessive oil requirements probably indicate an oil leak.
- Grease points should be checked and greased every week.

Note: Do not overfill with oil as this will cause pressure build up and damages seals.

### DETRITORS

- Bushes and pivots must be greased weekly
- Grease pots must be kept full.
- Any grease points on moving shafts or bearings that are in regular use must be lubricated weekly with a small amount of grease.

### GENERAL

Any lubrication points that are damaged or blocked should be reported to the A.E / J.E. immediately.

**Note:** Care must be taken of moving parts when lubricating.

## GENERAL DAILY TASKS

### TASK

#### SECTION A: PRELIMINARY TREATMENT GUIDELINE FREQUENCY

##### 1. Inlet Areas

- (i) Remove trapped floating debris 6 pd
- (ii) De-grit any Chambers and Channels 1 pd

##### 2. Screens

- (i) Remove rag from hand raked screen 1 ph
- (ii) Dispose of Screenings 3 pd

##### 3. Grit Removal

- (a) Constant Velocity Channel
  - (i) Remove grit from one channel 1 pd
  - (ii) Dispose of grit 1 pd
- (b) Cross Flow Detritors
  - (iii) De-rag deflectors baffles 1 pd
  - (iv) Dispose of grit 3 pd

##### 4. General

- (i) Check the operation of Plant is satisfactory 1 ph
- (ii) Take readings e.g. hours run and record 1 pd
- (iii) Take samples as required
- (iv) Remove raga from valves, penstocks and flow splitting devices 1 pd

#### SECTION – B: PRIMARY TREATMENT

##### 1. Primary clarification (Primary settlement)

- (i) Clean overflow weirs and perimeter channels 1 pd
- (ii) Clean scum boards 1 pd
- (iii) Clean settled sewage collection channels 1 pd
- (iv) De-sludge tanks 20 min per hours
- (v) Remove scum/solids from center stilling box 1 pd
- (vi) Clean and flush out scum box 12 pd

##### 2. General

- (i) Check the operation of Plant is satisfactory 1 ph
- (ii) Take readings e.g. hours run and record 1 pd
- (iii) Remove raga from valves, penstocks and flow splitting devices 1 pd

## SECTION – C: SECONDARY TREATMENT

### 1. Activated Sludge Plants

- |       |  |              |
|-------|--|--------------|
| (i)   | Operate / adjust surpassing valves   | 1 pd         |
| (ii)  | Take 30 min. settlement test on mixed liquor                                 | 1 pd         |
| (iii) | Measure mixed liquor suspended solids  | 1 pd         |
| (iv)  | Measure dissolved oxygen levels  | 6 pd         |
| (v)   | Adjust Aerator immersion   | as necessary |
| (vi)  | Check / adjust rate of return  | as required  |
| (vii) | Clean inlet, out, mixed liquor, return and surplus activated sludge channels | 1 pd         |

### 2. Secondary Clarifiers (Humus and Final Tasks)

- |       |  |            |
|-------|--|------------|
| (i)   | Clean overflow weirs and perimeter channel               | 1 pd       |
| (ii)  | De-sludge humus tank                                     | continuous |
| (iii) | Check sludge blanket level in Final Clarifiers(as plant) | 1 pd       |
| (iv)  | Clean de-sludging chamber                                | 1 pd       |
| (v)   | Remove scum from center stilling box                     | 1 pd       |

### 3. General

- |       |  |      |
|-------|--|------|
| (i)   | Check that Operation of Plant is satisfactory                      | 1 ph |
| (ii)  | Take records e.g. hours run and record                             | 1 pd |
| (iii) | Clean all necessary channels, chambers                             | 1 pd |
| (iv)  | Remove rage from valves, penstocks and flow splitting devices etc. | 1 pd |

## SECTION - D: SLUDGE TREATMENT

### 1. Digestors

- |      |                                       |                 |
|------|---------------------------------------|-----------------|
| (i)  | Check supernatant flow and under flow | 1 pd            |
| (ii) | Operate sludge mixing pump-sets       | 8 hours per day |

### 2. Sludge Drying beds

- |       |                                      |      |
|-------|--------------------------------------|------|
| (i)   | Prepare beds for sludge              | 1 pd |
| (ii)  | Fill beds with sludge                | 1 pd |
| (iii) | Decant supernatant water if possible | 1 pd |
| (iv)  | Check progress of drying             | 1 pd |
| (v)   | Operate Filtrate Return Pump         | 1 pd |

### 3. General

- |       |   |             |
|-------|---|-------------|
| (i)   | Check the operation of Plant is satisfactory                  | 1 ph        |
| (ii)  | Take readings e.g. hours run and record                       | 1 pd        |
| (iii) | Take samples  | as required |
| (iv)  | Remove rage from valves, penstocks and flow splitting devices | 1 pd        |

**SECTION – E: BALANCING TANK**

- |      |  |              |
|------|--|--------------|
| (i)  | Check the inflow                           | 1 pd         |
| (ii) | Pump-out to inlet chamber during no inflow | as necessary |

**SECTION – F:**

**1. General**

- |       |  |             |
|-------|--|-------------|
| (i)   | Empty float chamber and remove rag     | 1 pd        |
| (ii)  | Clean flume and any measurement boards | 1 pd        |
| (iii) | Take readings and record               | as required |
| (iv)  | Change chart                           | as required |

**SECTION – G : BUILDINGS**

**1. Cleaning**

- |      |                             |      |
|------|-----------------------------|------|
| (i)  | Sweep office floors         | 1 pd |
| (ii) | Clean toilet and wash rooms | 1 pd |

**2. Maintenance**

- |     |   |             |
|-----|---|-------------|
| (i) | Check and repair any defective structure (roof, walls, windows, perimeter fence etc.) | Immediately |
|-----|---|-------------|

### APPENDICES 3

Example: Daily Ledger Log Sheet

#### NESAPAKKAM, DAILY LOG SHEET

Task	Guideline Frequency	No. of times task performed (1 – 24)
------	------------------------	---

#### Section A

##### 1. Inlet Areas

- (i) Remove trapped floating debris 6 pd
- (ii) De-grit any Chambers and Channels 1 pd

##### 2. Screens

- (i) Remove rag from hand raked screen 1 ph
- (ii) Operate Mechanical screen 3 pd
- (iii) Empty screen chamber and remove or  
flush out accumulated grit 1 pd
- (iv) Dispose of Screenings 3 pd

##### 3. Grit Removal

- (b) Cross Flow Detritors
  - (i) De-rag deflectors baffles 1 pd
  - (ii) Dispose of grit 3 pd

##### 4. General

- (i) Check the operation of Plant is satisfactory 1 ph
- (ii) Take readings e.g. hours run and record 1 pd
- (iii) Take sample as required
- (iv) Remove rags from valves, penstocks and  
flow splitting devices 1 pd

**ANNEXURE – VII**

**RECOVERY TO BE MADE FOR DEFAULT**

<b>Sl.No.</b>	<b>Description</b>	<b>Amount</b>
1.	Site Engineer B.E Holder	Rs.500/- per day per each
2.	Operator Diploma holder	Rs.300/- per day per each
3.	Grit disposal from Detritor once in a day	Rs.200/- per occasion
4.	Rag removal and disposal from screens	Rs.200/- per occasion
5.	Clearing of site	Rs.200/- per day
6.	Clearing of secondary clarifier weirs	Rs.100/- per day
7.	Trail run of D.G set once in a week	Rs.100/- per occasion
8.	Clearing of pump house and pump pits	Rs.100/- per day
9.	Photo Identity	Rs.100/- per each
10.	Safety belt	Rs.500/- per month
11.	Gas mask	Rs.500/- per month
12.	Loose Tools	Rs.200/- per month
13.	Maintaining of registers	Rs.2000/- per month
14.	Display of staff particulars	Rs.500/- per month
15.	Preventive maintenance not done	
	For daily maintenance items	Rs.100/- per day
	For weekly maintenance items	Rs.200/- per week
	For fortnightly maintenance items	Rs.500/- per fortnight
	For monthly maintenance items	Rs.1000/- per month
16.	For not maintaining Diesel Generator batteries in good charge condition	Rs.50/- per day
17.	For not maintaining minimum diesel (400Lit) stock	Rs.100/- day

NOTE : The above defaults should not be repeated more than three times in a year. If repeated the contract may be recommended for termination and the contractor may be recommended for black listed.