## SECTION – I PART – I

**Chennai Metropolitan Water Supply and Sewerage Board**
**Contracts & Monitoring Wing**

**Tender No. CNT /**

**Name of work:**

## INSTRUCTIONS TO TENDERERS

1. For and on behalf of the Chennai Metropolitan Water Supply and Sewerage Board, e-tenders in the prescribed form for the above work are invited and to be submitted through online to Superintending Engineer, Contracts & Monitoring (C&M) CMWSSB on or before 3.00 pm on _____from Contractors registered in the Chennai Metropolitan Water Supply and Sewerage Board under class _____and above. Contractors registered in other Departments and Undertakings of the State or Central Government in the corresponding Class for taking up such works, who have executed similar works of the same or higher magnitude are also eligible to tender for this work.
2. The tender will be opened by the Contract Engineer or by an officer duly authorized for this purpose immediately after 3.00 p.m. as per server clock of portal www.tntenders.gov.in for e-submission on the said date in the presence of the tender scrutiny committee members, tenderers or their representatives who choose to attend.

3. (a) The prescribed tender forms will be made available for downloading from _____to _____. The tender schedule will be available in the website www.tntenders.gov.in. The eligibility criteria and other terms and conditions as per the bid documents will be followed strictly.
   (b) The tenderer may submit the tender through the e-tender portal only. Tenderers should submit the E.M.D. by online transfer through tender portal only.
4. Tender must be accompanied by an EMD for Rs._____ by online payment of transfer only through tender portal for Tender No.CNT / _____ due at 3.00 p.m. on _____.

5A. Submission of modified tenders

5A.(1) No tender may be modified after the deadline for submission of tenders.

5A.(2) Withdrawal or modification of a tender between the deadline for submission of tenders and the expiration of the original period of bid validity specified in Clause 14. a) or as extended may result in the forfeiture of the Bid security pursuant to Clause 15. (b)

5B. Opening of Tenders

The tenderer name, and such other details as the Employer may consider appropriate, will be announced by the Employer at the opening.

6. (a) The tenderer shall be deemed to have inspected and examined the site and its surrounding and to have satisfied himself before submitting his tender as to the nature of ground and sub-soil (so for as is practicable and having taken into account any information in connection there with which may have been provided by or on behalf of the Board) the form and nature of the site, the extent and nature of the work and materials necessary for the completion of the works, the means of communications with and access to the site, the accommodation the tenderer may require and in general the tenderer has to obtain by himself all necessary information (subject as have mentioned) as to / the risks, contingencies and all other circumstances influencing or affecting his tender.

(b) Any further information that may be required can be obtained from Superintending Engineer (C&M) on any day during working hours.

7. 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 while submitting the tender.

8. Tenderers must comply with instructions in the Notice Inviting Tender. They must also agree to comply with all conditions and specifications of the Contract. Otherwise their tenders are liable for rejection.

9. All **duties and other levies payable** by the contractor under the contract, or for any other cause shall be included in the rates, prices and total bid price / percentage quoted.

(a) The rates quoted should be firm and no variation in rates or prices is admissible, otherwise provided in the checklist issued to the Tenderer.

(b) The rates should be quoted in Indian Rupees and payment will also be made only in Indian Rupees.

(c) The Tenderer shall quote the price exclusive of GST. GST amount is to be shown separately at the rates given in the price schedule.

10. All duties and other levies (other than GST) payable by the contractor under the contract, or for any other cause shall be included in the rates, prices and total Bid Price/percentage quoted submitted by the tenderer. The Tenderer shall quote the price schedule exclusive of GST. The GST rates with amount to be shown separately in the BoQ. Any statutory variations in duties / levies, which take effect from a date subsequent to the due date for receipt of tender, shall be to CMWSS Board’s account.

11. A certificate of Income Tax Clearance from the Income Tax Authorities as required in Government order No.1867, Finance (Budget General) Department, dated 16.08.1949 in the form appended therein will have to be furnished by the successful tenderer within 14 days from the date of the acceptance of his tender by the Board or at the time of execution of the agreement whichever is earlier.

12. The tenderers must also produce the GST Certificate before execution of the agreement.

13. (a) The tenders shall be valid for acceptance for a period of 90 days after the due date fixed for the receipt of the tenders.

    (b) In exceptional circumstances, prior to expiry of the original time limit, the Employer may request the bidders to extend the period of validity for a specified additional period for the completion of the evaluation provided that sum total of all extensions shall ordinarily not exceed 180 (one hundred and eighty) days. The request and the tenderers responses shall be made in writing. A tenderer may refuse the request without forfeiting his EMD. A tenderer agreeing to the request will not be required or permitted to modify his tender, but will be required to extend the validity of his EMD for a period of the extension, and in compliance with Clause 4 & 15 in all respects.

    (c) In case the evaluation of tenders and award of contract is not completed within extended validity period, all the tenders shall be deemed to have become invalid.

14. (a) Attention of the tenderer is drawn to the following declaration which forms part of the Letter of Tender to be signed by the tenderers.

    (b) 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 the Instruction to Tenderers or during such extended period as agreed to by me / us such period to date after 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 E.M.D. to the Board."

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

16. The tenderer or his authorized agent is expected to be present at the time of opening of tenders.

17. The Board reserves to itself, the right to reject all or any of the tenders or accept any tender or part thereof without assigning any reason for doing so and to cancel the Bidding process and reject all Bids, at any time prior to the award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the Employer's action.

18. The acceptance of the tender by the competent authority shall be deemed to result in and constitute a valid and concluded contract binding on the tenderer notwithstanding the non-execution of contract agreement.

19. The Board will not accept letters authorizing the Board or adjust amounts towards E.M.D. / S.D. either from pending bills of the tenders or from deposits held by the Board for other works.

20. The successful tenderer within 14 days after notification of the acceptance of the tender by the Board shall furnish a Security Deposit in the form and manner as below:

    (i) Form in which S.D. collected.

        (a) In the shape of NSC / KVP / Post office Time Deposits valid for the required contract period and pledged in favour of Managing Director, CMWSS Board Payable at Chennai and shall have the necessary transfer endorsement of the Post office.

        (OR)

        (b) Fixed Deposit for the required period from nationalized / schedule Bank / TNSC Bank in favour of Managing Director, CMWSS Board Payable at Chennai.

        (OR)

        (c) Certified cheque / Bank Draft in favour of MANAGING DIRECTOR, CMWSS Board Payable at Chennai.

    (ii) Manner in which S.D. collected

        (a) For tenders with any plus percentage and upto (-) 5% over departmental value 2% of the contract value.

        (b) For tenders between (-) 5% to (-) 15% over departmental value 4% of the contract value.

        (c) For tenders, above (-) 15% over departmental value 5% of the contract value.

21. It is open to the competent authority to insist on an additional Security Deposit upto a maximum of 5% of the contract value, if the tender of the successful tenderer is seriously unbalanced in relation to Board's estimate of the cost of work to be performed under this contract.

22. The E.M.D. of unsuccessful tenderers will be returned to them through tender Portal. The E.M.D. of the successful tenderer will be returned to him after he deposits his Security Deposit and executes the agreement.

23. The successful tenderer shall pay all stamp charges on the contract.

24. Should the successful tenderer fail to furnish such security or execute the contract agreement within 14 days after notification of the acceptance of the tender by the Board or to furnish the Income Tax Clearance Certificate as required in Clause 11 and

Certificate of GST as required in Clause 12 of the Instruction to Tenderers, his E.M.D. is liable to be forfeited to the Board and the concluded contract may, 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.

25. 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 the proper completion of the contract through special mention thereof may have been omitted in the specification by drawings.

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

27. Tenderers should refer to the description of works given in the accompanying specification 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 specifications or shown in the drawings and it is to be distinctly understood that no claim will be entertained which is based on the circumstances that works may be described in the specifications to which apparently no corresponding item is given in the schedules. Items for which no rate or price is entered by the bidder will not be paid for by the Board when executed and shall be deemed covered by the other rates and prices in the price schedule / Bill of Quantities.

28. Should the contractor fail to undertake to commence the work within 7 days from the date of receipt of work order, the Earnest Money 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 persons to undertake or perform, provide, execute and do all works, materials or matters and things in the tender schedule at the risk and cost of the contractor.

29. The entire work should be completed within the specified contract period of _____ from the date of receipt of individual work order issued under this contract.

The following additional penal conditions will be imposed to the contractor in this contract, who fails to take up the work, or who fails to complete the work, causing inordinate delay.

(i) The contractor may be expelled for a period of One Year from participation of any tenders in the Board. Their contract will be terminated, balance work will be completed at their risk and cost and security deposit paid for this work will be forfeited.

(ii) After the completion of the expelled period and after approval of the competent authority they will be permitted to participate in future tenders / renewing the registration after payment of fine according to the Class of Registration as follows:

a) Class – I = Rs.25,000/-
b) Class – II = Rs.20,000/-
c) Class – III = Rs.15,000/-
d) Class – IV = Rs.10,000/-
e) Class – V = Rs.5,000/-

30. Whenever detailed specifications for various items of work included in 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 Engineer shall apply in that order.
31. The contractor should make his own arrangements to procure the shoring and timbering materials.
32. Tenderers should give full Postal address of their office in their tender. The delivery at the above named place or posting 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 thereupon the tender to contractor in writing. The address may be changed at any time by an instrument executed by the tenderer or contractor and delivered to the Contracts Engineer of the Board.
33. Any Tenderer who has been debarred/ black listed by any State/ Central Government Departments, or State / Central Undertakings/ Boards/ Corporations, Municipalities and Municipal Corporations, Urban Developments Authorities, International Funding agencies such as World Bank, KfW, JICA, ADB, etc. will be disqualified from participation in the tender.(Format enclosed)
34. Bidders shall provide declaration of undertaking for Social and Environmental responsibility in accordance with sub-clause 72.

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

## SPECIAL INSTRUCTIONS TO BIDDERS FOR E-BID SUBMISSION

The tender notice is also available on the web site www.tntenders.gov.in. This site permits downloading of the tender documents at free of cost. The intending tenderers may visit this site and download the tender document at free of cost and use it for tender submission.

The tenderer should upload the tender on the web site using the e-token.

The following list of items is to be uploaded by the tenderer (or) bidder within the date & time of submission of bids.

1. **Earnest Money Deposit**

   The tenderers should submit EMD by online transfer only through Tamil Nadu Government eProcurement System. The tenderer shall submit scanned copy of online transactions statement towards EMD along with tender documents.

   The tenderers are requested to upload the Digitally signed tender schedule along with the letter of tender using DSC tokens while submitting the tender.

2. **Schedule of Works / Bill of Quantities:**

   The Bidder has to fill only the rates/ percentage in figures in the columns provided in Bill of Quantities in excel form and uploaded as boq.xls file.

### PROCEDURE FOR E - SUBMISSION

1. Tenderer should do the registration in the e – tender site using the option available. Then the Digital signature registration has to be done with the e-token, after logging into the site. The e-token may be obtained from one of the authorized Certifying authoritiesauthorised by Government of India for issuing DSC. The list of address of the DSC vendors can be seen in https://tntenders.gov.in/nicgep/app?component=%24DirectLink_0&page=DSCInfo&service=direct&session=T&sp=SDSCAddress.pdf

2. Tenderer then should login to the site using user id and the corresponding passwords.

3. The e-token that is registered should be used by the tenderer and should not be misused by others.

4. After downloading the tender schedules, the tenderer should go through them carefully and then submit the Tender Schedules as directed, otherwise, the tender will be rejected.

5. If there are any clarifications, this may be obtained online through the e-tender site, or thro' the contact details. Tenderer should take into account the corrigendum published before submitting the tenders online.

6. Tenderer, in advance, should get ready the Tender Schedules to be submitted as indicated in the tender schedule and they should be in the prescribed format.

7. The tenderer should read all the terms & conditions mentioned in the tender schedule and accept the same to proceed further to submit the bids.

8. The Tenderer has to submit the tender Schedule online well in advance before the prescribed time to avoid any delay or problem during the e-submission process.

9. The tenderers should submit the EMD by online transfer only through Tamil Nadu Government eProcurement System. The Tenderer shall submit scanned copy of online transaction statement towards EMD as part of Tender Schedule.

10. The CMWSS Board will not be held responsible for any sort of delay or the technical difficulty faced in the submission of tenders online by the tenderers.

11. The tenderer should submit the Tender Schedules by online mode through the site (https://tntenders.gov.in)

12. The online tendering super scribed as “Tender Schedules “contains Scanned copy of EMD, Tender Schedules & BoQ furnished by CMWSS Board along with any additional documents to be submitted in the online tender. The Tender Schedule furnished by CMWSS Board uploaded in the PDF format should not be changed or converted to any other format while submitted in the online bidding

13. The Tender shall be **digitally signed using DSC token** of the Tenderer. All pages of the Tender where entries or amendments have been made shall be **digitally signed using DSC token while uploading the bid**.

14. The tendering system will give an ACKNOWLEDGEMENT Message only after successful uploading of all the required Tender Schedules. The ACKNOWLEDGEMENT is the tender summary. With the Tender No., Date & Time of submission of the tender with all other relevant details. The Schedules submitted by the tenderers will be digitally signed with the e-token of the tenderer and then submitted.

15. The ACKNOWLEDGEMENT should be printed and to be kept as a token of the submission of the tender. The ACKNOWLEDGMENT will act as a proof of tender submission for a tender floated and will also act as an entry point to participate in the tender opening date.

16. Tenderer should log into the site well in advance for tender submission so that he submits the tender in time i.e. on or before the tender submission time. If there is any delay, due to other issues, tenderer only is responsible.

17. Each Schedule to be uploaded thro’ online for the tenders should be less then 2 MB, If any Schedule is more than 2 MB, it can be reduced through zip format and the same can be uploaded. It may be however noted that, if the file size is less than 1MB the transaction uploading time will be very fast.

18. The time setting fixed in the server side & displayed at the top of the tender site, will be valid for all actions of requesting, tender submission, tender opening etc., in the e-tender system. The tenderers should follow this time only, during tender submission.

19. All the data being entered by the tenderers would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered will not be viewable by unauthorized persons during tender submission & not be viewable by anyone until the time of tender opening. Overall, the submitted tender Schedules become readable only after the tender opening by the authorized individual.

20. The Confidentiality of the tenders is maintained since the secured Socket layer 128-bit encryption technology is used. Data storage encryption of sensitive fields is done.

For any other queries, the bidders are asked to contact thro'

Mail: secandm@gmail.com

Phone no.: 044-28451300-320, Extn. 209 or 254 well in advance

This Department will not be held responsible for any sort of delay or the difficulty faced in the e-bid submission of tenders online by the bidders.

**SECTION – I**
**PART – II**

**Chennai Metropolitan Water Supply and Sewerage Board**
**Contracts & Monitoring Wing**

**Tender No. CNT /**

**Name of work:**

## LETTER OF TENDER

To be submitted through online only via e-procurement portal www.tntenders.gov.in on or before 3.00 p.m. on _____ day of _____ 202

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

Sir,

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

I / We herewith enclose scanned copy of online transaction statement towards EMD as part of Tender Schedule for having remitted for Rs._____ by online transfer only through tender portal 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 14 of the Instructions to Tenderer or during such extended period as agreed to by me / us, such period to date after the due 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 / copy of Income Tax Return filed with Income Tax Department, GST, ESI, EPF certificates, Pan Card 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 on 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 expenses arising from or by reason of such failure and arrangements.

I / We undertake to assume full responsible for the stability and soundness of the works structures that will be executed by me / us as per the contract.

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

In case my / Our tender for the above work is accepted, I / We agree and guarantee to commence the said works within a period of seven days and complete it within the specified contract period of _____ from the date on which the work order received by me / us. I / We also agree that time is the essence of contract. I / We have actually inspected the site of work and have tendered for the work after inspection.

UNDERTAKING

I / We have gone through the copy of standard tender document received from the Office of the Contracts and Monitoring wing and abide by the same for this contract also.

As witness my / our hand this _____ day of _____202

Signature:_____

Name and Address:

## SECTION – I PART – III

**Chennai Metropolitan Water Supply and Sewerage Board**
**Contracts & Monitoring Wing**

## AGREEMENT

ARTICLE OF AGREEMENT made this _____ day of _____ Two Thousand and _____ BETWEEN_____
_____
_____
(thereinafter referred to as the "Contractor") on the one part and the Chennai Metropolitan Water Supply and Sewerage Board, No.1, Pumping Station Road, Chintadripet, Chennai–2. (hereinafter called 'The Board') on the other part:

WHEREAS the 'Contractor' submitted to the Board the tender attached dated _____ day of _____ Two Thousand and _____ whereby the contractor offered and undertook to carryout the works specified under this contract and accessory work in
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
in the state of Tamil Nadu in India, and provide the works, materials, matter and things described or mentioned in these presents at the prices set forth in the schedule annexed to such tender and the contractor also undertook to do all extra and varied works which might be ordered as part of the contract on the terms provided for in the conditions and specifications hereto annexed and the Board accepted such tender in pursuance where of the parties here to have entered into this contract.

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 PRESENCE WITNESS THAT for the consideration hereinafter mentioned, the contractor convenient and agrees with the Board and their successors in manner following that is to say; that the contractor shall and will within time specified in this Letter of Tender thoroughly and efficiently and in a good workman like manner perform, provide, execute and do all the works, materials, matters or things incidental to or necessary for the entire completion of the works specified under this contract necessary works including all works shown in the drawing herein after referred to or described or set forth in the said specifications 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 (hereinafter 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 provide and give together with any alterations in the works or additions thereto, in the time and manner in each schedule (Bills of Quantities) and specifications stipulated to the entire satisfaction of 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 contract the prices or sum mentioned in such certificates as due to the contractor under the terms of contract subject nevertheless to deductions or additional thereto 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 whatsoever.

(b) The term contract shall include these presents and the Instructions to Tenderers, Letter of Tender, schedule (Bill of Quantities) and specifications hereto annexed and the plans and drawings hereinafter referred to.

**IN WITNESS WHEREOF 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

**Signature, name and**
**Designation of witness:**

The common seal of the CMWSS
Board was hereunto duly affixed
in the presence of:

In witness whereof I hereunto
affix my signature.

CONTRACTS ENGINEER ( )
CHENNAI METROPOLITAN WATER
SUPPLY AND SEWERAGE BOARD.

## SECTION – II

## General Technical Specifications

PART - I - GENERAL STIPULATIONS AND CONDITIONS

PART - II - TECHNICAL SPECIFICATIONS

(A) - CIVIL WORK – GENERAL SPECIFICATIONS

(B) - WATER SUPPLY & SEWERAGE WORKS – GENERAL SPECIFICATIONS

(C) - WATER SUPPLY – SPECIAL SPECIFICATIONS

(D) - SEWERAGE – SPECIAL SPECIFICATIONS

(E) - PUMPING MACHINERY AND ELECTRICAL WORKS – GENERAL

(F) - ADDITIONAL SPECIFICATIONS RELATING TO THE WORK IN THIS CONTRACT

## SECTION – II
## PART – I

## GENERAL STIPULATIONS AND CONDITIONS

1. INTERPRETATION — In this contract the following words 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, Chintadripet, Chennai – 2, and any Officer duly authorized by this Board to act on its behalf.

   (b) 'Contractor' means the person or firm or company contracting for the work specified, including his or their executors or administrators of legal representative or successors:

   (c) 'Engineer' means Superintending Engineer or any other Engineer appointed from time to time by the Board to act as such in connection with these Works. Whenever any Work is specified to be done or material supplied to the satisfaction of the Engineer, shall be taken as including his properly authorized assistants and duly authorized representatives.

   (d) 'Works' means Work to be constructed, completed and maintained in accordance with contract.

2. WORKS COMPRISED IN THE CONTRACT — This contract comprises the execution and completion of the Work described or mentioned in these specifications and in the schedules hereto annexed and shown upon the drawing herein and therein referred to and all extra Works which may be ordered under the powers herein contained, the drawings, specifications, schedules etc. are to be considered as explanatory of each other and no advantages shall be taken of any omission in any of these document.

3. DISCREPANCIES — Should any discrepancy appear in any of the documents and drawings including in the contract or between different parts of the same documents or any ambiguity or insufficiency of information, the Contractor shall point out the same to the Engineer in writing and received his instructions explanations 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 the sole judge) being omitted to be shown or described in the drawings, specifications and schedules, the Contractors shall not-withstanding execute and provide at the rates noted in the bills of quantities all such Omitted Works and things as if they had been clearly shown and described and according to the direction of the Engineer and to his satisfaction.

5. SCHEDULE (BILLS OF QUANTITIES)

The Contractor shall not be held responsible for the accuracy of the quantities set out in the schedules hereto attached but only for the accuracy of the prices amounts and totals therein appearing. The rate for each item of the work in the schedule shall be inclusive of the cost and charges of all materials, 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 fulfillment of all the requirements relating thereto as specified in the contract. If any error, omission or mis-statement shall be discovered in the said quantities the same shall not vitiate the contract for release the Contractor from the execution and completion of the 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 quantities of work include in this contract as set out in the priced bills of quantities and should it appear measurement that these quantities of work have been exceeds, 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 MEASURE-MENT

Should the final measurement of the Work show that the total quantities of the various Works executed are less than those set out in the bills of quantities, the Engineer shall in like manner deduct at appropriate rate the value of such difference from the total sum of the contract. The measurements above referred to will be taken and recorded as prescribed in the T.N.B.P. (latest edition).

8. DRAWINGS

The drawings referred to in the contract are detailed in Section – III Part – IV. They are signed by the Engineer authorized by the Board. The Engineer may issue such further or amended drawings as he shall from time to time think fit and all such drawings signed by him shall be held to be included in this contract. Working drawings will be furnished from time to time by the Engineer to the Contractor. No drawings shall be used by the Contractor unless it has been signed by the Engineer.

The drawings are intended to show the position and

extent of works and the details of their construction; but neither these nor the specification are guaranteed to show or described every part or position of the work. The Contractor shall return to the custody of the Engineer at the termination of the contract, all plans, drawings, writings, papers, specifications and other documents which may have been delivered to him for his use and in the meantime, the Engineer and such persons as he may appoint, shall have full access thereto, at all time and for all purposes and the same shall be kept at or near the site of the work.

9. CONTRACT GENERAL EXPLANATION

The works under this contract and every addition, alteration of 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 workman like manner, with materials of the best and approved quality of their respective kinds, according to the particulars contained in or implied by the specifications and schedules hereto attached and the said drawings herein referred to or such other additional particulars, explanations and drawings as may be given or proved by the Engineer and to the full and entire satisfaction of 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 time 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 purpose they are applied or not in accordance with the said bills of quantities, specifications, drawings, instructions or directions.

10. CONTRACTOR'S LIABILITY

The Contractor shall be absolutely and solely responsible for injury or damage 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 skillfully in conformity and strictly in conformity with the provisions of the specification or not. To this end, the Contractor shall at his expenses, shore, sling, protect, support, alter, restore and make good all houses, bridges, barns, buildings, drains, culverts, water mains, sewers, electric posts, fences or any other properties or things which may be disturbed or damaged during the execution of the works, should he fail to do so, the same shall be carried out by the Engineer and the cost thereof recovered from the Contractor, Care shall be taken not to move without the consent of the proper authorities, any pipe, culvert, cable, pole, wire, buildings or other structures. If instructed by the Engineer in writing, permanent supporting works shall be constructed by the Contractor, or the positions of any existing work shall be changed. Such permanent work that may be ordered in writing by the Engineer, if specified by him of be an extra work, will be paid for on the valuation fixed by the

Engineer.

11. POWER TO VARY WORK

The description of Work to be executed by the Contractor are set forth in the specification, schedules and in the drawings, but the Engineer reserves the power to vary, extend or diminish the quantities of Work, to alter the line, level, or position of any work to increase, change or to add or decrease the size, quality, description character or kind of any work, to order the Contractor to execute the Works or any part thereof, by day or to add 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, alterations, increase, change or decrease other than for the Work actually done, calculated according to the prices tendered and accepted in this Contract.

12. EXTRA OR VARIED WORK

If the Engineer uses the power reserved to him under Clause 11 above 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. This shall apply to unforeseen items of work which are not found in the Bill of Quantities. If the rates are not available in the Schedule of Prices,, a rate or price shall be agreed upon between the Engineer and the Contractor, in writing and failing their agreement, the Contractor, shall forth will execute such order and the Engineer shall determine the rates or price at which the work shall be paid of.

13. NOTICES REG. SHORING ETC.,

In any case in which works of shoring or other Works for the protection or security of buildings are necessary, the contractor shall within a reasonable period before the execution of such Works serve notices upon the occupiers of the buildings intended to be shored up or otherwise secured and upon all other parties entitled to notice, apprising them respectively that such Works are necessary, that the contractor is about to execute the same, and will, at a time to be specified in such notice, enter upon the premises for the purpose of executing such Works.

14. CONTRACTOR TO BE RESPONSIBLE FORALL TRESPASSES AND DAMAGES

In the event of accident to any person including employees of the 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 Contractors as so much money paid to him on account

of his contract and the Contractor shall not be at liberty to dispute or question the right of the Board to make such payment for him or on his account, notwithstanding the same may have been made without his consent of authority, and decision or determination in law or otherwise to the contrary notwithstanding. The Board shall not be liable to, for or 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 inconsequence of any accident or injuries to workmen or others in the employment of the Contractor or any Sub-Contractor or of any person acting under him or on his behalf or the staff / persons 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 of any and all cost and expenses incident thereof or consequent thereon.

14.A The contractor shall conform to and comply with the regulation and by laws of the National or State / Central Govt or the Board and of the all-other local authorities such as Corporation of Chennai. The Tamil Nadu Electricity System, the Chief Electrical Inspector to Government of Tamil Nadu, the Government Customs and Police Departments, Fire Service, the provision 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 Regulation Act, Employees Provident Fund Act, 1961 and scheme made under the said Act. Health and Sanitary Arrangement for Workers etc., and the Contractor Labour (Regulation and Abolition) Central Act 1970 and the Contract (Regulation and Abolition) Central Rules 1971 and Safety and preventive measures and digest of labour laws, available in the Board etc., for Welfare and provision and Protection of Women from Sexual Harassment Act, 2013.The Board shall not be liable for the failure of the contractor in conforming to the provision of the Act., Rule and Regulation etc., referred to in the above para and in case of any contravention of the provision of the Acts, Rules and Regulation etc., the Contractor shall keep the Board indemnified against any loss, cost and damage in the event of the action being taken for contravention.

The contractor shall commit complying with and ensuring that our Sub-contractors and major suppliers under the Contract comply with international environmental and labour standards and good practices, consistent with laws and regulations applicable in the country of implementation of the Contract and the fundamental conventions of the International Labour Organisation (ILO) and international environmental treaties. Moreover, we shall implement environmental and social risks mitigation measures when specified in the relevant environmental and social management plans or other

similar documents provided by the Project Executing Agency and, in any case, implement measures to prevent sexual exploitation and abuse and gender-based violence.

Further the contractor has to give a declaration for the following provisions as per the format enclosed in Page No.105 of this document.

i) That in the capacity of Contractor, the contractor has to comply with the provisions of Contract Labour (Regulations & Abolition) Act, 1970 by obtaining a valid license under the Act and the Rules thereto and similarly under Factories Act wherever applicable.

ii) The Contractor has to pay the wages in accordance with the Minimum Wages Act to all his / their employees.

iii) The staff who have been employed by the contractor should also have ESI & EPF number in their names. The contractor has to pay ESI & EPF contributions towards the staff every month. The employee's contribution has to be deducted from his salary only and will not be reimbursed by the Board under any circumstances. The quoted value should be exclusive of employer's share towards ESI and EPF. The copies of the remittance challans of the ESI and EPF contributions should be submitted along with the bill for reimbursement of Employer's share of ESI and EPF and for claiming the subsequent monthly payment. If the evidence of ESI and EPF remittance are not produced, both employee and employer share will be recovered from the bill. Further payments will not be made in case of failure in adhering the procedure. Similarly, the contribution/premium/tax etc. payable to any other statuary authorities should be remitted by the contractor directly, after registering with the respective departments.

   a. The contractors are requested to register on Employees Provident Fund Organizations (EPFO) Unified Portal: https://unifiedportal-emp.epfindia.gov.in/epfo. and furnish the details along with the tender document.

   b. Contractors cannot execute the agreement until the PF code of the contractor as well as individual UAN details of their workers provided by the contractor.

iv) That the contractor has to further declare and undertake that in case of any liability pertaining to his / their employees is to be discharged by the Principal Employer for his / their lapse, the contractor undertake to reimburse the same or the Principal Employer is authorised to deduct the same from the contractor's dues as payable.

v) That the contractor will maintain the Registers and

records about the Contract Labour employed under Section 29 of Labour (Regulation & Abolition) Act wherever applicable.

vi) That the contractor will take insurance policy under Workmen Compensation Act to meet out any untoward incident until the contract labourers are issued with ESI card.

vii)

1) That the contractor shall not employ any child labour in a house / worksite / establishment and other places.

2) As per the Section 2 (ii) of the Child Labour Prohibition & Regulation Act, 1986, the child means a person who has not completed 14 years of his age.

3) Further the Contractor shall not employ children in a manner that is economically exploitative, or is likely to be hazardous, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development. Where the relevant labour laws of the Country have provisions for employment of minors, the Contractor shall follow those laws applicable to the Contractor. Children below the age of 18 years shall not be employed in dangerous work.

viii) The contractor shall provide sanitary latrines and urinals. Toilets provided shall have running water availability all the time. Bathing, washing and cleaning areas shall be provided at the site for construction labour. Washing and bathing places shall be kept in clean and drained condition. Workers shall be hired especially for cleaning of the toilets and bathing area. Septic tanks and soak pits shall be provided at site for disposal of the sewage generated.

| | | |
|---|---|---|
| 14.B | CONTRIBUTION TO FUND FOR BENEFIT OF MANUAL WORKERS IN THE EMPLOYMENT IN CIVIL WORK | Notwithstanding anything contained in any Law for the time being enforce or in any arrangement every person / Contractor who undertakes any civil work shall be liable to pay a sum at such percent, not exceeding one percent of the total estimated cost of the civil work i.e. construction or maintenance of dams, bridges, roads, etc., as may be fixed by the Government, by notification, as contribution to the fund constituted for the benefit of manual workers in the employment in Civil Works under a scheme, framed under section 3 of Tamil Nadu Manual Worker (Regulation of Employment and Conditions of Works) Act, 1982. The percentage of total estimated cost of civil works, as may be fixed by the Government notification from time to time shall be paid by the Board, to the Tamil Nadu Constructions Workers Welfare Board within such period as may be prescribed. |
| 14.C | Tax | The Tenderer shall quote the price schedule exclusive of GST. The GST rates with amount to be shown separately. However, the rates quoted by the Contractor shall be deemed to be inclusive of GST for the performance of this Contract. The Employer will deduct such taxes and other statutory levies at source as per applicable law. Any statutory variations in duties / taxes, which takes effect from a date subsequent to the due date for receipt of tender, shall be to CMWSS Board‘s account. |
| 15. | ACCESS TO WORK | The Contractor shall inform himself of the number and nature of the existing roads and cart tracts available for access to the site of the work and make due provision in the rates for any difficulty involved in carting materials and surplus excavation. |
| 16. | CONTRACTOR NOT TO COMMENCE WORK ON PRIVATE PROPERTY UNTIL AUTHORISED | The Contractor shall not commence any work in or upon, under across or through any land, house building shed, yard, area, roadways, ground, garden or any other place being private property, until authorized in writing by the Engineer to do so. |
| 17. | TEST | Every part of the work 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 test shall in all case be made at the Contractor’s sole expense. |
| 18. | CONTRACTOR RESPONSIBLE FOR FINISHED ACCURACY OF WORKS | The Work will be set out by the Engineer who will give proper lines, positions, level, depths; and particulars on the ground, the Contractor provide poles, rails, boning rods, straight edges, struts, pegs, etc. and all labour for fixing the same. The Contractor must check and satisfy himself of the accuracy of such setting out and shall be responsible for the same and for the finished accuracy of the Work in accordance with the contract. The Contractor shall take every care that the pegs or pillars |

for levels or lines are carefully preserved, from disturbances. Should he neglect this precaution, the cost of re-setting shall be borne by him.

19. WORKS UNDER THE CONTROL OF THE ENGINEER WHO MAY REJECT MATERIALS OR WORKMANSHIP

The Work shall be carried on and 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 workmanship or 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 authorized 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.

20. CONTRACTOR'S SUPERVISION OF WORK

(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 the uncounted and methods of preventing accidents) as may be requisite of the satisfactory construction of the Works. The proposed methodology and program of construction including Environmental and Social Management Plan backed with equipment planning and deployment, duly supported with broad calculations and quality control procedures proposed to be adopted, justifying their capability of execution and completion of the work as per technical specifications within the stipulated period of completion as per milestones.

(ii) The Contractor or a competent and authorized agent or representative approved of in writing by the Engineer (which approval may at any time be withdrawn) is to be constantly on the Works and shall give his whole time to the superintendence of the same. Such authorized agent or representative shall be in full charge of the Works and shall receive on behalf of the Contractor direction and instruction from the Engineer. The Contractor or such authorized agent or representative shall be responsible for the safety of all operations.

(iii) The scale and qualification for the employment of technical staff and the rate of penalty for the failure on the part or the Contractor to employ the technical staff for the Work be as indicated below:

| Value of contract<br>1 | Scale of employment of Technical Staff and minimum qualification<br>2 | Penalty<br>3 |
|---|---|---|
| Above Rs.50,000/- upto Rs.5 lakhs | One Diploma holder in Civil Engineer or a retired Engineer (Civil) from Govt. service or any public body. | Rs.1000/- Per month |
| Above Rs.5 lakhs and upto Rs.10 lakhs | One B.E. (Civil) or equivalent degree holder in Civil Engineering with one year experience or a retired Civil Engineer from Government service or any public body not below the rank of an Asst. Exe. Engineer. | Rs.2000/- Per month |
| Above Rs.10 lakhs upto Rs.25 lakhs | One B.E. (Civil) or equivalent degree holder in Civil Engineering with 3 years experience or a retired Civil Engineer from Government service or any public body not below the rank of an Asst. Exe. Engineer plus one Diploma Holder in Civil Engineering or retired J.E. (Civil) from Govt. service or any public body. | Rs.3000/- Per month |
| Above Rs.25 lakhs | One B.E. (Civil) or equivalent degree holder in Civil Engineering with 3 years experience or a retired Civil Engineer from Government service or any public body not below the rank of an Asst. Exe. Engineer plus one Diploma Holder in Civil Engineering or retired J.E. (Civil) from Govt. service or any public body.<br>One M.Sc. Environmental Science or M.E. Environmental Engineering with minimum 3 years of experience in Environmental Health & Safety. | Rs.4000/- Per month |

Such Engineer or agent shall on behalf of the Contractor receive and have charge of at the site of the Works, all drawings, specifications and schedules and of all writing, papers and documents, (or copies thereof) which may be delivered to or for the use of the Contractor or for his guidance and such Engineer or agent shall also on behalf of the contractor receive, execute and obey all such instructions and directions as may be given by the Engineer and he shall not be changed without the consent of the Engineer, Instruction given to such Engineer or agent shall be considered as having been given to the Contractor.

20A. To qualify for a package of contracts for which tenders are invited, the tenderer must demonstrate having availability of the key and critical equipments and key personnel with adequate experience to meet the aggregate of the qualifying criteria for the participating packages.

21. ORDER BOOK

An order book will he kept by the Junior Engineer / Asst. Engineer in charge at the site of the Works, order entered in this books by the Engineer, the Project Engineer, Assistant Executive Engineer,

Assistant Engineer or Junior Engineer shall be held to have been formally communicated to the Contractor. The Assistant 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.

22. LEVELS ETC.

The levels and the other particulars shown upon the drawings such as the size and position of existing main, cables, Railway line, storm water drain etc. are believed to be correct, but the Contractor must verify the same, as well as all other particulars of the Contract on the ground, and he will be held responsible for the consequences of any error contained therein or omission there from.

23. 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 and the drawings; 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 true intent or meaning of the drawings.

(b) The quality of the work carried out or materials supplied by the Contractor and

(c) Any requirements of the Engineer under clause 27.

24. BOARD MAY OCCUPY THE SITE AND EMPLOY OTHER CONTRACTORS

The Board expressly reserve to themselves the right to occupy for their own purpose of whatever kind, at any time and for so long a time as the Engineer may be notice in writing to the Contractor require any portion or 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 agents and workmen other than the Contractor in the execution of matter not the subject of the Contract and Contractor shall not obstruct such agents and workman, but without extra charge and without relief from any liability 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.

25. TEMPORARY DIVERSION OF ROADS

During execution of the works the Contractor shall make at his cost all necessary provision for the temporary diversion of roads, cart-tracks, footpaths, drains, water courses, channels, etc., should he fail to do so, the same shall be done by the Engineer and the cost thereof will be recovered from the Contractor.

26. COMMENCEMENT OF WORK AND RATE OF PROGRESS

(a) The Contractor must commence, execute and complete with such expedition as the Engineer shall required and in a manner satisfactory to the Engineer all works for which he has accepted orders before commencing the Works the Contractor shall collect at the site all necessary materials required for the work. If required by the Engineer the Contractor shall commence and proceed with the work at more than one place pointed out by the Engineer. He shall employ such numbers of men as may be considered necessary by the Engineer for the efficient and expeditions execution of the Work.

Work on pipe line along roads:

(b) Before commencing the Work, the Contractor shall collect at the site all necessary materials for timbering not less than 15% of the length involved in the contract subject to a minimum of 100m. if required by the Engineer the Contractor shall commence and proceed with the work at more than one place pointed out by the Engineer along the length of the pipe lines included in this contract. He shall break up road way or ground only in such length at such times and at such places as may be ordered by the Engineer. The Engineer will from time to time lay down the minimum rate of progress for all classes of Work based on the availability of pipes and other materials to be supplied by the Board and the Contractor must strictly adhere to the rate so laid down.

(c) For all other Works, within 7 days from the date of receipt of the work order the Contractor shall submit to the Engineer for his approval programme showing the order of procedure in which he proposes to carry out the Works within the stipulated period for the completion of work and thereafter shall furnish such further details and information as the Engineer may reasonably require in regard thereto. The Contractor should also indicate in his programme the date of completion of each section of part of Works included in the contract.

(d) If the Contractor does not maintain the tempo of Works and maintain the rates of progress in the said manner, the Engineer shall have the powers without vitiating the contract and he is hereby authorized to take the whole or any part of the work from the Contractor and execute it either by direct labour or through the medium of other parties at the Contractor’s risk and cost.

(e) For judging the progress of the work, the Contractor shall submit to the Engineer a monthly progress report in the form given below showing the correct progress of Work each month so as to reach

the Engineer not later than the sixth of every succeeding month.

**FORM UNDER CLAUSE - 26**

| Description of work | Qty. of work done upto the end of last month | Qty. of work done during the month | Total Qty. done up to date | Total Qty. to be done upto the month as per programme | Difference more or less (5-4) | Remarks |
|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) |

27. SKILLED WORKMEN TO BE EMPLOYED

The Contractor shall employ only competent and skilled persons to do the works. Whenever the Engineer shall inform him in writing that any person on the Works is in his opinion unsatisfactory of 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.

28. NOTICE TO TELEPHONE RAILWAYS & ELECTRIC SUPPLY UNDERTAKING

The Contractor shall give all notices required by any law or custom or as directed by the Engineer and whether notice be so required or so directed or not shall in all cases give due and sufficient notices to all companies and other bodies and persons such as railways, water, gas, electric lighting, telephone, hydraulic power, Chennai Corporation Work, and Electrical Department and Chennai Metropolitan Water Supply & Sewerage Board Department. Postal Authorities and all persons and all authorities having charge of the telegraph, water and other pipes, sewers, culverts, drains, water courses railway, telephone, highways, road, streets, foot and carriage ways, payments and other works, previous to commencement and at the completion of any work under this contract in order that the proper bodies or persons in respect of the matter aforesaid may be enabled attend and see that the works within their jurisdiction and all matters and things incidental and appertaining thereto are secured, relaid or reinstated in a proper and satisfactory manner and so that such bodies and persons may be enabled to attend and secure, shore up, alter the position or remove, relay and reinstate the works and things belonging to them but the Contractor not withstanding any notice given aforesaid shall be chargeable and responsible for the proper protection and restoration of all matters and things herein referred to.

29. OPENING FOR EXAMINATION

No work shall be covered up until it has been examined by the Engineer and directions given by him to that effect and if the Contractor cover up any work before it has been so examined, shall uncover the same when required by the Engineer at his expense and should the Engineer require it for his further satisfaction, the Contractor shall at any period during the continuance of his contract, pull down any part of work and make such opening and to such extent through any part of the said

works as the Engineer may direct and the Contractor shall make good the same again to the satisfaction of the Engineer.

30. 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 Project Engineer shall act, as the Engineer during his absence or until the Board shall appoint some other person to act as such Engineer and Project Engineer or other person appointed as aforesaid as the case may be shall during the said absence of the Engineer, 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 way connected therewith, as are conferred on the Engineer by virtue of this contract.

31. NIGHT WORK — The Works shall without extra charges be carried on day and night without intermission. Should there be any cause whatsoever which in the judgment of the Engineer, shall require it, but no work shall be carried on in the night or on Sundays or in other than ordinary working hours without the prior sanction of the Engineer in writing.

32. WATCHING AND LIGHTING — The Contractor shall at his expenses provide at the site of Work sufficient lighting and watching and fencing by night and by day and shall in every respect conform to the police regulations in these matters and he shall free and relieve the Board, should he neglect to do so, the same shall be provided by the Engineer and the cost thereof will be recovered from the Contractor.

33. PUMPING ETC. — The Contractor shall at his expenses pump out or otherwise remove any water which may during the continuance of the contract be found in the mains, cuttings, excavations, banks, foundations, trenches or Works and may hamper the programme of all the works and be detrimental to the quality of work and shall provide all dams, pipes, drains, chutes, sumps and other means necessary for keeping the works clear of water during their progress. The Contractor shall at his expense keep the whole of the works thoroughly drained and clear of water below the lowest level of any part of them as long as may be required by the Engineer and if considered necessary by the Engineer continuously day and night by pumping with hand or steam or oil or other pumps and engines without damaging the existing or new structures nearby during the operations. Where required by the Engineer, sumps are to be sunk and the pumps fixed outside the trenches. The Contractor will not be allowed except by written sanction of the Engineer to use sewers (including those finished by himself) to carry or serve as an outlet for any water or sewage.

34. SHORING — The Contractor shall at his expenses and without extra

| | | |
|---|---|---|
| | SCAFFOLDING ETC. | charge make provision for all shoring scaffolding, centering, lifting, pumping, labour, materials and plant and for difficulties encountered in excavating, laying pipes and building and shall properly and securely timber all trenches all other excavation to the satisfaction of the Engineer. |
| 35. | FILLING IN HOLES AND TRENCHES ETC. | The Contractor immediately upon completion of the works shall fill up holes and trenches which may have been made or dug, level the mounds, or heaps or earth that may have been raised or made and clear away all rubbish which may have become superfluous or have been occasioned or made in the execution of the works and the Contractor shall bear and pay all costs, charges damages and expenses which may be incurred or sustained on account or in consequence of any accident which may happen by means of holes and trenches connected with the works being dug and left unfenced or materials being left or placed in improper locations. |
| 36. | PROVISION FOR EXISTING DRAINAGE ETC. | The Contractor shall make all necessary provisions for the conveyance of the temporary and permanent sewage and surface water now discharging through the existing sewers, pipes, culverts, channels and drains. Such conveyance is to be carried out in a proper and works man like and hygienic manner to the satisfaction of the Engineer. |
| 37. | CONTRACTOR TO JOIN UP WITH WORK ALREADY EXECUTED | The Contractor will be required at his cost to bond into join up with and continue any work already done by the Board and shall do all the work necessary in order to ensure a perfect junction between existing and new work which shall be thoroughly cleaned and wetted if required. |
| 38. | MATERIALS IMPLEMENTS AND LABOUR PROVIDED BY THE CONTRACTOR | Except for such materials as are herein stated to be supplied by the Board, the Contractor shall at his cost and charge furnish all materials, planks, timber, carts, wagons, trucks, lights, pumps and cranes, iron work and metal work and also all plant, power and labour and everything necessary for the full and complete performance of this contract, including the construction, erection and maintenance of all necessary fences, roadways, paths and bridge ways for the traffic and he shall in like manner furnish lights and watchmen and everything necessary for the safety of the public for the protection of properties adjoining the said contract works. |
| 39. | TIMBER TO BE DELIVERED BEFORE WORKS IS COMMENCED | The Contractor shall immediately after the receipt by him the letter of acceptance of the tender deliver at the site of works sufficient timber comprising runners, paneling boards, wings struts, wedges and puncheons all to the satisfaction of the Engineer, for the efficient timbering of 100 meters length of trench to the full depth of the deepest sewer or pipe line shown on the drawings and to be fixed by the Engineer.<br><br>The timber shall be the property of the Board as stated in |

Clause 43 but the Engineer may at his discretion certify payment to the Contractor as advance an amount not exceeding two thirds of the value of the timber at current market rates. This amount will be recovered from the Contractor by deductions from the first four bills in equal installments. No advance will be made except on first lot of timber supplied.

40. 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 therewith and all the other operations of the Contractor, or any authorized Sub-Contractor, manufacturer or tradesman shall be open to the inspections and control of the Engineer; and all persons authorized by him at all times. All pipes, specials, electrical and mechanical items shall be subjected to third party inspection at the cost of the employer. The Contractor shall provide all necessary details such as manufacturer's / supplier's address and location of the manufacturing site well in advance to the Employer for such purpose.

41. MATERIALS AND WORKMANSHIP INFERIOR WORK TO BE AMENDED PROCEEDING ON REFUSAL

If any materials brought 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 periods 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 authorized 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 the thereupon the Contractor shall on demand repay to the Board the expense incurred thereby or to which the Board may be put liable in connection therewith, the amount thereof to be certified by the Engineer whose certificates shall be final.

42. PROCEEDING IN CASE OF DEFECTIVE WORK OR NEGLECT

The provision of the proceeding clause shall also applied in the event of the Contractor refusing or neglecting to pull down, amend and reconstruct any work which in the opinion of the Engineer shall have been erected or insecure or insufficient foundation or shall not have been sufficiently secured and protected against immediate and future damage, whether arising or to arise from weight, pressure, action of water or otherwise on being required so to do by Engineer and within the period directed by him.

43. PLANT ETC. NOT TO BE REMOVED WITHOUT

The plant, tools and materials provided by the Contractor shall, from the time they are brought to the site of the works and during the construction and until

ENGINEER'S CONSENT

the satisfactory completion of the contract become and continue to be the property of the Board and the Contractor shall not remove the same or any part thereof without the consent in writing of the Engineer but no advance shall be made on either plant, tools or materials.

44. 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 of abode or business and sent through the post office or other modes of delivery requiring the Contractor to remove or cause to be removed all such materials of plant from any such land or property as aforesaid or to give 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 of should 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 as often as the same shall happen the Contractor shall forfeit and on demand pay to the Board the sum of Rs.50/- (Fifty only) per day as and for liquidated and ascertained damages for each and every day during which the said land or property are so used and occupied as aforesaid from the time such notice has been given.

45. RESPONSIBILITY FOR ACCIDENTS DAMAGES ETC.,

The care of the whole of the permanent work until their completion as defined in Clause 57 and for the period prescribed in Clause 59 and 60 of the whole of the temporary work until their removal 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 damage or defects where occasioned by the negligence of the Contractor or not or may or might have been discovered during the progress of the works or consequences thereof, or shall appear to be know after the completion whereof or whether payment may wholly or partially have been made or the works approve as supposed to have been properly done, and no certificate or approval of any works by any Officers or members of the Board shall affect or prejudice the right of the Board against the Contractor or be considered or held as at all conclusive as to the sufficiency of any works or materials.

46. COMPLETED WORKS TO BE DELIVERED THEN

Portions of works ordered by the Engineer according to the minimum rate of progress, referred to in Clause 26 above will have to be carried out and completed in

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| | AND THERE | all respects and delivered to the Board in a clean and perfect condition within the periods of times, mentioned in the said orders laying down such minimum rate of progress. |
| 47. | SUSPENSION OF PROGRESS | The Contractor shall without recommence 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 to 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 Contractors expense properly cover down and secure so much of the works as may be liable to 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. |
| 48. | LIQUIDATED DAMAGES FOR NON COMPLETION | Liquidated damages will be levied at the rate per day stated in the Schedule for each day that the Completion date is later than the indented completion date (for the whole of the works or the Milestone as stated). The total amount of liquidated damages shall not exceed 10 (TEN) percentage of the Contract value.<br><br>The Board may deduct the liquidated damages from payments due to the Contractor. Payment of liquidated damages does not affect the Contractor's liabilities. |
| 48.A | | **Bonus for advance completion of work.**<br>Any work completed in advance by not less than 10% of agreement period can be considered and bonus of 1% on the value of actual quantum of works executed at tendered rate may be paid. |
| 49. | DELIVERY WHEN PROVISIONAL AND WHEN COMPLETE EXECUTION CERTIFICATE OF COMPLETION WORKS BY CMWSSB DURING CONTINUANCE OF CONTRACT | The completion and delivery at the time referred to in Clause 47 or at subsequent time shall be deemed to be a completion and delivery only if the Engineer shall accept the same and when so accepted shall not be deemed a full, complete and sufficient completion and delivery of the said works by the Contractor to the Board unless and until a certificate in writing called a certificate of completion under the hand of the Engineer shall have been given to the effect that all the works contracted for and directed to be executed have been completed and are in a sound watertight, workmanlike, and completed and usable condition and that the Contractor has in the opinion of the Engineer reasonably fulfilled and completed his contract and undertaking, except so far as it relates to the maintenance of the works as herein after provided. Provided always and notwithstanding anything |

contained in this contract, it shall be lawful for the Board to undertake and execute either departmentally or through other parties at any period during the continuance of this contract, and kind of work, matter or thing whatsoever, which they may consider necessary or proper to be performed and executed for the purpose of and in connection with any or all of the works under this contract and that without in any way relieving the Contractor from any of this liabilities and responsibilities under this contract on in any way vitiating or avoiding this contract.

50. 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 in case such money than due or to become due to the Contractor by the Board shall be insufficient to pay such losses, costs, damages and other money payable to the Board by the Contractor, it shall be lawful for 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 Government 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 Government promissory notes or securities shall be insufficient for such purpose than and in that case, it shall be lawful for the Board to recover the residue thereof, if necessary by legal proceedings against the Contractor.

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

Should the Contractor during the continuance of the contract die or become bankrupt or insolvent or go into liquidation or should he suspend payment or compound with his creditors or from any other cause whatever 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 programme 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 contract or should his preparations for commencement and his subsequent rate of progress by slow from any cause whatever that in the opinion of the Engineer or his representative he shall be unable to complete the work by the expiration of the specified period or should he refuse or neglect to comply with the directions given to him by the Engineer or his representative or in any other 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 a 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 price of the works to be done under this 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 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 55 hereunder.

52. MEASUREMENT OF WORK — The work will be measured by the Assistant Engineer / Junior Engineer. The Contractor will be at liberty to accompany them in order that they may agree on the measurements but should he neglect to do so, the measurements as recorded by the said Officer shall be taken as final and conclusive. The measurements of work will be recorded as prescribed in the T.N.B.P. (Latest edition)

53. CERTIFICATE — So long as he is satisfied with the rate of progress of 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 quantity and description of the finished works executed by the Contractor calculated according to the prices in the schedules hereto attached and measured in accordance with the provision contained herein, and the final certificate will be made out from such returns and measurement. No certificate will be issued except for work which has been completely finished, tested and passed as satisfactory.

54.(a) 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 or deduction, 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 par at the discretion of the Engineer if in this opinion the Contractor fails to comply with the contract requirements. 2 ½ % (Two and a half percent) of the total value of the works executed by the Contractor less deduction if any will be paid to the Contractor along with the final bill. The balance amount of 2½ % (Two and a half percent) of the total value of Works (i) will be retained for a period of two years reckoned from the date of completion in the case of original civil works and water supply and sewage pipe laying works, without interest and this amount will be paid to the Contractor after obtaining an irrevocable bank guarantee for the remaining defect liability period (ii) in respect of electrical, mechanical and allied works executed by the Contractor, this amount will be rationed without interest and paid to the Contractor after a period of 36 (THIRTY SIX) months reckoned from the date of completion of those works.

PAYMENT TOWARDS SUPPLY OF CI / DI / PSC / MS PIPES & SPECIALS:

**1. For supply of pipes and specials**

70% of the quoted rates will be released after supply of above at site on production of Bank Guarantee equivalent to the amount to be paid.

**2. For laying, jointing, testing of pipe line at site**

20% payment from the quoted rates will be released after laying, jointing, testing of pipeline at site. The Bank guarantee obtained towards the advance paid for the pipes already laid, jointed and tested can be released proportionately.

**3. For commissioning of the pipe line**

Remaining 10% payment from the quoted rates will be released after commissioning of the pipe line.

**Note: The amount due under Sl. No.55 (a) on DI pipes and specials will be paid as follows:**

1. For the first and second consignment of pipes and specials, payment shall be made only when pipes and specials are accepted at site by the Engineer.

2. For the subsequent consignments, payment shall be made only when the pipes and specials are accepted at site by the Engineer and atleast 50% of the pipes and specials supplied at site in the consignment immediately preceding the present consignment and 100% of all other earlier consignments are laid, jointed and tested to the satisfaction of the Engineer.

54.(b) **For Operation and Maintenance works,** 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 or deduction, 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 par at the discretion of the Engineer if in this opinion the Contractor fails to comply with the contract requirements. 5 % (Five percent) of the total value of the works executed by the Contractor less deduction if any will be paid to the Contractor along with the final bill after handing over of the installations to the Board on completion of the contract period .

54.(c) No retention amount need be recovered for petty repaid works for machinery, electrical equipments etc., other than civil works to the value of Rs.10,000/- and below. However, guarantee period of minimum six months for such works carried out shall be ensured by the Contractor.

55. LIMITATION OF CERTIFICATES

No Certificate made by the Engineer or other person appointed as aforesaid upon any bill submitted by the Contractor shall be taken or deemed as certifying that the Contractor has duly executed his contract or any portion thereof, and no certificate thereof shall relieve the Contractor of any obligation 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 means no more than that, at the time such certificate is given, the Engineer or other officer aforesaid believed that the Contractor had done work other than temporary works, in respect of which the Board might pay the sum stated in such certificate. No payment or certificate, shall protect or be deemed to protect the Contractor in case over payment or in case it shall at anytime appear that the works or any part of them have not been executed in accordance with this contract.

56. TIME FOR COMPLETION OF WORKS

The Contractor shall complete and deliver to the Board the whole of the works comprised in this contract and shall complete the removal of all temporary works, plant and surplus materials, within the stipulated period be delivered up complete in every respect in a clean and perfect condition. Provided always that if by reasons of the non-possession of any site or sites required for the

purpose of the undertaking or the non-supply of materials which the Board has undertaken to supply for the works specified in this contract or by reason of any additional works or enlargements of the works (which additions or enlargements) the Engineer is hereby authorized to make or for any other, just cause arising with the said Board or with the Engineer or inconsequence of any unusual inclemency of the weather or general or local strikes or combinations of workmen or for want of deficiency of any orders, drawings or directions or by reason of any difficulties, impediments subtractions, oppositions, doubts, disputes, the Contractor shall in the howsoever occasioned, the Contractor shall in the opinion of the Engineer (whose decision shall be final) have been unduly delayed or impeded in completion of this contract, it shall be lawful for the Engineer if he shall so think fit, to grant from time to time and at any time or times by writing under his hand such extension of time either prospectively or retrospectively and to assign such other day or days for or as for completion as to him may seem reasonable without thereby prejudicing or in any manner effecting the validity of the contract or the adequacy of the contract price or the adequacy of the sums or prices mentioned in the schedules and any and every such extension of time shall be deemed to be in full compensation and satisfaction for and in respect of any and every actual or probable loss or injury sustained or sustainable by the Contractor in the premises and shall in like manner exonerate him from any claim or demand on the part of Board for and in respect of the delay occasioned by the cause or causes in respect of which any and every such extension of time shall have been granted but not in respect of and delay continued beyond the time mentioned in such writing or writings respectively.

57.(a) 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 works 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 thereupon, unless he shows reasons in writing to the contrary make a final measurement of the works and takes them over on behalf of the Board and sign a certificate purporting to be a last certificate. Nothing in this Clause or in the agreement shall prohibit the Board taking over and using any portion of the works which may be completed prior to the completion of the whole works of this contract.

57.(b)

57.1. If "As Built" drawings and or O&M Manuals are required, the Contractor shall supply them within 28 days from the date of completion.

57.2 If the Contractor does not supply the Drawings and manuals within 28 days from the date of completion, or they do not receive the Engineer's approval, the Engineer shall withheld the amount of Rs.1,00,000/- from payments due to the Contractor.

57.3. The Contractor has to submit the "As laid maps" (As Constructed) in the following format for UGSS/WSS / O&M works.

(i) All the assets (both surface & underground) Geo referenced using (Real Time Kinematics) RTK GPS Survey and drawing shall be in GIS shape file format along with the direction of flow.

(ii) X, Y and Z Coordinates of all the assets shall be surveyed.

(iii) The Geo-Coordinates (Spatial locations) of "As constructed" Assets using RTK shall be with reference to the Base point.

(iv) The Base point shall be obtained from CMWSSB.

(v) The Coordinate Reference System shall be in the Universal Transverse Mercator (WGS 84 UTM Zone 44N) Coordinates system.

(vi) The symbols/legends used by the consultancy firm would be based on the NUIS Standards.

(vii) The data model & attributes of the network component shall be submitted to the needs of CMWSSB (Templates shall be provided by CMWSSB).

(viii) The RTK GPS survey drawings has to be submitted along with every RA bill for the completed portions and comprehensive 'As built drawing' is to be furnished on completion of the project

58. DEFECTS OR FAULTS APPEARING WITHIN DEFECT LIABILITY PERIOD TO BE MADE GOOD BY THE CONTRACTOR.

Notwithstanding any certificates issued by the Engineer under Clause 54 and Clause 58 and defect, shrinkage other faults whatsoever which may appear.

a) In respect of original Civil works and pipeline works within 5 (five) years.

b) In respect of Electrical, Mechanical works within three years and

c) In respect of petty repair works for machinery and electrical equipments etc., other than Civil works to the value of Rs.10,000/- and below within six months

from the completion of the respective works and the grant of final certificate and arising out of defective or improper materials and made good by the Contractor at his cost and in case of default, the Engineer may cause such works to be executed or may take any measure or do anything which may in his opinion be necessary for rectifying the defect or fault in the works and the cost of so doing shall be recoverable from the Contractor.

59. PERIOD OF LIABILITY

The Contractor notwithstanding such execution of works, matters and things as lastly provided and any act, matters and things, done, permitted, happening of suffered in pursuance during the continuance of this contract as lastly provided shall be responsible for and shall effectively maintained and uphold in good, substantial sound perfect and water tight condition all and every part of the said works for a period of.

(a) Sixty months in respect of original Civil works and all pipeline works
(b) Thirty six months in respect of all Electrical, Mechanical & allied works.

From and after the date of such last mentioned certificate or completion and shall pay and make good to the Board and all other persons or parties legally entitled thereto all losses, damages costs and expenses they or any of them may incur or be put liable to by reason or consequences of the operations of the Contractor or of the failure from whatever causes of the works or any of them during the time the contractor is responsible thereof and shall indemnify save harmless and keep indemnified the Board and other persons or parties as aforesaid from and against the same and from and against all actions, suits, claims and demands whatsoever by reason of on account thereof or the Board may deduct and retain or pay over to such other person or parties entitled as aforesaid the amount of such losses damages, cost or expenses out of any amount in the hands of the Board accruing or due to the Contractor. If any portion or portions of the works are found to be defective during the period of liability and repaired as started in Clause 58 above, the period of liability for that portion of the work which has been so repaired shall be extended to a further period of.

(a) Sixty months in respect of original Civil works and all pipeline works.

(b) Thirty-six months in respect of all Electrical, Mechanical and allied works from the date of completion of the repairs.

60. PAYMENT OUT OF PUBLIC FUNDS

The payments to the Contractor shall be made out of the funds under the control of the Board in their

capacity and no member or officer of the Board shall be personally responsible to the Contractor.

61.(a) REPAYMENT OF SECURITY

After the expiry 6 months from the date of completion of works and grant of final certificate referred to the Clause 57 the Board shall repay to the Contractor the Security Deposit detailed in the preamble hereto or reminder of the proceeds of such sums after the Board had deducted any sums due to 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. The repayment of security deposit is subject to the conditions stipulated in Clause 59 & 60 regarding the defects to be rectified during the period of liability.

61(b)

For Operation and Maintenance works after the expiry 2 months from the date of completion of works and grant of final certificate referred to the Clause 58 and the handing over of the installations to the Board in full working condition, the Board shall repay to the Contractor the Security Deposit detailed in the preamble hereto or reminder of the proceeds of such sums after the Board had deducted any sums due to 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. The repayment of security deposit is subject to the conditions stipulated in Clause 59 & 60 regarding the defects to be rectified during the period of liability.

62. SUBLETTING TRANSFERRING OR ASSIGNING CONTRACTOR

The Contractor shall not sub-let the whole of the works except where otherwise provided by the contract the Contractor shall not sub-let any part of the works without the written consent of the Engineer and such consent if given shall not relieve Contractor from any liability or obligation under the contract and he shall be responsible for the acts defaults and neglects of any sub-Contractor his agents servants or workmen as fully as if they were the acts defaults or neglects of the Contractor his agents servants or workmen. Provided always that the provision of labour on a piecework basis shall not be deemed to be a sub-letting under the Clause.

63. 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 therewith, 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.

64. PROTECTION AGAINST CLAIMS FOR THE USE OF PATENTS

All fees for any patented invention articles or arrangements, that may be used upon or in any manner connected with construction, erection and 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 and 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 much furnish acceptable proof of a proper and satisfactory release from all such claims.

65. 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 company to the Secretary personally or left at 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.

66. 1)Standing Grievance Redressal Committee

If a dispute (of any kind whatsoever) arises between the Parties in connection with or arising out of the contract or execution of the works, including any dispute as to any opinion, instruction, representative, either party shall initially refer the same in writing to Employer. The Employer will constitute a Standing Grievance Redressal Committee (SGRC) with members of officers of the Board to resolve the disputes.

Accordingly, it is proposed that the following officials of CMWSSB may be formed as SGRC to resolve the disputes between CMWSSB and the Contractor.

Committee members for specified project:

i. Chief Engineer
ii. Superintending Engineer

General Committee Members:

iii. Controller Of Finance
iv. Internal Auditor

The Committee should be formed by the concerned execution wing for each projects separately after getting approval from the Competent Authority. The Chief Engineer and Superintending Engineer should be other than the Chief Engineer / Superintending Engineer entrusted with the execution of the project.

If any dispute is referred to the SGRC, it will within a week of receipt of such request acknowledge and convene a meeting with both the parties. The committee will go through the submitted documents,

hear the parties and attempt at finding an amicable solution within 28 days of receipt of such reference by the SGRC. If any settlement is arrived at SGRC the same shall be recorded in writing as a settlement agreement and signed by the Contractor, Employer and all committee members. Such settlement shall be final and binding on the parties with regards to all disputes so resolved.

If the SGRC fails to settle all or part of the dispute within 28 days, the same shall be notified to the contractor. Thereafter it is left to the parties to refer the unresolved disputes to Adjudication / Arbitration. In such case, the party may give notice in writing its intention to refer such dispute to Adjudication / Arbitration.

2) Arbitration

a) In case any question difference of dispute shall arise on matters (except any of the "excluded matters" mentioned in Clause No.23) 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 the 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 a Superintending Engineer of the Chennai Metropolitan Water Supply and Sewerage Board to be nominated by the Managing Director of the Board as the sole arbitrator whose decision shall be final and binding on the parties. In case where the value of claims is more than Rs.50,000/- the parties will seek remedy in accordance with the Arbitration and Reconciliation Act 1996.

b) 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 matter, question or dispute being referred to arbitration, but shall proceed with the works with all due diligence and shall, until the decision of the arbitrator be given abide by the decision of the Engineer and no 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.

"The liability of the Contractor to the Board arising out of them Clause 14-A herein shall not be the subject matter of Arbitration".

67. Corrupt or Fraudulent Practices

1. The Employer requires that Bidders observe the highest standard of ethics during the evaluation and execution of such contracts. In pursuance of this

policy, the Employer:

a) defines, for the purposes of this provision, the terms set forth below as follows:
    i. “Corrupt practice” is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;
    ii. “Fraudulent practice” is any act or omission, including misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain financial or other benefit or to avoid an obligation;
    iii. “Collusive practice” is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;
    iv. “Coercive practice” is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
    v. “Obstructive practice” is:
        1) deliberately destroying, falsifying, altering, or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Employer investigation into allegations of a corrupt, fraudulent, coercive, or collusive practice; and/or threatening, harassing, or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or

b) will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;

c) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing a contract.

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| 68. | INSURANCE OF CONTRACTOR'S EMPLOYEES | All Labourers and other employees of the Contractor should be covered by a suitable Accident Insurance Policy to cover liabilities under the Workman's Compensation Act 1923. |
| 69. | LANGUAGE | "All entries in the contract documents all transactions and all correspondences connected with this contract shall be only in English". |
| 70. | JURISDICTION | "All disputes under this contract shall be subject to Courts in Chennai Jurisdiction only". |

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## SPECIAL CONDITIONS

### 71. CODE OF CONDUCT FOR PUBLIC UTILITIES FOR BETTER ROAD MAINTENANCE IN CHENNAI CITY.

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| 71.1 | PERMISSION FOR ROAD CUTS | In the event of cutting a road by the Contractor without permission from the Engineer shall pay a fine of Rs.1,000/- per day until it is restored at the cost of the erring Contractor. |
| 71.2 | MODE OF TRENCHING DIGGING | Digging of trench by the Contractor beyond the 500 meters or less as specified by the Engineer shall invite a fine of Rs.500/- per day till such time the damage is restored. |
| 71.3 | DAMAGE TO PLANT SERVICE EQUIPMENT | In case of any inadvertent damage to the plant / service equipment of another service department, the location and nature of damage shall be intimated to the concerned service Department immediately by the Contractor. Failure to observe the above provisions shall render the Contractor liable for a fine of Rs.250/- per day till the damage is compensated. |
| 71.4 | CAUTION CUM-INFORMATION BOARDS | (a) Before commencing an excavation, "Caution-cum-information," board, Flickering lights during night time shall be installed at site by the Contractor. Such board shall remain as site as long as the trench remains open. The Board shall be installed at both the ends of the trench at least 100m before the approach to the area if the trench is less than 600m in length Additional boards at every 300m shall be installed, if the length of the trench exceeds 600m. If the street light is inadequate, lettering with fluorescent paint shall be used for these boards. The boards shall also contain information regarding dates of commencement and completion of the work, name and phone number of the Engineer-in-charge of the work.<br><br>(b) Non-installation of "Caution-cum-information" board at a work site is liable for a fine of Rs.500/- per day till the installation of the Board. |

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| 71.5 | BARRICADING | The machine hole trench shall be barricaded on all four sides. The Contractor who has dug up the trench shall be responsible for any mishap which may occur. Non-barricading of trenches by the Contractor shall be liable for a fine of Rs.500/- per day. |
| 71.6 | MATERIALS STACKING | Materials required for the work shall be stacked on road sides by the Contractor without causing inconvenience to the traffic. Dumping of materials in a haphazard manner during execution of the works thereby causing inconvenience to road users is liable for a fine of Rs.1,000/- per day. |
| 71.7 | BACK FILLING | The Contractor shall fill the trenches excavated by them with sea sand and excavated earth depending upto the depth of the trenches as required by the Engineer and the surplus earth shall be removed and stacked at one or two places causing minimum inconvenience to road users and subsequently these stacks shall be removed to the places as directed by the Engineer. If the contractor fails to remove the excavated earth within 6 days, the concerned Contractor will be liable for a fine of Rs.500/- per day. |
| 71.8 | CONSOLIDATION | Non-consolidation of earth while back filling to the original level shall be liable for a fine of Rs.500/- per day till such consolidation is done. |
| 71.9 | GENERAL | If any penalties made by the Corporation of Chennai due to any lapse on the part of the contractor during execution, the penalty amount mentioned above or such amount as levied by the Corporation of Chennai will be recovered from the Contractor's payment. |
| 71.10 | PERSONNEL | This Code of Conduct is part of measures to deal with environmental and social risks related to the Works. It applies to all the staff, laborers and other employees at the Works Site or other places where the Works are being carried out. It also applies to the personnel of each subcontractor and any other personnel assisting in the execution of the Works. All such persons are referred to as "**Contractor's Personnel"** and are subject to this Code of Conduct. |
| 72. | SOCIAL AND ENVIRONMENTAL RESPONSIBILITY | (a) comply with and ensure that all their Subcontractors and major suppliers, i.e. for major supply items comply with international environmental and labour standards, consistent with applicable law and regulations in the country of implementation of the respective Contract and international environmental treaties and;<br>(b) implement any environmental and social risks |

mitigation measures, as identified in the environmental and social impact assessment (ESIA) and further detailed in the environmental and social management plan (ESMP) as far as these measures are relevant to the Contract and implement measures for the prevention of sexual exploitation and abuse and gender-based violence.

(c) Hire a local sub-contractor/labor-supplier to exercise influence on and engage with the host community;

i. Engage local workers to satisfy “son-of-the-soil” demand;

ii. Extend some reasonable favors to keep the locals happy;

iii. Involve some local influential person or persons in some capacity and give him/them some decision-making power;

iv. Form joint committee/s with local influential persons which would monitor the effect of influx of outsiders and liaison between them and the host community;

v. Ensure that project staff behave responsibly to environment in particular, not dumping waste, creating water-logging, etc.;

vi. Provide certain amenities or services, such as use of water supply to some extent, small repairs to public/community buildings, occasional recreation and entertainment such as sports events or film screening, etc.;

vii. Engage with and manage groups who are in majority or capable of creating problems;

viii. Engage the local unemployed educated youth in responsible jobs like site supervisor, junior engineer, etc.;

ix. Understand and manage the caste or ethnicity politics;

x. Balance the requirement of outside workers with the tendency of the host community to be hostile to certain cultural, ethnic or religious groups;

xi. Alternately, ensure reduction of conflict by keeping the workers away from the community, ensure short duration stay or phased engagement to ensure the barriers are removed;

xii. Ensure that welfare measures are implemented

in full so that labor is satisfied and confined to camp and worksites and therefore minimise the incidents of drawing on local resources or mingling with the host community.

**REQUIRED CONDUCT**

Contractor's Personnel shall:

1. carry out his/her duties competently and diligently;
2. comply with this Code of Conduct and all applicable laws, regulations and other requirements, including requirements to protect the health, safety and well-being of other Contractor's Personnel and any other person;
3. maintain a safe working environment including by:
    a. ensuring that workplaces, machinery, equipment and processes under each person's control are safe and without risk to health;
    b. wearing required personal protective equipment;
    c. using appropriate measures relating to chemical, physical and biological substances and agents; and
    d. following applicable emergency operating procedures.
4. report work situations that he/she believes are not safe or healthy and remove himself/herself from a work situation which he/she reasonably believes presents an imminent and serious danger to his/her life or health;
5. treat other people with respect, and not discriminate against specific groups such as women, people with disabilities, migrant workers or children;
6. not engagein Sexual Harassment, which means unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature with other Contractor's or Employer's Personnel;
7. not engage in Sexual Exploitation, which means any actual or attempted abuse of position of vulnerability, differential power or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another;
8. not engage in Sexual Abuse, which means the actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions;
9. not engage in any form of sexual activity with individuals under the age of 18, except in case of pre-existing marriage;
10. complete relevant training courses that will be provided related to the environmental and social aspects of the Contract, including on health and safety matters, and Sexual Exploitation, and Abuse (SEA) and Sexual Harassment (SH);
11. report violations of this Code of Conduct; and
12. not retaliate against any person who reports violations of this Code of Conduct, whether to us or the Employer, or who makes use of the grievance mechanism for Contractor's Personnel or the project's Grievance Redress Mechanism.

**RAISING CONCERNS**

If any person observes behavior that he/she believes may represent a violation of this Code of Conduct, or that otherwise concerns him/her, he/she should raise the issue promptly. This can be done in either of the following ways:

1. Contact [*enter name of the Contractor's Social Expert with relevant experience in handling gender-based violence, or if such person is not required under the Contract, another individual designated by the Contractor to handle these matters*] in writing at this address [ ] or by telephone at [ ] or in person at [ ]; or
2. Call [ ] to reach the Contractor's hotline *(if any)* and leave a message.

The person's identity will be kept confidential, unless reporting of allegations is mandated by the country law. Anonymous complaints or allegations may also be submitted and will be given all due and appropriate consideration. We take seriously all reports of possible misconduct and will investigate and take appropriate action. We will provide warm referrals to service providers that may help support the person who experienced the alleged incident, as appropriate.
There will be no retaliation against any person who raises a concern in good faith about any behavior prohibited by this Code of Conduct. Such retaliation would be a violation of this Code of Conduct.

**CONSEQUENCES OF VIOLATING THE CODE OF CONDUCT**

Any violation of this Code of Conduct by Contractor's Personnel may result in serious consequences, up to and including termination and possible referral to legal authorities.

FOR CONTRACTOR'S PERSONNEL:

I have received a copy of this Code of Conduct written in a language that I comprehend. I understand that if I have any questions about this Code of Conduct, I can contact [*enter name of Contractor's contact person with relevant experience*] requesting an explanation.

Name of Contractor's Personnel: [insert name]

Signature: _____

Date: (day month year): _____

Countersignature of authorized representative of the Contractor:

Signature: _____

**Date: (day month year): _____**

**ATTACHMENT 1 TO THE CODE OF CONDUCT FORM**

**BEHAVIORS CONSTITUTING SEXUAL EXPLOITATION AND ABUSE (SEA) AND BEHAVIORS CONSTITUTING SEXUAL HARASSMENT (SH)**

The following non-exhaustive list is intended to illustrate types of prohibited behaviors:

(1) **Examples of sexual exploitation and abuse** include, but are not limited to:

- A Contractor's Personnel tells a member of the community that he/she can get them jobs related to the work site (e.g. cooking and cleaning) in exchange for sex.
- A Contractor's Personnel that is connecting electricity input to households says that he can connect women headed households to the grid in exchange for sex.
- A Contractor's Personnel rapes, or otherwise sexually assaults a member of the community.
- A Contractor's Personnel denies a person access to the Site unless he/she performs a sexual favor.
- A Contractor's Personnel tells a person applying for employment under the Contract that he/she will only hire him/her if he/she has sex with him/her.

(2) **Examples of sexual harassment in a work context**

- Contractor's Personnel comment on the appearance of another Contractor's Personnel (either positive or negative) and sexual desirability.
- When a Contractor's Personnel complains about comments made by another Contractor's Personnel on his/her appearance, the other Contractor's Personnel comment that he/she is "asking for it" because of how he/she dresses.
- Unwelcome touching of a Contractor's or Employer's Personnel by another Contractor's Personnel.
- A Contractor's Personnel tells another Contractor's Personnel that he/she will get him/her a salary raise, or promotion if he/she sends him/her naked photographs of himself/herself.

## SECTION – II
## PART – II

## TECHNICAL SPECIFICATIONS
## (A) CIVIL WORKS – GENERAL SPECIFICATIONS

### 1. Sand

The sand to be used shall be composed of hard siliceous material. It shall be clean and of a sharp angular grit type free from clay, loam and dirt, it shall be washed if ordered by the Engineer. Fire drift sand, or sea sand or sand containing saline impurities shall onno account be used except with the express approval of the Engineer. The sand to be used for all times of work shall be in conformity with Specifications No.7 of Tamil Nadu Building Practice. (TNBP).

### 2. Cement

All cement to be used on the work unless otherwise specified shall comply with I.S. 269 – 1976 or the latest revision thereof for ordinary Portland cement. It shall further be of the best normal setting quality unless an especially rapid hardening or quick setting quality if expressly instructed by the Engineer to be supplied.

All cement shall be delivered in bags and shall be stored in a dry place (perfectly water tight and reasonable air that shed, the floor of which is raised from the ground) and for this, the Contractor shall be held responsible.

Cement which has become caked or perished shall on no account be used on the work and shall be rejected. Although the Engineer may have passed any consignment, he shall nevertheless have the power at any subsequent time to reject such consignment, if he finds that any deterioration in the quality thereof has taken place.

### 3. Brick Jelly

Broken brick for concrete shall be from hard well burnt bricks. If vitrified bricks are specified the best hard quality shall be supplied. The broken brick shall be free from dust, clay, loam or organic matter and shall if so directed by the Engineer by washed and screened. The broken brick shall generally conform to specification No.1 of TNBP.

### 4. Aggregate

Broken stone for concrete shall consist of broken blue granite stones, hard, sharp, angular and free from dust and dirt and washed, if necessary to ensure that all faces of the stone are perfectly clean. The broken stones should be from approved quarries and of required sizes as per schedule and should conform to IS 383 – 1963 and its subsequent revisions.

### 5. Brickwork

The bricks to be used on the works under this contract shall be manufactured in accordance with the relevant I.S.S. and its subsequent revisions using the best appliances and adopting the best methods. The bricks when specified as stock bricks First Sort class shall be table moulded of uniform size, shape and colour and must be well burnt so as to give a clear ringing sound when struck. They shall not break when thrown on the ground or against other bricks. They shall be clean, whole and free from flaws, cracks, stone and under burnt lumps of any kind especially lime. They shall have sharp edges and angles and even surfaces. Bricks which when soaked in water for 24 hours absorb more water than one-fifth of their dry weight shall be rejected.

Second class or country bricks will be ground moulded but should otherwise conform to the specifications for first class bricks. Twisted and irregular bricks will be rejected.

Brick work shall conform to specifications No.31-G and 31-D of TNBP. The quality of brick work should be strictly in accordance with the specifications listed above and in addition the Contractor shall comply with the instruction of the Engineer with regard to courses, joints, curing etc. The bricks are to be well soaked in water before use on works.

**6. Water to be used**

Water used for making the mortar and concrete must be perfectly fresh clean and free from oil acids or alkali other deleterious material. Sea water should not be used any purpose whatsoever. No water shall be allowed to be used if it is taken from any source which in the opinion of the Engineer is not suitable for making mortar or concrete. The Contractor shall make his own arrangement to procure the water required for the works but the quality of water in any case should be subject to the approval of the Engineer.

**7. Cement Mortar**

The Cement mortar to be used on the works should generally conform to specification No.13 of TNBP. Only sufficient mortar shall be mixed as required for immediate use. Partly set mortar shall not be used.

**8. Cement Concrete**

Cement concrete shall be of appropriate mix as indicated in the schedule and in the conformity with IS 456 – 1964 and its subsequent revisions. The ingredients shall be measured by volume in properly marked measures approved by the Engineer. The mixing of the concrete shall be done by concrete mixers and hand mixing should not be resorted to without the special permission of the Engineer.

The concrete shall be laid in layers not exceeding 15cm. in depth and shall be well compacted using vibrators where specified. The successive layers of concrete to the full thickness required shall be laid while concrete in the lowers is still green.

The top surface of the concrete shall be finished to the required shape by using templates. Before concrete is laid, the ends of the previous day's work shall be raked out and washed. Concrete must not be tipped into work from a height of more than 600mm and proper staging must be provided for gently lowering the mixed concrete to the work. The surface of the concrete shall be brought to the required level and shape immediately after the concrete is laid and shall be kept wetted in such manner and for such time as the Engineer may direct and any work injured through not being kept damp or from any other cause will have to be made good at Contractor's cost. The detailed specification No.28 and 30 of TNBP is also to be applied for concrete work.

**9. RCC Work**

Cement concrete and steel for RCC work should be strictly in accordance with IS 456 – 1964 and its subsequent revisions. The method of preparing cement concrete, bar bending placing in site, laying concrete consolidation, curing including form work should also be in accordance with specification 30 of TNBP. In addition necessary precautionary measures and works warranted at site should also be carried out by the Contractor as per the direction and instruction of the Engineer.

The Contractor shall be solely responsible for the accuracy of the design and the details of the structure. The component parts of the structures as well as the materials of construction used shall be strictly in conformity with specifications.

The concrete for reinforced cement concrete work shall be mixed thoroughly so as to get the required consistency and shall be uniform throughout and accurate in the proportion specified. All arrangements shall be completely made, before mixing, is started to ensure that there will be no stoppage of work at any stage of mixing, handing, placing and compacting. In all cases the mixing and laying shall be done in presence of the Engineer. The sand and broken stones shall be measured by volume in gauge boxes of size to give the specified proportion.

**10. Construction Joints**

The constructions joints where necessary shall be made water tight by providing copper or G.I. Sheet 200mm wide in between two successive layers of concrete. The sheet should be 18 S.W.G. or as may specifically indicated and soldered to ensure it remaining in position. It should be embedded to the extent of atleast 100mm in the new concrete. P.V.C. or rubber water stops may also be permitted by the Engineer.

**11. Steel for Reinforcement**

a) The steel rods intended for reinforcement shall be of an approved make fulfilling the requirement set forth in the latest Indian Standard Specification and the tests therein described for ultimate tensile strength, bend tests and elongation tests.

b) Soft annealed steel wire of 16 or 18 S.W.G. should be used in tying the reinforcing bars in exact position. The wire used shall have an ultimate strength of not less than 5624 kg/cm$^2$ and a yield point of not less than 3857 kg/cm$^2$.

c) All reinforcing steel should be clean and free from oil, grease, loose scales or rust or other coatings of any character, which would reduce or destroy the bond, but a thin film of rust shall not be considered objectionable.

d) Particular care should be taken to see that all reinforcing bars are in exact position as shown in the drawings and they shall be held in position by suitable patent chairs or other devices in such a way as shall ensure the accurate spacing of bars both horizontally and vertically and the frame work of reinforcement shall process sufficient rigidity to avoid displacement of bars while laying concrete.

   The Chair or supports shall be placed at sufficient intervals to prevent any sagging of the reinforcement between the supports. It is most important that the depth of cover for the reinforcement should be uniform.

e) All sheets should be of full size and dimensions shown in the drawing or mentioned in the calculations or specification and no welding will be allowed under any circumstances whatsoever. All protruding bars from piers, columns beams and slabs, to which other bars are to be spliced and which will be exposed to the action of weather for an indefinite period shall be protected from rusting by a thin coat of neat cement grout.

f) Before commencing concreting for R.C.C. works all the steel placed position shall be approved by the Engineer.

**12. Splices or overlaps in reinforcement**

a) Joints in reinforcement bars are to be avoided as far as possible but where splices are unavoidable they may be made wherever convenient but preferable at points of minimum stress. The overlap must be sufficient to transfer the stress from one bar to the other by permissible bond or adhesive stress.

b) In case the steel in stressed upto its full permissible stress the grip length or overlap from reinforcement bars shall be as per I.S.S. The end of M.S. bars shall preferably be hooked.

c) Splicing should be staged so as to splice only a small part of the total effective reinforcement at any one section.

**13. Form works and Reinforcement**

i) Before commencing concreting the form work should be carefully gone over to ensure.

   a) That the form work is secure and safe.

   b) That the inside measurements are correct and corresponds to the plans.

   c) That they are truly vertical or horizontal or in any position as required.

   d) That the joint are close.

   e) That they are absolutely clean and free from shaving or foreign matter.

ii) Before commencing to place concrete, the reinforcement for the entire member of the structure shall be fixed correctly in the exact position as shown in the drawings.

iii) As the reinforcement has to be embedded at various depths specified within the extreme fibers of the members it shall be raised off the bottom of the forms to the required height by suitable supports of a type approved by the Engineer vide previous remarks under “steel” reinforcement.

iv) Care should be taken during concreting, not to disturb the exact position of the reinforcement and individual bars should not be allowed to be out of their places.

**14. Placing Concrete**

a) The concrete shall always be placed in the moulds within ten minutes and compacted or worked into its final position within twenty minutes of being mixed. It must be worked round the reinforcement and well compacted in layers not more than 75 mm deep so as not to allow any voids to occur and to expel all entrapped air bubbles. It should be worked down the sides with internal vibrators and compacted with such special tools as the requirements of the works may demand for proper consolidation. The concrete shall be deposited so as to secure as early as possible a monolithic structure with concrete and steel in immediate contact and without joints.

b) All beams shall be filled to the top surface in one continuous operations that is from the bottom of beam to top of floor construction.

c) Surfaces which will be exposed to view shall have the concrete well pressed against the forms to bring the finer portion to the surface.

d) Concrete shall not be deposited under water, except when authorised in writing by the Engineer and in accordance with the method approved by him.

**15. Plastering**

Cement plastering with prescribed cement mortar mix should be carried out in accordance with the specification for the work in specifications 56 & 57 of TNBP. In addition the proportion of mix, curing etc. shall be done as per the instructions of the Engineer. If any rectification is found necessary the Contractor shall attend to such works as per the direction of the Engineer.

**16. Pointing brick work**

Pointing all exposed faces or bricks work that is not to be plastered shall have the joints carefully raked out and the brick work thoroughly cleaned. The joints shall then be neatly and truly pointed and be struck using cement mortar in the proportion as specified in the schedule. The work must be done in a thoroughly workman like manner.

**17. Pumping**

The Contractor must ascertain for himself the extent of pumping that will be necessary during excavation and upto the completion of the work and make adequate provision for it in his rates. No extra payment will be allowed for pumping unless otherwise specified in the schedule.

**18. Occupational & Community Health & Safety**

The Contractor must ascertain for the proper health and safety of the laborers engaged for the work and provide appropriate PPEs, equipment's to work in sewers/machine holes, during excavation, etc., The guidance of safety expert sand authorities must be ensured before any maintenance work sewers.

## SECTION – II
## PART - II

## (B) WATER SUPPLY AND SEWERAGE WORKS

## GENERAL SPECIFICATIONS

### 1. Extent of Contract and Mutual Obligations

a) This contract comprises the execution and proper fulfillment of all the works herein described and specified and accessory works.

b) The alignment shown on the plan is only tentative and cannot be taken as the final portion. Actual alignment will be marked out by the Engineer during excavation and pointed out to the Contractor in at every stage of work.

c) The Contractor shall harmoniously agree with the contractors of adjoining contracts and it is hereby expressly provided and declared that no conflict between the separate Contractors will be recognized by the Board as an excuse for delaying the works or for the non-fulfillment of all or any part of the contract. Any claim among the respective Contractors must be determined among themselves without involving any liability on the part of the Board.

### 2. Class of pipes etc. to be used

All pipes, bends, stoppers and other materials used on works included in this contract shall be of the quality, materials, manufacture and workmanship and to the entire satisfaction of the Engineer as per the relevant I.S.S.

Sample of pipes etc. are to be submitted to the Engineer and when these are approved they shall become the standards of quality from and finish for the reminder of the works.

### 3. Stoneware pipe and specials

The stoneware pipes and special shall be in accordance with the relevant ISS for salt glazed are pipes.

### 4. C.I. & D.I. Pipes and specials

The C.I. & D.I. pipes and specials or fittings shall be of the class specified in the Schedule conforming with the relevant Indian Standard specification or as prescribed by the Engineer.

### 5. Earthwork excavation

a) The Contractor shall undertake the excavation in such situations and on such sites and parts of the Streets, roads or places as shall be directed by the Engineer; and the Contractor shall before proceeding with such excavation, carefully take up and lay aside in heaps on sites clear of the site of the works, in position where the normal traffic will not be interfered, all the paving, pitching, mettaling or other hard surface or crust of the said streets, roads, fields or places, each class of materials being kept separate.

b) All streets, roads and private ways shall be kept open for the normal traffic, and the materials excavated shall be so handled and placed as not to

interfere therewith. To this end or for the safety or the works, or for any other reason that he may consider necessary the Engineer may order that no excavated materials shall be stacked by the trench side and in such case the Contractor shall at his cost remove from the site of the works the excavated materials as soon as it is taken out and stacked neatly in places pointed out by the Engineer or alternatively if ordered by the Engineer the materials shall be immediately used for filling the trench behind.

c) When timbering is specified the Contractor shall put up the timbering with the best of materials and in a thoroughly workman like manner as to prevent any kind of damage to the sides of trench or to works. Where timbering is found necessary the Contractor shall put up such timbering and to such extend as ordered by the Engineer in writing.

d) The bottom of the trenches shall be leveled with boning rods to the gradients shown in the drawings and well watered and rammed before laying concrete for pipe. The Contractor shall see that no excavation deeper than necessary is taken. All excess depths taken must be filled to the full width of these trenches with brick jelly cement concrete 1:3:6 to the satisfaction of the Engineer and no extra payment can be claimed by the Contractor for such work.

**6. Superior Road Surface**

Some of the roads along the alignment of the pipeline have superior road surface such as cement concrete and asphaltic concrete. Cutting these road surface will be paid for separately at the rates quoted in the Bill of Quantities.

**7. Length of Trench open at one time**

The pipe line shall be excavated in such length as may be ordered by the Engineer depending on the nature of the ground, the depth from the surface and the risk of damages to the adjoining property. The pipe shall not be covered until they have been tested to the satisfaction of the Engineer. But in bad ground in close proximity to buildings or in other places where the Engineer shall consider necessary he may limit the length of trench so that there shall not be more than three pipes length from the refilled trench to the unbroken ground ahead.

**8. Gradients of pipes**

The pipe shall have the inclinations or gradients and depths as shown on the drawings but the inclinations and depths may be varied at any point as the work proceeds should it be so determined by the Engineer.

**9. Demolishing existing sewers / sewer lines**

Where existing sewers or machine holes whether shown in the drawings or not, are intended to be taken out or demolished or where the Engineer directs that this be done, the Contractor shall do so at his cost provided that the sewer or machine hole to be demolished line with in the limits of the new excavation. The space previously occupied by the old sewers or machine holes shall be completely filled up solid with suitable earth and rammed.

**10. Sub-drain**

Should sewage or water be met with in such quantities as to tender it advisable in the opinion of the Engineer to use a sub-drain this shall consist of 150mm stoneware pipes laid open jointed in a grid or channel excavated in the bottom of the trench and surrounded and covered with 75mm of fine, clean broken stone or brick (unless concrete be ordered by the Engineer).

The Contractor shall keep the sub-drain free from sand or other deposit by means of chains or other methods. At intervals not exceeding 30 meters, a 100mm of 150mm square junction shall be inserted at the sub-soil water level to from a “grouting up” pipe. On completion of the length of sewer the entire length of sub-drain shall be solidly filled in the presence of the Engineer with liquid grout consisting of ten parts of sand to one of cement. The Contractor’s price for sub-drain shall include the necessary excavation, broken stone or brick, providing and laying of pipes, junctions etc., and temporarily connecting up branch drains and grouting up the pipes, on completion. With the exception of the sub-drains the whole cost of keeping works clear of water shall be borne by the Contractor.

**11. Slip and fall**

Every precaution must be taken against slips and falls of earth, clay, rock and sand etc. in the excavations but in the event of any occurring, the Contractor shall remove the surplus arising from the slip or fall without payment from the Board and he shall make good the space caused by such slips and falls, which may be outside of the dimensions of the works orders, at his cost.

The Engineer will determine in each case whether such space in to be filled up in whole or part with concrete, brick work or masonry of the quality and kind used in the adjoining work, and if part only is to be filled what materials are to used for the remaining part. If excavation is taken out by Contractor to too great a depth for any reason whatsoever he shall fill it up to the proper level with brick work or concretes as in the case of slips and falls. If in the opinion of the Engineer there is possibility of the newly constructed work having being damaged or disturbed by slips and falls, the work shall be laid bare and examined and any damages made good at the expenses of the Contractor.

**12. Timbering orders to be left in trenches**

The Engineer may order the timbering of trenches to be left in at any part of the work where in his opinion damages might be done to adjoining property or streets it the timbering where withdrawn; he may also order timbering to be left in as bearers under concrete or other foundations. The top of all timbering so ordered to be left in shall be 300mm clear beneath the surface of the ground. For timbering orders by Engineer to be left in the Contractor will be paid at the schedule rates. No payment will be made for timber left in without a written order from the Engineer. Nothing in this clause shall exempt the contractor from his sole responsibility under Clause 10 of Section II Part I, General Stipulations and Conditions.

**13. Old materials**

Any old sewer, iron work pipes, bricks or other materials met with on the works and which require to be removed for the construction of the works shall be held to belong to the Board and if required shall be removed from out of trenches by the Contractor without any extra cost.

**14. Treasure Trove**

Any coins, curiosities or antiquities or treasure trove found during the construction of the work shall be immediately delivered to the Board.

**15. Offensive Matter**

The Contractor at his expense shall disinfect with chloride of lime or other strong disinfectant all offensive matter immediately it is taken out or the trenches and shall cart away or cover up such matter as soon as possible.

**16. Laying of C.I. pipes / D.I. pipes**

The laying and jointing of cast pipes shall be carried out as follows:

Before laying the pipes, the Contractor shall carefully brush them to remove any soil, stones or other materials which may be therein. An even and regular bed having been prepared and joint pit excavated to form a recess under the socket of each pipe of no greater depth and width than to enable the pipe joining to be properly done, each pipe shall then be carefully lowered and placed singly in the trench and shall rest in the solid ground for a distance of not less than two thirds of its entire length. In places where the soil is not hard, cement concrete bed blocks or timber piles have to be provided under the pipes if directed by the Engineer. These bed blocks or timber piles will be paid for separately at the rates quoted by the Contractor.

Each pipe shall be brought into a line true from to bend or machinehole to machinehole. Each pipe shall be set correctly to level by means of a boning rod and sight rails.

**17. Laying C.I. / D.I. pipes on pile foundation**

Where the subsoil is slushy or considered otherwise unsatisfactory each cast iron pipe should be supported on to pairs of best timber piles as specified in the schedule driven below the bottom of the trench until they reach firm ground. One pair of pipes shall be driven about 150 mm behind the shoulder of toe socket and another pair about 750mm in front of the spigot end of pipe. A cross piece of the same section as the pile shall be bolted on to the pair or piles which have already been down to the required depth. The level of the cross piece should be such that when the pipe rests on its top, its invert level should coincide with the proposed invert of the pipe at the point.

The cast iron pipes shall then be aligned for straightness and secured in position by wooden wedges nailed down to the wooden cross piece. The spigot end of each pipe shall be thoroughly homed into the socket of the proceeding pipe and joining made as required in Clause 22 below.

The pipe shall be further secured from moving upwards by timber cross pieces bolted to be supporting piles.

The rate to be entered in the schedule per pair of piles shall include the cost of the timber piles, cross pieces, wedges, bolts and nuts etc., and also the cost of the labour for driving the piles and fixing the cross piece complete. The rate should be for a standard depth of piles 3.5m below the invert level of the pipe. But payment will be made proportionate to the actual depth of the pile below the invert level of the pipe at the point.

"Whenever it become necessary to adopt Venteak wooden piles for laying C.I. pipes, the Engineer in charge shall have the power to authorise the execution of this item and the Contractor is bound to carry out the same. The rate for this entire item shall be fixed at schedule of rates plus or minus tender premium or variation.

**18. Flat curves**

Any deviation either in plan or elevation of less than 11-¼ degrees shall be effected by laying the straight pipes round a flat curve of such radius that the minimum thickness of lead at the face of the socket shall not be reduced below 6mm or the opening between the spigot and socket increased beyond 11mm at any joint. A deviation of about 2-1 degrees each joint can be effected in this way. If the joints used are spigot and socket joints, using lead or cement; the spigot share be carefully centered in the socket by one or more laps of white hemp spun yarn sufficient yarn only bring forced into the socket to leave a depth of lead or cement as directed by the Engineer.

**19. Pipes not truly laid**

Any pipe or pipes, laid, which on inspection are found to diverge from the true lines and levels shall be removed and relaid to the true lines and levels by the Contractor at his expense, the old jointing being properly cleared off the pipes and fresh joints made. Any pipes damaged in removal shall be replaced at the Contractor cost.

**20. Cutting of C.I. Pipes**

Where necessary and as ordered by the Engineer the Contractor shall cut the pipe and fix and join common collars for jointing spigot ends. The cut ends of the pipe shall be made truly at right angles with the axis of the pipe.

**21. Covering up open ends**

The Contractor shall take particular care to ensure that the apertures and open ends of pipe are carefully covered whenever the workmen are not actually employed therein.

**22. Jointing C.I. / D.I. pipes**

The Contractor shall take particular care to ensure that the apertures and open ends of pipe are carefully covered whenever the workmen are not actually employed therein.

**a) Lead joints**

Generally lead joints shall be used for all size, in the case of 100mm pipes, cement joints may be used if specified in which case for every ten cement joints, one lead joint shall be used. Provisions of lead joints shall also be made at street crossings at closing joints and for all specials and as determined by the Engineer depending upon the site conditions.

The spigot end of the pipe must be placed well home into its sockets and must be centered, so that the joints may be of even thickness all round, as may laps of white hemp spun yarn as may be needed to leave the space required for the lead shall be driven to the bottom of the socket without being forced through the joint into the pipe but carefully driven home with a caulking tool. The proper depth of each joint shall be tested before running the lead by passing completely round it a wooden gauge, notched out to the correct depth of lead the notch being held close against the face

of the socket. The joints shall then be run with molten lead in sufficient quantity so that being caulked solid, the lead may project 3mm beyond the face of the socket against the outside of the spigot but must be flush with the outside edge of the socket.

For pouring lead in the joints, a ring of hemp rope covered with clay shall be wrapped around the pipe at the end of the socket leaving on opening at the socket into which lead can be poured. The hemp rope shall be supported by clay packing so as to withstand the operation of lead pouring.

The lead used shall be carefully skimmed of all scale, when melted in a cast iron port or patent melting machine. Sufficient lead shall then be taken by a laddle and run hot into the joint, and the joint filled at one running. The joint shall than be caulked when cool by a suitable caulking tool and a 2 kg. hammer and joint left neat and smooth.

The weight of lead and hemp which shall be used in each joint shall be in conformity with the table given below or as specified by the Engineer.

**Quantity of lead and spun yarn for different size of pipes**

| Nominal size of pipe mm | Lead joint Kg. | Depth of Lead joint mm | Spun yarn per joint Kg |
|---|---|---|---|
| 80 | 1.8 | 45 | 0.10 |
| 100 | 2.2 | 45 | 0.18 |
| 125 | 2.6 | 45 | 0.20 |
| 150 | 3.4 | 50 | 0.20 |
| 200 | 5.0 | 50 | 0.30 |
| 250 | 6.1 | 50 | 0.35 |
| 300 | 7.2 | 55 | 0.48 |
| 350 | 8.4 | 55 | 0.60 |
| 400 | 9.5 | 55 | 0.75 |
| 450 | 14.0 | 55 | 0.95 |
| 500 | 15.0 | 60 | 1.00 |
| 600 | 19.0 | 60 | 1.20 |
| 700 | 22.0 | 60 | 1.35 |
| 750 | 25.0 | 60 | 1.45 |
| 800 | 31.5 | 65 | 1.53 |
| 900 | 35.0 | 65 | 1.88 |
| 1000 | 41.0 | 65 | 2.05 |
| 1100 | 46.0 | 65 | 2.40 |
| 1200 | 50.0 | 70 | 2.60 |
| 1500 | 66.5 | 75 | 2.80 |
| 8 inches | 4.54 | 2.00 inches | 0.29 |
| 9 “ | 5.10 | 2.00 “ | 0.31 |
| 10 “ | 5.6 | 2.00 “ | 0.34 |
| 12 “ | 6.58 | 2.00 “ | 0.48 |
| 14 “ | 9.30 | 2.20 “ | 0.63 |
| 15 “ | 9.98 | 2.50 “ | 0.68 |
| 16 “ | 10.66 | 2.50 “ | 0.74 |
| 18 “ | 14.06 | 2.50 “ | 0.95 |
| 20 “ | 16.33 | 2.50 “ | 1.04 |
| 21 “ | 17.92 | 2.50 “ | 1.08 |
| 24 “ | 20.41 | 2.50 “ | 1.21 |
| 27 “ | 23.13 | 2.50 “ | 1.33 |

| Nominal size of pipe mm | Lead joint Kg. | Depth of Lead joint mm | Spun yarn per joint Kg |
|---|---|---|---|
| 30 " | 25.86 | 2.50 " | 1.46 |
| 33 " | 28.35 | 2.50 " | 1.65 |
| 36 " | 31.58 | 2.50 " | 2.40 |

Note: The quantities of lead and spun yarn given in the table are provisional and variation of 20 percent is permissible.

If quantities of materials consumed on finished joints are more or less than what is specified here the Contractor should bring it to the notice of the Engineer and obtain the certificate from him for the actual quantities used on that day.

**b) Flanged Joints**

Flanged joint should be made by painting the facing of the flange with white lead freely and bolting up evenly on all sides. A thin fibre of lead wool may be very useful in making the joints water tight where facing of the pipe is not true.

When packing must be used, it should be of rubber insertion three ply and of approved thickness. The packing should be of the full diameter of the flange with proper pipe hold and bolt holes cut out evenly on both the inner and outer edges.

Where the flange is not fullfaced, the packing may be of diameter of the packing strip only proper placing of the packing should be checked before another pipe is jointed on.

**c) Cement Joints**

The Cement for the joints shall conform to IS 269 / 1976 specification the latest revision thereof for ordinary, rapid hardening and low heat Portland cement.

Cement and water taken in proportion 8:1 by weight shall be thoroughly mixed. The mixture shall be such that when it is tightly compressed by hand into a ball and the ball is broken into two pieces the break shall be clean. If the hand become water stained, it has to be considered that the water is excessive. If there is evidence of crumbling in the break, water added is less than required. The cement mixture shall ring with metallic sound while caulked.

Cement which has been wet for more than one hour or which has undergone initials set shall not be used for jointing.

**Making the Joints**

When new pipes are laid close ahead of a newly made joint the disturbance caused during the forcing home of the pipe ends into sockets during the adjustment of the pipe to proper alignment may damage the new joint. To avoid this damage jointing shall be done only, when there are atleast six pipes laid to the final grade and alignment ahead of the joint to be made. Starting at the bottom of the joint, the joint space shall then be refilled with cement and caulked until the joint is practically flush with the face of the socket. The mixture shall be thoroughly compacted to make water tight joint.

**d) Rubber Ring Joints**

In the case of rubber ring joints or push on joints, the groove and the socket shall be thoroughly cleaned before inserting the rubber gasket. While inserting the gasket it shall be made sure that it faces the proper directions and that it is correctly seated in the groove. After cleaning dirt or foreign materials from the plain end, lubricant shall be applied in accordance with the pipe manufacturer's recommendations.

The Contractor shall make sure that the plain end is beveled as square or sharp edges may damage or dislodge the gasket and cause a leak. When the pipe is cut at site, the plain end shall be beveled with a heavy file or grinder to remove all sharp edges.

The plain end of the pipe shall be pushed into the socket of the pipe and while pushing, the pipe shall be kept straight. If any deflections are to be made in the alignment, it may be made after the joint is assembled. A timber header shall be used between the pipe and crow bar or jack to avoid damage to the pipe while the plain end of the pipe is pushed into the socket with a crow bar or jack, or lever puller.

**23. Fixing Sluice Valves**

The sluice valves to be fixed on the pipe lines shall be examined, cleaned and placed in the positions as shown in the drawings. The valves shall be placed on the pipe line and valve chambers constructed according to drawings. The depth at which the valve is to be laid and the dimensions of concrete and masonry shall be varied when necessary under the orders of the Engineer.

As the pipes in some instance may be required to be fixed at a lesser depth that will permit the top of the valve spindle being the level of the road (but this may only be in cases where the position of the valve is to be one side of the metalled road) the walls of the valve chamber shall in such case be carried upto such height as may be ordered, and the chamber shall have such covering as the Engineer may direct.

The valve shall be supported in the valve chamber so that no stress or strain occurs in the flange or other joints of the valve.

The valve shall be carefully protected from slime or dust by a suitable mat or gunny covering and the pit itself shall be cleared of all unwanted material.

**24. Fixing scour valve**

Scour valves shall be fixed at places shown in the drawings or as directed by the Engineer and the scour connections from the main carried out completely as per drawings.

**25. Fixing air valve**

Air valve shall be fixed at the summits of pipe lines or at places directed by the Engineer. The air valve connections etc. shall be carried out as per drawings.

**26. Interconnection work**

The interconnection work between the existing main and the proposed main to be laid under this contract shall proceed from the new main to the existing main. Before actually proceeding with the interconnection work, the Contractor shall make

ready necessary tools and plant required for the work at site as pumpsets, shoring materials etc. He shall also keep ready at site necessary pipes, specials, valves of any required for the work. The Contractor shall keep necessary skilled workmen of sufficient strength at site and once the work is commenced the entire interconnection works shall proceed without interruption by engaging labour for carrying out the work on a continuous basis both day and night till the work is completed. The work shall be executed as per programme drawn up by the Engineer and shall be completed within the time ordered by the Engineer for each individual interconnection. The work shall be carried out under the direction of the Engineer from the beginning to end.

Laying of specials, valves (except straight pipes from the branch of the new main to the connecting point in the existing main) including conveying specials etc. from the stores or site of stacking, excavation timbering, pumping out water from the trenches, lowering, aligning jointing specials and valves cutting the existing mains, dealing with water inserting the necessary branches jointing, testing, refilling etc. comprise as whole one unit of work and will be paid at the lumpsum rate quoted in the schedule for interconnections.

**27. Works to be left water-tight**

The Contractor shall construct the pipes chambers and all other works so that they shall be water tight. Should any leakages appear they shall be made good by him at his expenses by removing and reconstructing portions of the works so affected or by other method which will render the work thoroughly water-tight to the satisfaction of the Engineer.

**28. Cleaning of Mains**

During the whole for the work the Contractor shall keep the interior surface of the mains free from cement, brick, soil or other surplus matter and shall hand over the mains perfectly clean and free from deposit on completion.

**29. Masonry Chambers**

Chambers for sluiced valves, inspection branches scour valves, air valves shall be constructed on the pipes in the positions as shown in the drawings or in such positions as the Engineer may direct. The work shall be done strictly in accordance with the detailed drawings or as ordered by the Engineer. The excavation shall not be made lower than necessary to admit of the earth being properly timbered. The bottom of the excavation shall be properly leveled up rammed and a bed of concrete laid thereon. When the concrete has sufficiently set the building of the brick walls shall than be proceeded with and all iron work fixed in as the buildings proceeds. The inside of all chambers shall be plastered with cement mortar 20mm thick and the outside with cement mortar 12mm thick. The Chamber shall be topped with pre-cast R.C. Slabs 1:2:4 or cast iron surface box of valve cover as ordered by the Engineer. The surface box or valve shall be fixed on the top of the R.C.C. slab by a layer of cement mortar of the sides of the surface box or valve covered over with cement concrete.

Where pipes pass through walls of chambers relieving arches shall be turned neatly over the upper of the pipes or R.C.C. lintels shall be provided to avoid leak of the walls being transmitted to the pipes.

Cast Iron steps shall be built in each chamber as the work proceeds one being inserted to every 4 courses of brick work, horizontal distance centre to centre of each row being 30 cms.

The contractor shall include in his rate for brick work cost for fixings steps, frame cover etc. for completing all chambers in accordance with the drawings and with the above specifications, unless otherwise indicated.

**30. Testing of main-hydrostatic test**

After laying and jointing the pipes and specials, the pipe line shall be tested for hydrostatic pressure in such lengths as may be specified by the Engineer.

The test pressure shall be equal to 50% or such other higher percent as may be specified in excess of the pressure the pipe will have to withstand subsequently subject to a minimum test pressure of 7 kg./sq.cm in the case of lead joints. Where as for D.I. pipes K9 minimum test pressure is 12 kg/cm$^2$ for K7 pipes kg/cm$^2$. However in the case of cement joints, the joints may be tested to a minimum test pressure 3.5 kg./sq.cm.

If cement joints show seepage or slight leakage, such joints shall be cut and replaced as directed by the Engineer and the test repeated.

The contractor shall make his own arrangements to procure, necessary equipments, apparatus etc., required for testing and shall provide necessary labour for filling with water the length of pipes to be tested, fixing all apparatus and for carrying on the testing apparatus until the length of pipe, specials and connections are firmly passed by the Engineer. If the testing apparatus and equipments are available with the Board, they can be hired by the Contractor at usual conditions and charges.

The length to be tested shall be provided with two blank flanges fastened on in the usual manner by colour bands and bolts to the end pipes or if the length to be tested shall have a sluice valve at each and such blank flanges may be dispenses with.

The length of pipes to be tested shall first be filled in with water from a higher section of pipes already laid or with clean water obtained from a service connection, as the Contractor may arrange with the approval of the Engineer.

Before the actual testing pressure is applied any air which has lodged in the length of pipe to be tested shall be got rid of by screwing on at the highest part of the length of pipe of temporary air valve, or by opening a temporary stock-cock or by other means as the Engineer may direct.

The test pressure shall then be applied to the length of pipes under test by means of a hand or powered hydraulic test pump. The connection of the test pump to the length of pipes shall either be at the union connection provided at a blank flange or shall be at a temporary stop cock or fountain connections as the Engineer may in the circumstances direct.

The actual test shall be made by pumping water into the length of pipes under test, the test pressure as specified above has been reached on the pressure gauge.

The test pressure shall be maintained for half an hour or for such other period of time as may set by the Engineer and each joint will be inspected. While the pressure is on, the pipes should be struck smartly with a 2 kg hammer.

When a flange joint is found to be leaking, care shall be taken that in tightening up the flange the neighbouring joints are not affected.

If the length of pipeline under test is found to be satisfactory and no leaks or sweating are found at the pipe joints or at the joints of specials and connections then this length pipeline will be passed by the Engineer.

But should any pipe, joint, special or connection be found to sweat or leak, contractor shall make good at his cost such defective joint and the length of pipe line shall be tested by the Engineer until all pipes, joints specials and connections are found to be satisfactory.

If any pipe or special leaks or bursts due to cause beyond the control of the Contractor when the test pressure is below 1.72 kg/cm$^2$ (25 psi) the damaged portions shall be removed and new pipes or specials that will be supplied by the Board shall be laid and jointed at the contractor's cost, If however leak is noticed only at a pressure higher than 1.72kg/cm$^2$ the removal are replacing of such pipe or special will be paid for at the rates to be fixed by the Engineer whose decision shall be final.

**31. Refilling**

After the work of laying main has been inspected and the Engineer permission to refill the trench is obtained, the trenches shall be refilled with the excavated materials in layers of not more than 250mm deep, each layer being well watered and rammed until it has been thoroughly consolidated, the final material free from large stones and lumps being selected for the fillings for a depth of 600mm above the pipeline and it shall be carefully placed and rammed so as not to cause any damage either on the materials or joints or interfere with the alignment or levels.

**32. Removal of surplus excavated materials**

The Contractor shall at his cost remove and find places of deposit for all surplus excavated materials which is not required by the Engineer, but the Engineer shall have the right to remove for his own use, without consent and free from all claims on the part of the Contractor any portion of the excavated materials. If the Engineer exercises this right and by doing so an insufficient quantity of excavated materials remains for refilling the trenches the Engineer shall cause so much suitable materials to be returned to the site of such removal as may be necessary to make up any deficiency. The contractor shall not without a written permit from the Engineer, sell, remove or permit to be sold or removed from the site of the works any sand, earth or other excavated materials which may be suitable and required for refilling or for any other purpose directed by the Engineer.

**33. Restoring road surface**

The surface of the road or ground shall be finished off to the proper level with the same kind of materials as the surface consisted of before the excavated commenced, except in the case of superior roads and tarred roads in which case the surfaces should be finished off with water bound macadam surfaces. All road metal which was taken out shall be properly screened before being replaced by the Contractor making up any deficiency of materials at his expense. After the broken stone has been replaced, the surface shall be properly rolled, should any settlement occur after refilling is completed, and upto end of the period of maintenance, it shall be made good at once and the surface restored to the satisfaction of authority under whose jurisdiction such road or ground may be.

**34. Collection of rubbish**

The contractor shall, at his cost, on the completion of the work remove all water and all materials or rubbish of every description which may have been collected in the works and find a deposit thereof and anything which may have been collected within the works, during the period of maintenance shall also be removed the works are finally accepted by the Board.

## SECTION – II
## PART – II

## (C) WATER SUPPLY – SPECIAL SPECIFICATION

1. Laying and Jointing of Asbestos Cement pressure pipes

**a) Asbestos Cement Pipes**

The Asbestos Cement pressure pipes shall conform to the I.S.S. No.1592-1970

**b) Laying Cement Pipes**

The trench shall be excavated to the required alignment and depth shown on the drawing or as subsequently ordered in writing by the Engineer. The trench width shall be ample to permit the pipe to be laid and jointed properly and the backfill to be placed and compacted as specified by the Engineer, a coupling trench of sufficient length, width and depth shall be excavated to permit assembly and provide a minimum clearance of 50mm below the coupling. The pipe shall be provided with continuous support between joints.

The pipe shall not be lowered into the trench until the bedding has been brought to the required gradient. All pipes shall be inspected for defects. Dust and other foreign matter shall be removed from the interior and the machined ends before lowering into the trench. Pipe and accessories shall be lowered carefully into the trench by hand or with suitable equipment in a manner that will prevent damage to pipe and fittings. The sealing surface of all materials shall be kept clean installation.

**c) Jointing of Asbestos Cement Pipes**

The jointing of Asbestos Cement Pipes are done by using rubber ring or by Cast Iron Detachable Joints.

**i) Asbestos Cement Couplings with Rubber Sealing Rings**

The rubber rings used in jointing shall comply with the requirements of I.S. 5382 – 1969. The machined ends of pipe to be jointed, coupling grooves and rubber rings shall be cleaned immediately before assembly. Care should be taken not to reverse the gasket when placed in the socket. The pipe ends should be lubricated with lubricant recommended by the manufacturer / Engineer by hand or with a small brush or cloth.

The Asbestos Cement coupling should be placed against the pipe end and pushed with a level rod and wooden piece till the pipe butts with the middle ring surface. The second pipe should then be placed in position and lubricated. The pipe should then be forced into the order end of the coupling till the pipe is stopped by the middle ring.

For pipes of smaller diameter, say, upto 30mm the jointing can be done by means of a crowbar, for pipes of diameter above 300mm pipe pullers; recommended by the manufacturer / Engineer may be used for jointing. The jointing work could be speeded up if the pipe is jointed with one end of the coupling outside the trench and then supplied to the workmen in the trench to joint it in line.

**ii) Cast Iron Detachable joints with Rubber Sealing Rings and Bolts and Nuts**

The joints comprises a central collar, two flanges, two 'O' rings bolts and nuts. The pipe ends should be cleaned and the flanges inserted on pipe ends. The 'O' rings should be placed on the pipes by means of the Asbestos cement or Wooden Cone and rolling the rubber rings upwards towards the pipe. The rubber rings are brought to the correct position by means of a site gauge. The Central Collar shall then be placed on the laid pipe and the pipe to be jointed brought close to the laid pipe leaving a gap of about 5mm between pipe ends. The Collar should be centralized and the rings positioned to touch the collar. The flanges should then be brought closer, bolts inserted and tightened uniformly to ensure a leak proof joint.

Whenever it is necessary to cut the Asbestos Cement pipe at site it shall be done to produce a smooth square-cut-end without damages to the pipe and cylindrical to assure joint integrity.

**2. Laying and jointing of PVC Pipe**

**a) PVC Pipes**

The PVC Pressure pipes for water supply and distribution shall conform to IS 4985 – 1981.

**b) Laying of PVC Pipes**

The trench bottom should be carefully examined and should be free from hard objects, such as flints, rock projections or tree roots etc. The beddings for the pipes should be brought to an even finish providing uniform support for the pipes over their length and pipes laid directly on the trench bottom. In other case the trench should be cut correspondingly deeper and the pipes laid on a prepared under bedding which may be drawn from the excavated materials if suitable. As a rule trenching should not be carried out too far ahead of pipe laying. The trench should be kept as narrow as practicable but must allow adequate room for jointing pipes and placing and compacting the back fill. A width of 300mm over the outside diameter of the pipe will normally be found adequate for the purposes, mains should be laid with a cover of not less than 1m measured from the top of the pipes to the surface of the ground. Mains which might be brought under roadways by future widening schemes should be so laid that the eventual cover will not be less than 1m.

**c) Jointing of PVC Pipes**

The jointing of PVC Pipes are done either by using Solvent Cement joint or rubber ring joint.

**i) Solvent Cement joint**

The solvent cement used for jointing should be the quality recommended by the manufacturer. The spigot and socket ends of the pipes should be cleaned and roughened with emery paper. If the ends are grossly contaminated, they should be cleaned with Acetone or Methyl Alcohol. The solvent cement should be thickly applied on the spigot end and thinly in the socket. For larger size the first coat should be allowed to dry and a second coat is applied. The spigot isthen pushed into the socket and the excess cement wiped off at once with a piece or

cloth or rag. The joint should not be disturbed for at least 5 minutes. The pipe should not be subjected to working pressure for 48 hours after jointing.

**ii) Rubber Ring joint**

The pipes for rubber ring joints are supplied with both ends chamfered. A mark should be made at a distance from the pipe end equal to half the length of the coupler. The inner side of the coupler ring and the chamfered end of the pipe should be clean and dry. The 'O' ring is then slipped into the coupler. The ring and the chamfered end of the pipe are lubricated with a lubricant recommended by the manufacture. The coupler and the pipe should be carefully aligned and should be truly coaxial. The coupler is then pushed home into the pipe or the pipe is pushed into the coupler to make the joint.

**3. Renewal of water mains**

In case of renewal of water main by a new main along the same alignment the works for each day shall be commenced after 9.00 a.m. when the morning supply is over, as instructed by the Engineer and the entire work of removing old pipes, dealing with water from the mains, laying new pipes, jointing, transferring house services, restoring supply etc. should be completed by the evening on that day or before evening supply is commenced.

The sizes of quantities of materials required to be used for transferring each service connection from old main to the new main will be determined by the Engineer, and the Contractor shall carry out the work accordingly and will be paid for at the rates agreed to, as specified in the schedule.

While renewing or removing the old pipes, the Contractor should take care not to cause any avoidable damage to the old pipes and fittings. All the joints should be disjoined carefully either in the trench itself or outside and in case of lead joints, all the lead should be removed from the joints and handed over completely to the Engineer.

**4. Disinfection of Mains**

Upon completion of a newly laid main or when repairs to an existing pipes are made, the main shall be disinfected as directed by the Engineer.

The main shall be flushed prior to disinfection except when the tablet method is used. After initial flushing, the hypochlorite solution shall be applied to the water main with mechanically or electrically powered chemical feed pump designed for feeding chlorine solutions. For small applications, the solution may be fed with a hand pump.

In the case of mains of large diameter, from the existing distribution system or other approved source of supply shall be made to flow at a constant measured rate into the newly laid pipe line. The water shall receive a dose of chlorine also fed at a constant measured rate. The rates shall be proportioned so that the concentration in the water entering the pipe line is maintained at not less than 300mg/l. The chlorine shall be applied continuously and for a sufficient period to develop a solid column of 'Slug' of chlorinated water that will as it passes along the line expose all interior surfaces to a concentration of atleast 300mg/l. for atleast 3 hours. As the chlorinated water flows part tees and crosses related valves and hydrants shall be operated so as to disinfect the appurtenances.

In the case of newly laid mains in which scrupulous cleanliness has been exercised the tablet method can be adopted and in this method, the initial flushing is dispensed with the calcium hypochlorate tablets, are placed in each section of pipe and also in

hydrants, hydrant branch and other appurtenances. Tee tablets shall be attached by an adhesive and must be at the top of the main. The main shall then be filled with water and the water shall remain in the pipe for atleast 24 hours.

After the applicable retention period, the heavily chlorinated water shall be flushed from the main until the chlorine concentration in the water leaving the mains is no higher than the generally prevailing in the system or less than 1mg/lt.

After final flushing and before the water main is placed in service a sampler or sample shall be collected from the end of the line and tested for bacteriological quality and shall show the absence of coliform organisms. If the initial disinfection fails to produce satisfactory samples, disinfection shall be repeated until satisfactory samples have been obtained. When the samples are satisfactory the main may be placed in service.

The Contractor is expected to carry out the disinfection work as a part of laying the pipes and his rates for laying the pipes should include the disinfection and other connected works till the main is placed in service unless otherwise specified in the schedule.

## SECTION- II
## PART – II

## (D) SEWERAGE -- SPECIAL SPECIFICATIONS

### 1. Sight rails and Boning rods

As stated in clause 18 of Section – II, Part – I General stipulations and conditions the works will be set out by the Engineer. The Contractor shall be required to fix over the centre of each machine hole or where a change in direction or gradient occurs a strong timber sight rail, 150mm x 25mm with top edge placed straight and true. These shall be supported and fixed to stout wooden posts at each side of the excavation. The centre line of the sewer shall be marked on each sight rail both back and front by a single vertical line drawn thereon and on other side white. All lengths of sewer shall have three sight rails fixed one at each end and one in the centre and worked one with the other. The boning rods shall have a movable cross head at right angles to the rod. So arranged that it can slide up and down the rod and capable of being fixed at any required position on the rod by screws. The foot of the boning rod shall be provided with a shoe made truly at right angles to the rod so that when placed on the pipe being laid it shall rest properly on the pipe when the rod is truly vertical.

### 2. Laying stone ware pipe not on concrete

Before laying the pipes, the Contractor shall carefully brush them to remove any soil, stones or other materials when may be therein, even and regular bed having been prepared, and joint pit excavated to form a recess under the socket of each pipe of no greater width and depth than to enable the pipe jointing to be properly done, each pipe shall then to carefully lowered and placed singly in the trench and shall rest on the solid ground for a distance of not less than two thirds of its entire length.

Each pipe shall be brought into a true line from machine hole to machine hole, for this purpose, a strong twin line (rat thread) sufficiently long to reach the full length between machine hole shall be used. Each pipe shall be set correctly to level by means of the boning rod and sight rails.

The spigot of each pipe shall be carefully wrapped with a ring a spun yarn dipped in cement grout or tarred gasket sufficiently thick to properly fit the socket of the adjoining pipe and to allow true alignment. The pipe shall then be driven fully home into the socket of the adjacent previously laid pipe and yarn or tarred gasket carefully driven home with a caulking tool.

The remaining space in the socket shall then be tightly and completely filled with cement mortar composed of one part of Portland cement and one and a half parts sand and shall be neatly bevelled off all around the circumstance and finished at an angle of 45 degrees outside the socket of the pipes. A wooden caulking tool shall be used for forcing the mortar into the sockets.

A tightly fitting bag of shavings or straw having a rope attached shall be drawn through the pipes as the work proceed to ensure that there is no cement or yarn or other obstruction projecting into the interior.

All joints shall be kept moist either by means of wet bags, wet clay or wet earth which ever may be ordered by the Engineer to protect them from the sun. Such covering shall be removed when the length is tested for water tightness.

**3. Laying stoneware pipes on Concrete**

In trenches where ordinary socket and spigot stoneware pipes are to be laid on concrete, the method to be adopted is as follows:

When the earth is taken out to the proper depth and gradient, a concrete bed of suitable thickness and width is to be laid as directed by the Engineer. The top of this concrete bed shall also be to the required gradient.

When the concrete has set sufficiently, a series of special concrete invert blocks are to be laid about 60cm apart and levelled so that their top surface may be exactly the level of the sewer invert, less the thickness of the pipes. The correctness of level of the pipes is to be ascertained by working a straight edge from the invert of each pipe to block ahead.

The pipe must also be checked at intervals for the proper line and level and the first pipe of any length must be very carefully bedded and levelled into position.

The object to be obtained by the method above described is to ensure that the outside of the sockets shall be raised approximately 25mm above the concrete bed in order to allow the joints to be made properly in the under side.

In his prices for laying concrete, the Contractor must allow for doing the work in the manner as above described including cost of blocks.

**4. Junctions on stoneware pipes**

Where shown on the drawings or where directed by the Engineer, Junction pipes shall be provided at intervals during the construction of sewers, the jointing being effected in a similar manner to the pipe of the sewer in which they are placed.

These junction arms shall be closed with stoneware or cement disc and the sockets filled with cement mortar. The trench shall not be filled in until the position and orientation of each junction has been measured and recorded by the Engineer.

**5. Machinehole**

Machineholes shall be constructed on the sewers in the positions shown in the drawings or in such position as the Engineer may direct. The work shall be done strictly in accordance with the detailed drawings except where alterations are required by the Engineer. The excavation shall not be larger than sufficient to admit of the trench being properly timbered and to facilitate plastering outside. The bottom of the excavation shall be properly levelled up, rammed and a bed of concrete laid thereon. When the concrete has sufficiently set the construction of the brick walls shall then be proceeded with and all stoneware pipe connections through the walls shall be made and all iron work fixed in as constructions proceeds. Machineholes less than 2.5m from invert to sewer to ground level shall be built rectangular and shall have a flat top constructed as shown in the drawings, Machineholes more than 2.5m from surface to invert shall be built circular and the walls corbelled as shown in the drawings. The inside of all machineholes shall be plastered with cement mortar 20mm thick and the outside of all machineholes with cement mortar 12mm thick. The Machineholes bottoms shall be properly formed with stoneware channels fixed in cement mortar. The channels shall be neatly formed to the radius of the pipe and all side connection curved and channeled to admit the sewage to enter at an angle of 45 degrees to the line of flow Machineholes shall be topped with a circular cast iron frame with cover or cover of such patter as may be ordered by the Engineer. The machineholes frame shall be fixed to the top of the brick work by a layer of cement mortar.

Where pipes pass through walls of machineholes relieving arches shall be turned neatly over the upper half of the pipes. If any pipe enters at such an angle that a relieving arch cannot be properly turned the bricks shall be carefully cut and laid so as to fit closely and neatly against the pipe and a R.C.C. lintel shall be provided to avoid load of the walls being transmitted to the pipes.

The stoneware drop pipe connection in machineholes shall be secured to the wall of the machineholes by suitable clamps and shall be built in as the work proceeds in accordance with the drawings and the above instructions. The cost of this work will be paid separately.

Cast Iron steps shall be built in each machineholesas the work proceed one being inserted to every four courses of brick work, horizontal distance centre to centre of each row being 300mm.

The Contractor shall include in his prices for completing all machineholes in accordance with the drawings.

**6. Cleaning out Sewers and Machineholes**

During the whole of the work the contractor shall keep interior surface of sewers and machineholes free from cement mortar, bricks, soil or other superfluous matter and shall handover the sewers perfectly clean and free from deposit on completion.

**7. Water Test of Sewers**

All sewers shall be tested before the filling in of the trench or other excavations. Testing shall also be done after refilling of the trench or other excavation, if considered necessary by the Engineer. The testing or retesting shall be carried out by and at the expenses of the Contractors who shall also provide the necessary appliances and water for the same. The tests will only be made from machineholes to machineholes after the machineholes connected with the length under test have been completely finished.

The test shall be carried out in the following manner.

The pipes shall be carefully cleared of all earth or materials that may be lying thereon or therein and all joints shall be exposed right round so that thorough examinations may be made while the pipes are under test.

The ends of the pipe shall be closed by means of expanding stoppers and all junctions with stoneware stoppers or cement disc fixed in cement mortar.

The last but one pipe at the higher end of the length shall be a junction pipe with the junction arm at the top which will permit of the filling of length with water and also allow the escape of all air in the pipes.

The expanding stoppers at each end of the length under test shall have a hold in the centre with a small piece of a pipe screwed therein and threaded on the projecting piece to permit of a flexible tube not less than 2m long fixed there to by a coupling. At the end of the flexible tubing, the following shall be fixed.

a) at lower end of length, a sock,

b) at top end of length, a funnel of 15 cm diameter.

The top of the funnel shall be fixed rigidly at a height of 30cm above the ground level, or such other height as may be decided by the Engineer.

After the above mentioned expanding stoppers have been fixed together with flexible tubing and funnel, the length shall then be filled with water through the junction arm of the pipe provided therefore. As soon as the water has risen of the level of the filling junction arm an expanding stopper shall be fixed thereon. After a short time has been allowed for absorption, water shall be poured into the funnel until the same is filled to the top.

If any of joints are leaking of it during a period of ten minutes the water level in the funnel drops 25mm or more (no more water being added or sewer interfered with in any way during the period) the test shall be considered unsatisfactory. If the water does not drop more than 25mm and there is no sign of leakage at any of the joints, the test shall be continued for one hour and at the end of the hour the pipe lines including the joints shall be examined and, if no indication of sweating or leakage is found then the test will be considered satisfactory. Should the test be unsatisfactory, all such joints or pipes found to be defective shall be removed, replaced or relaid to the satisfaction of the Engineer by the Contractor at his cost.

The test shall be done as many time as may be necessary until the length is found to be watertight to the satisfaction of the Engineer.

The water required for testing shall be clean.

## SECTION – II
## PART – II

## (E) PUMPING MACHINERY AND ELECTRICAL WORKS – GENERAL

### I. Electrical wiring and installation of fittings

1. The materials used for conform to the relevant I.S.S. wherever applicable. The make and other details of materials to be used should be furnished along with the tender.

2. Continuous earth connection are to be made with 14 SWG T.C. wire.

3. The wiring work done shall be neat, true to line, level etc. and in such a way that it gives an impressive and aesthetic appearance to the building.

4. The actual location and number of points for lights, fans power plugs etc., may be altered at the time of execution by the Engineer.

5. Entire wiring and cabling work should be done as per IE rules.

6. Any damages or breakages, 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.

7. The Contractor has to test and every point after completion of wiring to the entire satisfaction of the Engineer by taking temporary supply from the existing service.

8. Wiring to light point (both internal and external) and fan point will be treated as complete only when supply as well as connection upto the ceiling rose is completed.

9. Whenever conduit pipe wiring is done, cover for switch boards containing switches, plugs, etc. should be of hylam sheet or other specified sheet only.

### II. Machinery and other equipments

10. All the materials used shall conform to the relevant I.S.S. wherever applicable and should be delivered at site work. The Contractor is responsible for safe custody of materials and equipments under this contract till handing over to the Board.

11. The rate should include all the minor items of civil works if any required for installation complete.

12. All necessary civil works for erection of all equipments for accessories offered by the Contractor under this contract should be done by the Contractor. The rates for civil works are to be quoted wherever called for.

13. Test certificates for machinery and equipments should be produced along with the supply.

14. The Contractor should supply one set of tools for the pumpset maintenance of the machinery and equipments supplied by them under this contract.

15. The Contractor has to operate and maintain the pumpsets and other machinery and equipments for a period of 30 days to the entire satisfaction of the Engineer, free of cost, unless otherwise specified. Fuel, lubricants and power supply if required will be supplied free of cost, for operation and maintenance during that period.

16. PAYMENT TOWARDS SUPPLY AND ERECTION OF EQUIPMENTS AND PLANTS

a) Supply of Pumps and Motors, DG sets, transformers etc.,: Payment of 70% of the quoted rates will be released after supply of the above at site on production of bank guarantee equivalent to the amount to be paid, after completion of 80% of civil works.

b) Erection of Machineries and Equipments at site: 20% of the quoted rates will be released after erection of the Machineries and Equipments at site. The bank guarantee obtained towards the advance paid for the Equipments and plants already erected can be released proportionately.

c) Successful commissioning of Machinery and Equipment: 10%

**Note: All payments will be subjected to deduction of retention money as stated in Clause 54**

17. The tenderer should enclose along with their tender performance curves including ISO efficiency curves of the pumpsets, makes and other details and certificates from their claimed manufacturers, stating that the equipments offered by them would be supplied by the manufacturers.

18. The Contractor should supply immediately after commissioning three sets of Operation and Maintenance manuals for all equipments and machinery supplied under this contract.

**III. General**

19. Cable lengths given are only approximate and payment will be made for the actual lengths of cable laid.

20. The contractor has to make necessary arrangements to get supply of electricity from TNEB for operating the Machinery and equipments. The necessary service connection and S.D. Charges will be paid by the Board.

21. The Contractor should obtain all approvals for the installation and commissioning of machineries and accessories offered by them from the respective inspecting authorities such as CEIG or CIFG etc., Fee if any, to be paid to the inspecting authorities will be reimbursed by the Board.

22. Before supply of the machinery equipments and other materials, prior approval of the Engineer should be obtained giving the name of maker and other details required.

## PROCESS FOR INSTALLATION OF WATER SERVICE CONNECTIONS:

**Figure 1** contains flow chart shows the high-level process for initial consumer survey, application processing, sanction of connection, installation of connections, meter reading and for issuing bills and collecting revenues.

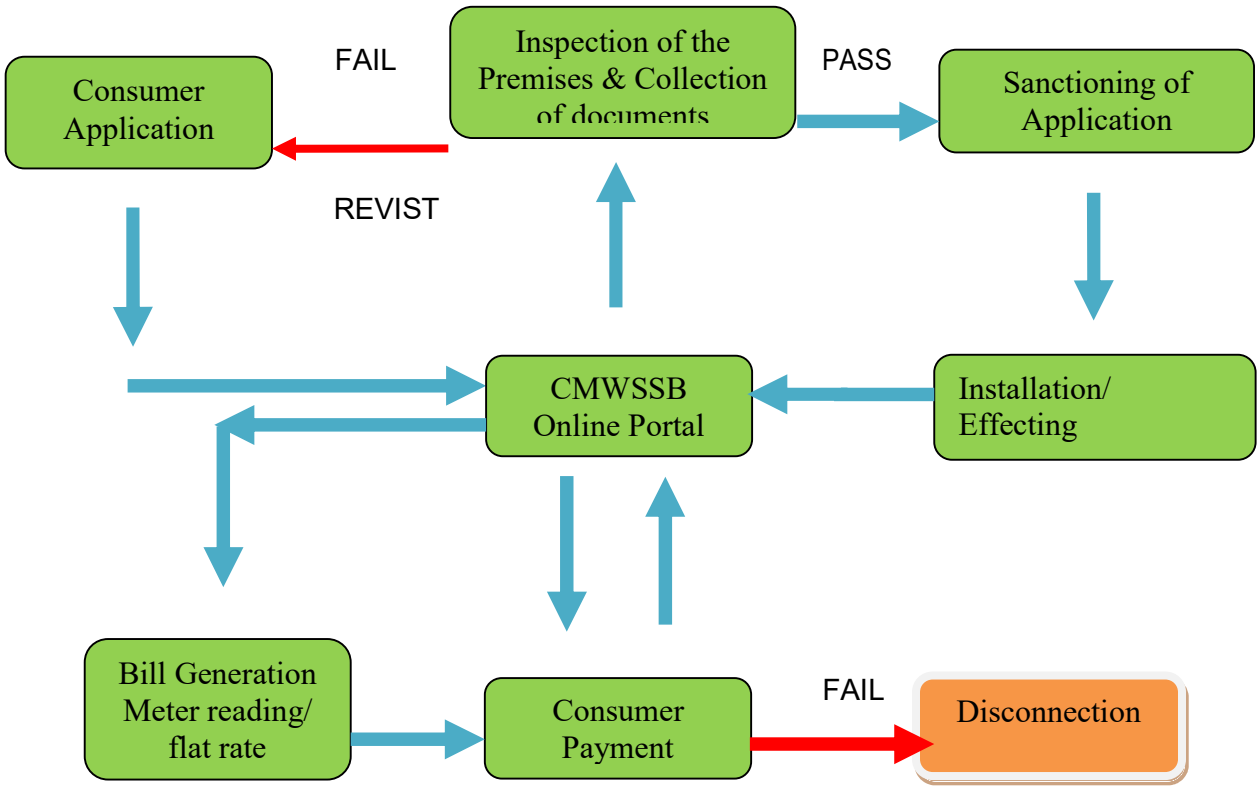



**Figure1 : Existing Service Connection Process**

## TERMINOLOGY

House Service connection includes the following:

1. Saddle with ferrule / Flow regulating valve
2. Ball Valve
3. Pipe
4. Compression Fittings
5. Stop Valve
6. Meter and Meter Hood

Necessary valving is included to permit various parts of the service connection to be isolated for repair or replacement. The responsibility of a water utility ends with the service connection; that is at the downstream side of the meter assembly or backflow prevention device if one is included as part of the meter assembly. Water utility shall ensure that the installation technician records the GPS coordinates of each tapping and each meter for ease of GIS based connection management and more efficient billing and monitoring water losses. **Figure 2** describes the terminology used for service connections

## PRODUCTS AND MATERIALS

### Materials:

Only **MDPE**: Medium density polyethylene Blue PE 80 pipe should be used to effect the House Service connection.

### Joints

The following joints are permitted:

1. PE: heat fusion (butt fusion, electro-fusion, socket-fusion) for HDPE Pipes.
2. Mechanical and Compression

### Tappings

Only the tapping which has a band that encompasses the pipe may be used. Figure 3 provides examples of acceptable tapping bands.

1. A tapping band
2. A tapping saddle

The two types of tappings shown above are mechanical tappings and are a very secure form of tapping and well suited to field applications.

A second form of tapping is a fusion tapping (For HDPE Pipes) where the seal is created by fusing a tapping saddle to the distribution main. This seal is much harder to achieve in the field due to

1. the presence of dirt particles;
2. the need for trained operators; and
3. the need for good quality fusing equipment.

If a fusion tapping is to be used then only tappings that embrace the full circumference of the pipe are permitted. **Figure 3a & 3b** illustrate this point.

**Compression Fittings:**

Compression fittings used for House service connection comply as per ISO 14236

**Material of Construction**

Compression fittings material shall confirm to Clause -5 of ISO14236.

a. Body-Polypropylene

b. Nut / Cap –Polypropylene.

c. Clip Ring-POM (Acetylic resin )

d. Packing bush- Polypropylene

e. “O” ring – NBR

f .Threaded metal inserts –SS 304 with BSP Threads

**U PVC Ball Valves (Stop Cocks)**

Ball Valves used for HOUSE Service Connections comply to ISO 4422, Part 4.

**Material of Construction:**

Ball Valve material shall confirm to as per clause 4 of ISO 4422.

a. Body and Handle - UPVC

b. Seals - PTFE

c.O-rings – NBR/EPDM

d. Material of Construction for compression end will as per specifications for compression fittings.

**(G) SOP FOR EFFECTING A WATER SUPPLY SERVICE CONNECTION**

1. The laying of water main and providing House service connection work shall not be taken up at a time in all the streets of a particular area, the selection of streets should be made in such a way that there should be alternate way for entry and exit of all residents in that street without causing much hindrance/inconvenience to the public. The details of commencement and probable date of completion of water main laying work should be intimated to the residents in that street before commencing the work. The works should be completed within the stipulated time.

2. The House service connection shall be laid in a trench.

3. The House service connection must be above GL inside the property boundary till meter assembly.

4. The pipe must have at least 100 mm separation from any other services such as electricity, internet cable, etc.

5. Tapping should be done with drilling machine. Tapping must be carefully made to avoid this leakage. Figure 3 provides examples of acceptable tapping bands.

6. Where the service connection is crossing another utilities service line/cable, it must cross at an angle of not less than 45 degrees and have a vertical separation of not less than 100 mm, as in **Figure 4**.

7. The service connection must be laid at a 90-degree angle to the property boundary, Figure 4 shows the correct location of a service connection in relation to the front property boundary. Locating service connections in this way greatly assists their relocation for maintenance at some future time.

8. A valve is required at the tapping so that the service pipe can be isolated for maintenance. The flow within the service pipe must be controlled by isolating valves. Some typical examples are given in **Figure 5**.

9. Distribution mains > 150 mm must preferably not be tapped. If necessary, a secondary tapping distribution main must be included as shown in **Figure 6**.

10. Consumer should ensure that the house service connection pipes must not be embedded into RCC structures inside their premises and Ramp portions. It may be covered with lean concrete or paved blocks and should be able to attend any repairs or maintenance works.

11. The house service connection provided with non ferrous metals (Ex: MDPE, PVC pipes) joining with ferrous metals (Ex: GI, Mild Steel) below ground is not permitted. Where these metals are joined above ground the materials must be insulated.

12. Where a pipeline renewal program or a program for enhancing water supply coverage is being implemented or when new service connections are being provided as part of routine operations, the new water connection should be extended to include a standpipe downstream of the meter assembly as shown in **Figure 7** (Stand pipe should be done by the consumer).

13. Once the house service connection pipe and tapping are installed and are pressure tested, they are buried to surface level with subsequent surface restoration works.

14. Where a meter assembly is installed at a later time, the end of House Service connection pipe must be sealed to permit (1) the pipeline and House Service connection pipe to be pressure tested and (2) for when supply commences to already connected consumers. **Figure 8** contains examples of HSC pipes with end plugs.

15. Meter assemblies must be installed with the minimum clearance shown in the Figures 9a & 9b. Meters must be located where they can be easily accessed and read by a meter reader. The meter assembly must be supported by a rigid and secure support, if plastic pipes are used. If needed additional support should be provided below the meter.

16. The location of the service connection is to be recorded as follows.

    a. GPS coordinates recorded at the tapping
    b. GPS coordinates recorded at the meter

17. Minimum Cover

    The minimum depth of cover of service pipes below the existing ground level is as follows:

    a. Under concrete slabs or footings: 75 mm
    b. Ground not subject to vehicle loading: 300 mm
    c. Ground subject to vehicle loading – sealed: 600 mm
    d. Ground subject to vehicle loading – unsealed: 750 mm

18. Installation and Bedding and Backfill (Figure 10)

19. The house service pipe should be surrounded by at least 75 mm of compacted sand or fine-grained soil. There should not be any hard objects resting against the pipe itself. Material used for the final backfill should be free from rocks or organic matter.

20. Pipes installed in contaminated or corrosive ground must be shielded, with the type of shielding depending upon the pipe material. Plastic pipes must not be used in ground contaminated with hydrocarbons, such as oils and fuels (for example, plastic pipes cannot be sued to service a petrol station).

**21.** Where the house service connection is in the vicinity of a sewer or drainage pipe, the minimum clearance for the installation of a service connection is 600mm, as in **Figure 10.**

22. **Figure 11** shows the typical installation of service connection after the meter assembly. This should be done by the consumer on his own cost.

23. For **Core Area** the above procedure is applicable in the zones where there is **adequate pressure** is maintained in the system during supply hours. Example zones near the Water Distribution Stations.

24. For **non-pressurized** zones/packets in **core area** the above procedure is applicable except **S.no 2 and 14.** Further Meter assemblies must be installed with the minimum clearance shown in the **Figures 9a & 9b** in a Meter Chamber of adequate size and with light weight covers. Meters must be located where they can be easily accessed and read by a meter reader. The construction of meter chamber should be done by the consumer on his own cost.

25. The distance between the Water Meter chamber and the tapping point shall be measured and recorded.

After completing the laying of pipes, backfilling with excavated earth in layers as provided in the agreement shall be carried out. Unless, otherwise specified, the trench shall be backfilled in layers not more than 300mm, watered and rammed to consolidation upto the road level. Road Restoration shall be carried out as per the specifications in the Agreement.

26. The excess or surplus earth shall be removed from the site immediately and site should be free from any debris or excavated earth. If any excess/surplus earth found in the site, action shall be initiated against the contractor.

27. Even after the instructions of the Engineer in Charge, if the contractor fails to remove the excess/ surplus earth, the Engineer in charge shall take action to remove the excess / surplus earth and shall deduct from the running bill of the contractor along with the penalty for not adhering to the instructions.

28. After completing the laying of Water Distribution main, House service connections are to be provided immediately without any delay. Unless there is any utility proposed in the street along the alignment of the water main, the HSCs shall be completed in 300m of length of particular road in not more than 7 days.

29. For vacant lands, house service connection need not be provided.

30. During the construction works,

    a. The HSC details shall be marked in the compound wall / visible location, with the concurrence of the consumer.

    b. A booklet shall be prepared in which one page should refer to one street. That page shall be titled as Name of Street containing Area number, Division No in the format (Area / Division / Street Name). It shall contain the Engineering drawings of all the HSCs given from the water distribution main be shown. Each HSC water meter chamber should be marked as door number of the concerned plot. The booklet shall be signed by both the contractor and CMWSSB official.

    c. The CMC number of the consumer for the respective HSC shall be linked with the above details for future reference by the O&M wing.

## Appendix I: Drawings

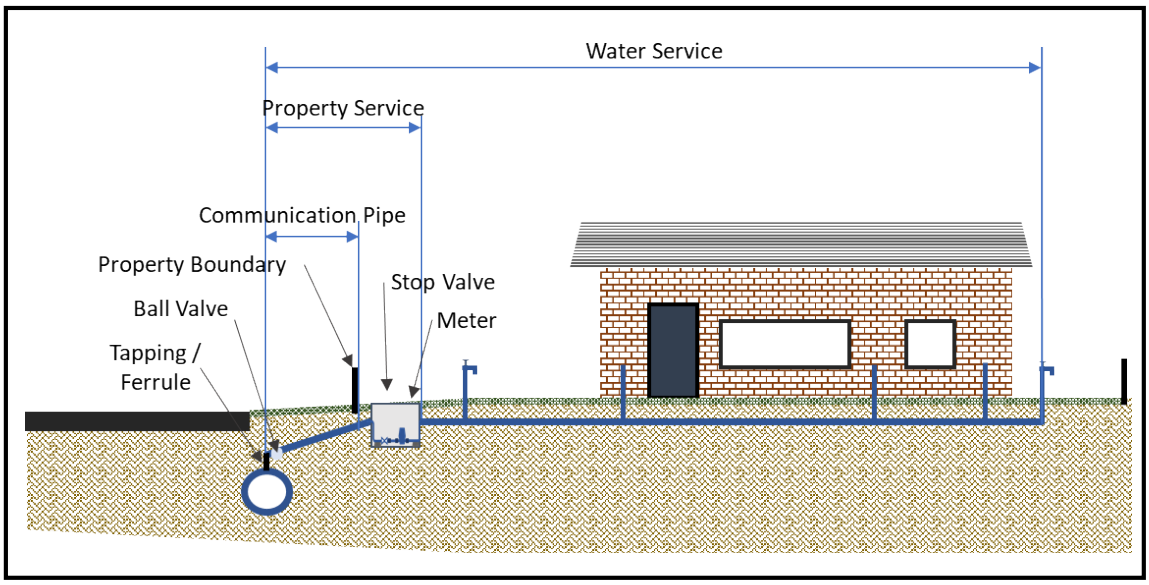



**Figure 2: Nomenclature Used in a Service Connection**

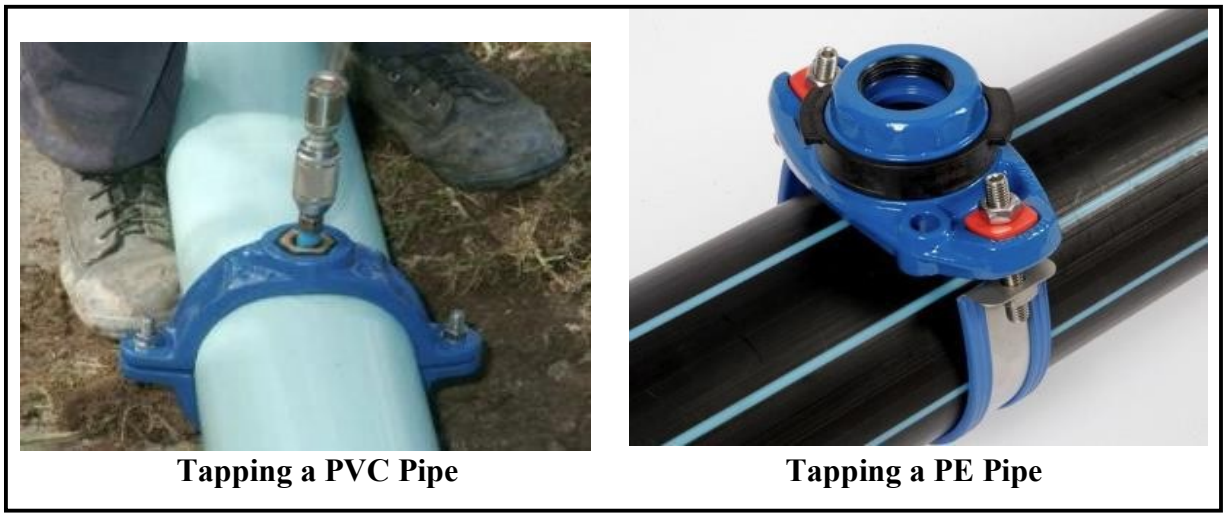



**Figure 3a: Examples of Tapping Bands for PVC and HDPE Pipes**

**Figure 3b: Examples of Acceptable Fusion Tapping Bands**

| | | | |
|---|---|---|---|
|  |  |  |  |
| Permitted | Permitted | Half Saddle Not Permitted | Quarter Saddle NotPermitted |

**Figure 3c: Examples of Permitted and Not Permitted saddles**

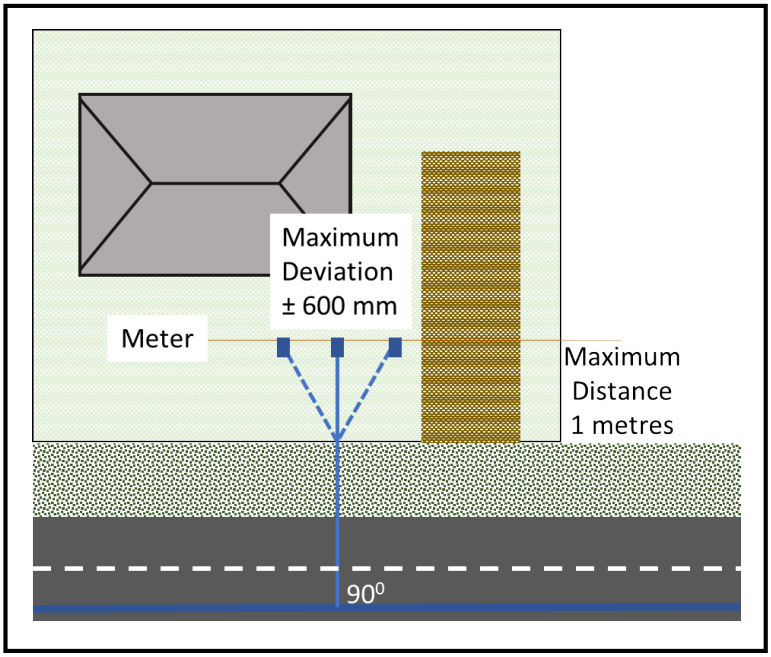



**Figure 4 :Service Connection Installations**

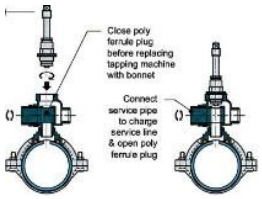
| | | |
|---|---|---|
|  |  |   |

**Figure 5: Examples of Ball and Ferrule Valves**

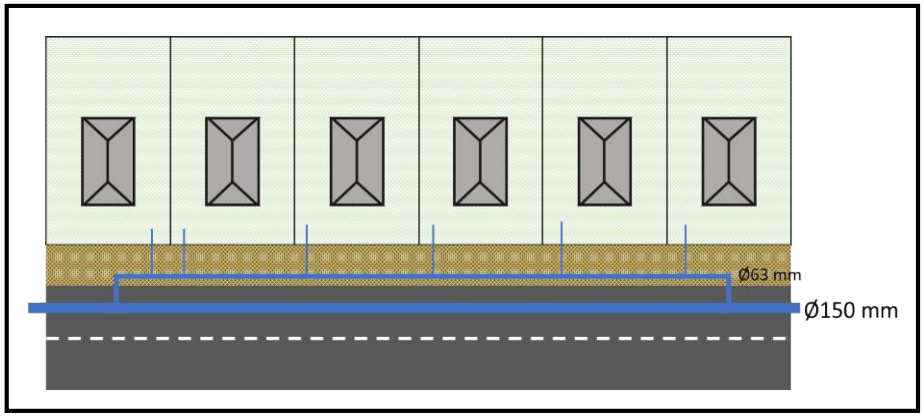



**Figure 6: Example of Secondary Main Suitable for Tapping**

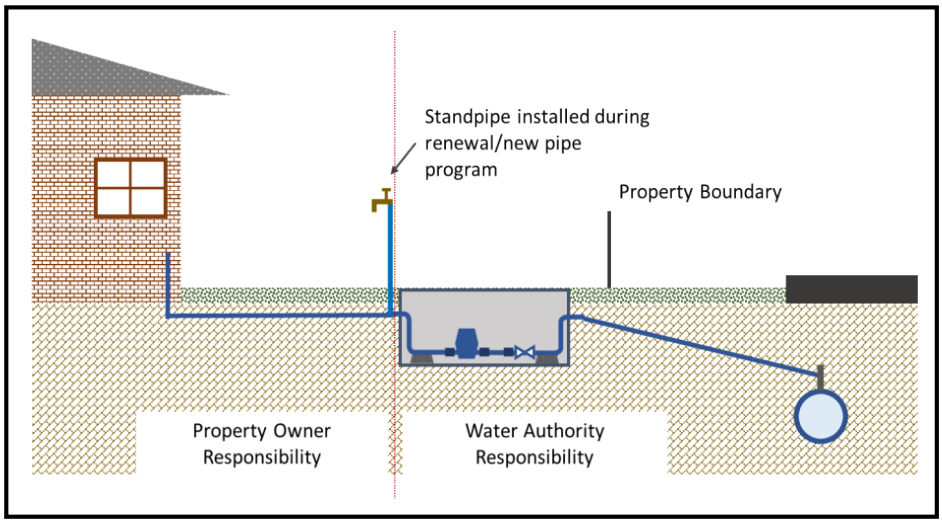



**Figure 7: Requirement of a Standpipe Downstream of a Meter Assembly**

Single installed House service Connection pipe with end plug

Multiple installed House service Connection pipes with end pipes.

**Figure 8: HSC Pipes with End Plugs**

| S.No | Size of meter in mm | Clearance between A & B in mm |
|---|---|---|
| 1 | 20 | 280 |
| 2 | 25 | 330 |
| 3 | 32 to 50 | 380 |

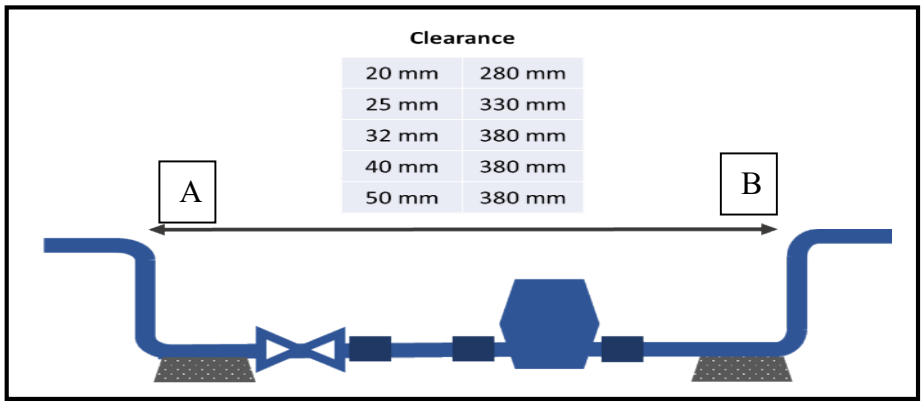



**Figure 9a :Meter Assembly**

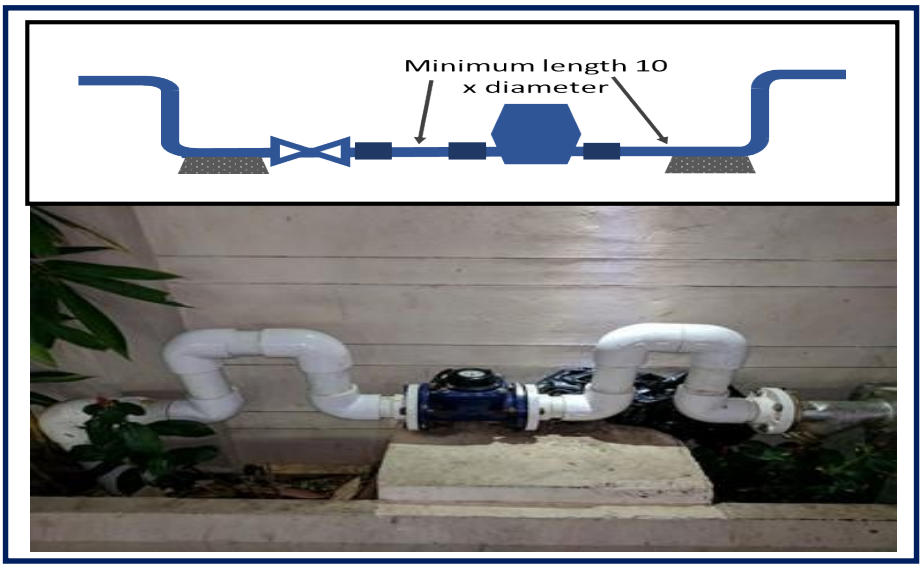



**Figure 9b: Meter Assembly**

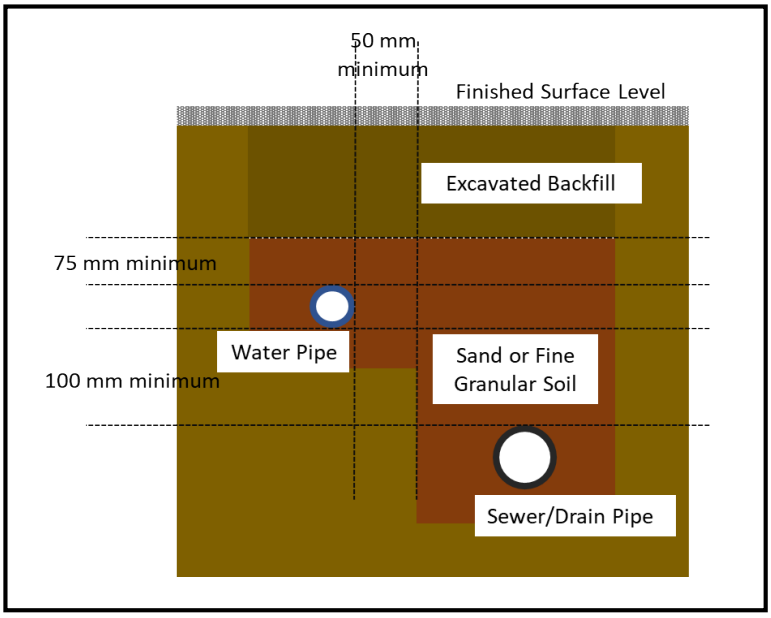



**Figure 10: Service Connection Bedding and Backfill Requirements**

**Some examples of poor service connection practices are given in Figure 11.**


Examples of the poor use of materials.Over-tightening the tap has cracked PVC fitting.This PVC fitting cannot be easily replaced as it is glued into the standpipe itself.


Water is exiting the standpipe at high pressure This makes the standpipe difficult to use and wastes water.Throttling the flow using the valve at the ferrule or in the meter box would solve the problem.

There is insufficient pipe lengths upstream and downstream of the meter. This meter will not provide reading within an acceptable error range and will contribute to non-revenue water. A better solution would be to use a bigger meter box or locate the valve outside of the meter box.


This newly installed tapping is leaking and must be repaired. In addition, there is no evidence of the use of plumbing tape in the compression fitting.

Communication pipe seals are leaking. This Could be a result of tampering and the regular inspection of communication pipes is required until the full remainder of the service connection is made.

Although correctly fitted this newly installed tap is not suitable for the pressure being experienced and should be replaced with a tap that is more robust and complies with the Indian Stands for Taps.

**Figure 11: Examples of Poor Service Connection Practices**

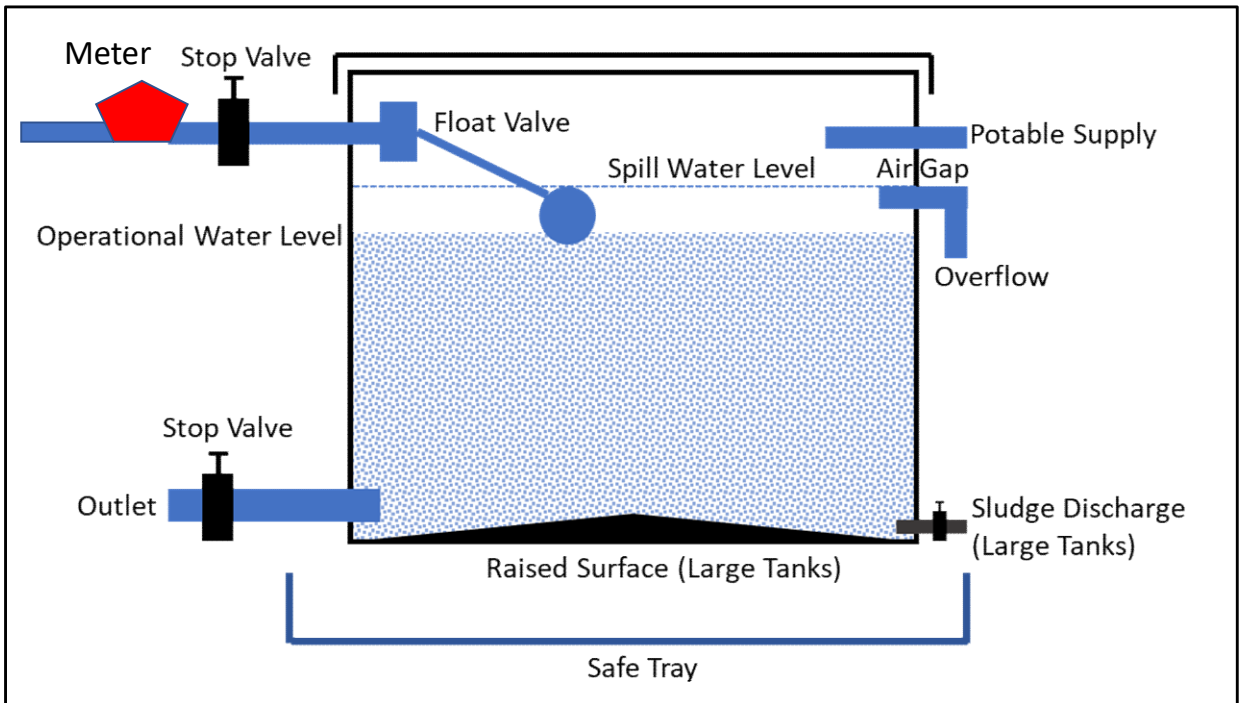



**Figure 12: Typical detail of service connection for Sump Taps**

Signed xxxxx
on 13.07.2023
MANAGING DIRECTOR

## (H) STANDARD OPERATING PROCEDURE FOR UNDERGROUND SEWERAGE SYSTEM

The following steps are to be adopted while providing House Sewer Connections in the Underground Sewerage Schemes:

1. The sewer laying work shall not be taken up at a time in all the streets of a particular area. The selection of streets should be made in such a way that there should be alternate way for entry and exit of all residents in that street without causing much hindrance/inconvenience to the public. The details of commencement and probable date of completion of sewer laying work should be intimated to the residents in that street before commencing the work. The works should be completed within the stipulated time.
2. The location for construction of Machine Hole shall be identified and clearly demarcated. The machine holes shall be constructed as per the specifications provided in the Agreement.
3. After the completion of the Machine Hole and laying of pipes, the location of the internal terminal chamber shall be identified inside the respective premises in concurrence with the owner of the premises and the same shall be constructed as per specifications in the Agreement.
4. Not more than 6 nos of House Sewer Connections shall be given to a particular Machine hole. If the no. of HSCs to a particular Machine hole to be provided is more than 6, then a new Machine Hole shall be introduced and HSCs shall be given.
5. The benching and channelling inside the Machine Hole as well as terminal chamber shall be provided as per specifications in the Agreement.
6. Excavation for effecting House Sewer Connection i.e., to link the internal terminal chamber with the Machine hole shall be carried out for the specified width as per the Agreement.
7. Necessary gradient from the newly constructed terminal chamber to the Machine hole shall be provided and the distance between the terminal chamber and the machine hole shall be measured and recorded.
8. Then, the pipes for House Sewer Connection as per the agreement shall be laid in the trench excavated, connecting the internal terminal chamber and the Machine Hole.
9. After laying the House Sewer Pipes, the gaps in the surrounding portion at the ends of the pipes at Machine hole as well as terminal chamber shall be packed with concrete properly to avoid leaks and finished smoothly on par with the wall surface.

10. After completing the laying of pipes, backfilling with excavated earth in layers as provided in the agreement shall be carried out. Unless, otherwise specified, the trench shall be backfilled in layers not greater than 300mm, watered and rammed to consolidation upto the road level. Road Restoration shall be carried out as per the specifications in the Agreement.
11. The excess or surplus earth shall be removed from the site immediately and site should be free from any debris or excavated earth. If any excess/surplus earth found in the site, action shall be initiated against the contractor.
12. Even after the instructions of the Engineer in Charge, if the contractor fails to remove the excess/ surplus earth, the Engineer in charge shall take action to remove the excess / surplus earth and shall deduct from the running bill of the contractor along with the penalty for not adhering to the instructions.
13. After completing the laying of Sewer main and Machine holes in a particular street, House sewer connections are to be provided immediately without any delay. Unless there is any utility proposed in the street along the alignment of the sewer, the HSCs shall be completed in 100m of length of road in not more than 7 days.
14. The terminal chamber shall be constructed (If there is provision in the sanctioned estimate) for the vacant land at which construction activities are under progress, HSC shall be given from the nearest Machine hole with the concurrence of land owner. For vacant lands where no construction activities commenced, house service connection need not be provided.
15. During the construction works, numbering system shall be adopted in the following manner
    a. Unique identification number shall be provided for each Machine Hole in the format ( MH_ _ / _ _ _/ _ _ _ _ ) ( Area number / Division No / Machine hole number)
    b. Unique identification number shall be provided for each terminal chamber Hole in the format ( TC _ _ _ _/ _ _ _ ) ( Machine hole number / House door number)
    c. Latitude and Longitude coordinates of the Machine hole and terminal chamber using GPS shall be measured and recorded.
    d. The laid angle of the House Sewer pipes with respect to the north direction from the centre of the Machine hole, shall be measured and recorded.
    e. The above details shall be clearly demarcated in the compound wall / visible location, with the concurrence of the consumer.
    f. The unique ID of the machine hole shall be written on the door of the respective machine hole with non-removable paint.

g. A booklet shall be prepared in which one page should refer to one machine hole. That page shall be titled as machine hole number containing Area number, Division No and Machine hole number in the format (_ _ / _ _ _/ _ _ _ _). It shall contain the Engineering drawings of all the HSCs given from the said machine hole. Approximate angle of each terminal chamber w.r.t. North direction shall be shown. Each HSC terminal chamber should be marked as door number of the concerned plot.

h. The booklet shall be signed by both the contractor and CMWSSB official and to be handed over along with “As Constructed Drawings”.

16. The CMC number of the consumer for the respective HSC shall be linked with the above details for future reference by the O&M wing.

17. Before payment of Final Bill, certificate should be furnished by concerned Engineers and Contractor that all the works have been carried out and submitted as per SOP in the Completion Report.

Signed xxxxx
on 13.07.2023
MANAGING DIRECTOR

**SECTION – II**
**PART – II**

## (I) ADDITIONAL SPECIFICATIONS RELATING TO THE WORKS IN THIS CONTRACT

### Environmental and Social, Health Management Strategies and Implementation Plans

The Authority / the Client to add approved Environmental and Social Management Plan, Monitoring Plan with the technical Proposal. The Bidder shall prepare and submit Management Strategies for key aspects such as

1) a Waste Management Plan (including Construction &Demolition Wastes, Solid Wastes, Plastics, Sludge, Slurry, E-Waste, Hazardous Waste, Batteries etc.);
2) Occupational and Community Health and Safety Management Plans;
3) Pollution Prevention and Management Plan;
4) Landscaping & Greenbelt Plans, in line with ESMP & their understanding of the Project.

These strategies and plans shall describe in detail the actions, materials, equipment, management processes, etc. that will be implemented by the Contractor and subcontractors.

The successful bidder shall prepare and submit comprehensive and concise Environmental and Social Management Strategies and Implementation Plans (ES-MSIP or C-ESMP) based on the actual site conditions after award of work. These strategies and plans shall describe in detail the actions, materials, equipment, management processes etc. that will be implemented by the Contractor, and its subcontractors.

**Fraud and Corruption**

This activity is financed by the world Bank and Bidders/Suppliers/Contractors/Consultants are required to comply with the applicable Guidelines ( available at following link)
https://ppfdocuments.azureedge.net/3682.pdf

## GUIDELINES ON PREVENTING AND COMBATING FRAUD AND CORRUPTION PROGRAM-FOR-RESULTS FINANCING

**Dated February 1, 2012 and Revised July 10, 2015**

### Purpose and General Principles

1. These Guidelines address Fraud and Corruption (as defined in paragraph 5) that may occur in connection with the preparation and implementation of programs financed, in whole or in part, by the International Bank for Reconstruction and Development (IBRD) or the International Development Association (IDA) through Program-for-Results Financing. They set out the general principles, requirements, and sanctions applicable to such programs.
2. The Loan Agreement[1] providing for the Loan[2] governs the legal relationships between the Borrower[3] and the Bank[4] with respect to the Program[5] for which the Loan is made. The responsibility for the implementation of the Program under the Loan Agreement, including the primary responsibility for preventing and combating Fraud and Corruption, rests with the Borrower. The Bank, for its part, has a fiduciary duty under its Articles of Agreement to "make arrangements to ensure that the proceeds of any loan are used only for the purposes for which the loan was granted, with due attention to considerations of economy and efficiency and without regard to political or other non-economic influences or considerations."6 These Guidelines constitute an important element of those arrangements and are made applicable to the preparation and implementation of the Program as provided in the Loan Agreement.
3. Recognizing that Fraud and Corruption leads to wasted resources and undermines development effectiveness, the Bank and the Borrower agree that all individuals and entities participating in the Program must observe the highest standard of ethics and, specifically, that all such persons and entities must take all appropriate measures to prevent and combat Fraud and Corruption, and refrain from engaging in Fraud and Corruption, in connection with the Program. In furtherance of these principles and purposes, the Bank and the Borrower further agree and commit to undertaking the actions set out in these Guidelines for the purpose of preventing and combating Fraud and Corruption in connection with the Program.

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[1] References in these Guidelines to "Loan Agreement" include any Loan Agreement providing for an IBRD loan; Financing Agreement providing for an IDA credit or IDA grant; Trust Fund Grant Agreement or Loan Agreement providing for a recipient-executed trust fund grant or loan in cases where these Guidelines are made applicable to such agreement; and the Program Agreement with a Program Implementing Entity related to any of the above.

[2] References to "Loan" or "Loans" include IBRD loans as well as IDA credits and grants, project preparation advances, and recipient-executed trust fund grants or loans for programs to which these Guidelines are made applicable under the agreement providing for such grant and/or loan. These Guidelines do not apply to investment project financing (to which separate guidelines apply) or to development policy financing.

[3] References in these Guidelines to "Borrower" include the recipient of an IDA credit or grant or of a trust fund grant or loan.

[4] References in these Guidelines to the "Bank" include both IBRD and IDA.

[5] Reference in these Guidelines to the "Program" means the Program as defined in the Loan Agreement.

[6] IBRD Articles of Agreement, Article III, Section 5(b); IDA Articles of Agreement, Article V, Section 1(g).

**Definition of Practices Constituting Fraud and Corruption**

4. These Guidelines address the following defined practices in connection with theProgram:[7]

(a) A "corrupt practice" is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party.[8]

(b) A "fraudulent practice" is any act or omission, including a misrepresentation, that knowingly or recklessly[9] misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation.

(c) A "collusive practice" is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party.

(d) A "coercive practice" is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party.

(e) An "obstructive practice" is (i) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation[10] into allegations of a corrupt, fraudulent, coercive, or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or (ii) acts intended to materially impede the exercise of the Bank's contractual rights of audit or access to information.

5. The above practices, as so defined, are referred to collectively in these Guidelinesas "Fraud and Corruption."

Borrower Actions to Prevent and Combat Fraud and Corruption in Connection with the Program

6. In furtherance of the above-stated purpose and general principles, except as otherwiseagreed in writing by the Borrower and the Bank, the Borrower

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[7] Unless otherwise specified in the Loan Agreement, whenever these terms are used in the Loan Agreement,including in the applicable General Conditions, they have the meanings set out in paragraph 4 of these Guidelines. [8] Typical examples of corrupt practice include bribery and "kickbacks."

[9] To act "knowingly or recklessly," the fraudulent actor must either know that the information or impression being conveyed is false, or be recklessly indifferent as to whether it is true or false. Mere inaccuracy in such information or impression, committed through simple negligence, is not enough to constitute fraudulent practice.

[10] As used in the definition of "obstructive practice", the term "investigation" includes any inquiry undertakenunder these Guidelines.

(a) takes all appropriate measures to ensure that the Program is carried out in accordance with these Guidelines;

(b) takes all appropriate measures to prevent Fraud and Corruption in connection with the Program, including (but not limited to) adopting and implementing appropriate fiduciary and administrative practices and institutional arrangements;

(c) promptly informs the Bank of all credible and material allegations or other indications of Fraud and Corruption in connection with the Program that come to its attention, together with the investigative and other actions that the Borrower proposes to take with respect thereto;

(d) unless otherwise agreed by the Borrower and the Bank with respect to a particular case, takes timely and appropriate action to investigate such allegations and indications; reports to the Bank on the actions taken in any such investigation, at such intervals as may be agreed between the Borrower and the Bank; and, promptly upon the completion of any such investigation, reports to the Bank the findings thereof;

(e) if the Borrower or the Bank determines that any person or entity has engaged in Fraud and Corruption in connection with the Program, takes timely and appropriate action, satisfactory to the Bank, to remedy or otherwise address the situation and prevent its recurrence; provided that nothing in this sub-paragraph (e) or in sub-paragraph (d) above obligates the Borrower to take action in direct contradiction of the applicable law of the Member Country;

(f) cooperates fully with representatives of the Bank in any inquiry conducted by the Bank into allegations or other indications of Fraud and Corruption in connection with the Program, and takes all appropriate measures to ensure the full cooperation of relevant persons and entities subject to the Borrower's jurisdiction in such inquiry; and

(g) ensures that any person or entity debarred or suspended by the Bank is not awarded a contract under or otherwise allowed to participate[11] in the Program during the period of such debarment or suspension.

**Sanctions and related Actions by the Bank in Cases of Fraud and Corruption**

7. In furtherance of the above-stated purpose and general principles, except as otherwiseagreed in writing by the Borrower and the Bank, the Bank:

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**9** For purposes of paragraph 6(g), participation does not include the performance under contracts entered into orother engagements began prior to the date of the Loan Agreement

(a) promptly informs the Borrower of all credible and material allegations or other indications of Fraud and Corruption in connection with the Program that come to its attention, consistent with Bank policies and procedures;

(b) in cases where the Bank determines it necessary to do so to fulfill its fiduciary duty, may conduct an inquiry into such allegations or other indications, independently of or in collaboration with the Borrower;

(c) reports to the Borrower on the outcome of any such inquiry; and

(d) may sanction[12] any individual or entity other than the Member Country[13] if at any time the Bank determines that such individual or entity has engaged in Fraud and Corruption in connection with the Program or any other Bank-financed activity, or is otherwise subject to sanction pursuant to its prevailing policiesand procedures.

**Miscellaneous**

8. For avoidance of doubt, nothing in these Guidelines is intended to restrict or otherwise affect the Member Country's sovereign right to investigate, prosecute or take any other action in furtherance of its own laws and regulations. Any inquiries conducted by the Bank pursuantto these Guidelines are administrative in nature, for the purpose of determining compliance with the Bank's policies, directives and procedures. Inquiries include, but are not limited to, the review of relevant accounts, records and other documents, and interviews with relevant persons.

9. Without prejudice to any provision hereof, in the event that any action to be taken by the Borrower under these Guidelines may conflict with requirements of the applicable laws and regulations of the Member Country, the Bank and the Borrower will consult with a view to identifying and agreeing on alternative actions that will avoid such conflict while ensuring compliance herewith.

10. The provisions of these Guidelines do not limit any other rights, remedies[14] or obligations of the Bank or the Borrower under the Loan Agreement or any other document to which the Bank and the Borrower are both parties.

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[12] Sanctions include (but are not limited to) publicly declaring such individual or entity ineligible, either indefinitely or for a stated period of time, to: (i) be awarded a Bank-financed contract; (ii) benefit from a Bank-financed contract, financially or otherwise, for example as a subcontractor; and (iii) otherwise participate in the preparation orimplementation of the Program or any other project or program financed, in whole or in part, by the Bank. The Bank may publish the identity of any individual or entity sanctioned under subparagraph 7(d).

[13] For purposes of these Guidelines, "Member Country" includes (i) officials and employees of the national government or of any of its political or administrative subdivisions, and (ii) non-autonomous government-owned enterprises.

[14] The Loan Agreement provides the Bank with certain rights and remedies that it may exercise with respect to the Loan in the event of Fraud and Corruption in connection with the Program, in the circumstances described therein.

## SECTION – III

**PART - I - NOTES REGARDING THE SCHEDULE**

**PART - II - MATERIALS TO BE SUPPLIED BY THE BOARD**

**PART - III - SCHEDULE**

**PART - IV - DRAWINGS**

## SECTION – III
## PART – I

### (Bills of Quantities)

### NOTES REGARDING THE SCHEDULE

1. Tenderers are referred to the General conditions, specifications and relative drawings for a description of the works covered by this schedule and are required to include in the prices they fix to the items provided in the schedule, all the work specified, whether separately set forth in the schedule, or not, as no claim of any kind will be allowed on the plea that the schedule is incomplete or inaccurate or that it does not set forth the whole work included in the contract and no items additional to those in the schedule will be allowed unless the Contractor points out the omission at the time of submission of his tender nor will any addition to or deduction from the schedule be allowed unless the Contractor points out the discrepancy at the time of submission of his tender or unless the Engineer alters the extent of the work in which case the addition or deduction consequent upon such alteration will be added or deducted as the case may be.
2. Excavation shall include excavating any materials except the superior road surface but including removing, stacking, watching, lighting providing and altering, drains draining water all materials, plant and labour and doing everything necessary to complete the work.
3. The rate of laying cast iron pipes, specials and valves etc., complete shall include the cost of transporting the pipes, specials, valves, lead, spun yarn etc., from the site of stacking and from any of stores of the Board to the site, excavating lowering the materials into the trenches aligning, refilling the trenches and disposing of surplus earth but shall not include the cost of pipes, specials, valves and jointing material or any other materials which are provided by the Board under the conditions stated here in after.
4. The rates for the C.I. pipes, specials and valves etc., to Indian standard in Metric Units shall also apply to pipes to the nearest British Standard in Inch Units and vice versa.

5. The quantities of work set out in Schedule are approximate and all work will be paid for at the rates quoted and on the actual net measurements taken during progress or after completion of the Works.

6. The following procedure will be adopted in taking measurements:

   i) The length of pipes between two adjacent points where the pipe line or sewer changes its gradient will be taken to the distance through the centre line of the length.

   ii) In measuring the depth of any length it will be taken to the average depth of the invert of the pipe correct to the nearest 0.25 meter arrived at from the ground levels, along the alignment before excavation, taken usually at not less than 30 meter intervals. In these depths, 0.13 meter and above will be rounded off to the next multiple of 0.25 meter and fraction below 0.13 meter will be disregarded.

   iii) The word 'Ground level' will mean the average level of the ground before excavation.

   iv) The depth of the invert will be the difference in levels between the level of the invert of the pipe and the average level of the ground vertically above the same point before excavation.

   v) Should the depth of the works at any part exceed the greatest depth given in the schedules by 0.25m, then the rate for it shall be calculated as follows:

   The difference in rates between the two adjacent greatest depths shown in the schedule will be taken and 10% added thereto. This total shall be added to the rates given for the greatest depth and the resulting total shall be the rate to be adopted. Similarly for other depth, should however, the depth of the work at any part be less than the smallest depth shown in the schedule than the rates to be allowed shall be obtained by reversing the previous process.

7. The prices for brick work shall include all vertical splayed angles, opening inclined or curved surfaces setting back, courses by course for valve grooves, sluices, backs or arches, ramps, string courses cutting to shape of pipes, fixing hold fasts, ladders, outlets. Price for brickworks shall also include forming curves, toothings, channels arches over pipe, springing bond courses to concrete. overselling of corbelling cleaning of old brick work and continuing with new work etc.

8. The brick work in walls of chambers will be measured solid over all opening of 500 mm diameter or under to allow for forming the openings or buildings round pipes, or cutting pipes flush with the inner face of the brick work etc.

9. Each of the inter-connections will be paid at a lump sum rate quoted by the Contractor. The rate shall include the cost of conveying all necessary materials from the Board stores to the site, excavating, timbering, lowering the materials into the trenches, fixing in position, jointing, cutting the existing main where the new main has to be connected, inserting the tees, encountering the water, jointing, testing, refilling, restoring surface etc. complete except the conveying, laying, jointing etc. of different sizes of straight pipes which will be paid for separately.

## SECTION – III
## PART – II

## MATERIALS TO BE SUPPLIED BY THE BOARD

1. a) Cement and steel required for the work shall be procured in the open market by the Contractors conforming the Board's specification on grade, brand names etc. as approved by the Engineer.

   b) The following material for the work will be supplied by the Board free of cost unless otherwise specified to the extent necessary for the work.

      1. S.W Pipes and Specials upto 250 mm dia
      2. Machinehole doors with frames & C.I. Steps
      3. Spun Yarn
      4. Pig lead
      5. C.I. / D.I. Pipes and C.I. / D.I. Specials upto 200mm dia
      6. Bolts nuts, washers and rubber insertions
      7. Valve cover and surface box
      8. Sluice Valves upto 200mm dia
      9. Air Valves 100 to 80mm dia
      10. Fire Hydrants 50 to 80mm dia
      11. P.V.C. Pipes 100 to 200mm dia
      12. G.I. Pipes and Specials

2. The Contractor should make his own arrangements for all materials required for the work except for items if any specified in Clause 1b above. However, at the discretion of the Engineer any materials required for the work, the issue of which is not contemplated under clause 1b above may be supplied by the Board, if available, and the cost thereof shall be recovered at the Board's rate prevailing at the time of issue plus storage charges at 15% thereof or at the market rate ascertained at the beginning of the quarter in which the materials are issued, whichever is higher.

3. Issue of materials by the Board under Clause – 2 above and the recovery of the cost shall be regulated under the following condition.

4. Materials supplied under Para 2 above will be valued at a rate not exceeding the rate charges originally. However, storage charges if any originally levied shall be excluded.
5. Materials returned by Contractor will be valued as under the necessary credit therefore offered to them.
6. The following general conditions will also apply.
    i) In part bills the recovery will be for all materials issued till the time of billing whether the materials issued had been fully consumed or not.
    ii) The contractor shall be responsible for the safe custody of the materials issued to him for the Works by the Board.
    iii) Any damage to the materials caused during transit or storage leading to complete rejection as unfit for use in work will have to be borne by the contractor.
    iv) In case the materials issued to the Contractor are lost, or stolen, or destroyed or damaged or rendered unfit for use, they should be replaced to the satisfaction of the Engineer by good materials at the cost of the Contractor. Otherwise the cost will be recovered from the contractor at the rates to be fixed by the Board.
    v) The Materials supplied by the Board will be issued from any of the Board's Stores and the Contractor should make his own arrangements to cart the materials to the site of work.
    vi) The Contractor should return the materials supplied to him by the Board if unused or surplus, in good form within 30 days of completion of work. If the Contractor fails to return the materials within the said period, the cost of such materials shall be recovered at Double the rate prevailing at the time and such amount will be deducted from the bill or any other bills due to the Contractor. Also, such contractors, may be liable for suspension from participating in future tenders. The date of completion of the work will be taken as the date of preparation of final bill after settlement of store return materials and any fine for slow progress will have to be recovered up to the date of preparation of final bill. The final bill has to be sent to Finance for the works within 30 days from the date of settlement of store return materials and other items.

## SECTION – III

## PART – III

## SCHEDULE

## (Bills of Quantities)*

**Percentage tender system**

1. 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. The bidder shall include the methodology for Environmental, Social, Health and Safety (ESHS) for the work involved.
2. The tenderers are requested to quote the percentage variation over the total departmental value in the BoQ(Excel Format), 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.

**Item Rate tender**

1. This tender has been called under item rate tender system. In the price schedule, detailed items of works involved in the work with specifications along with the quantity are furnished.
2. The present tender document contains price schedule only. The tenderer are requested to quote the rate for each item of work in figures in the BoQ.xls format uploaded in the e-procurement portal.
3. The tenderer shall quote the price schedule exclusive of GST and GST amount will be calculated automatically by the system at the applicable GST% separately.

| Quantity | Description of work | Rate | | Per | Amount | |
|---|---|---|---|---|---|---|
| | | Rs. | P. | | Rs. | P. |

Pl. refer Page Nos. from …… to ……..

Signature of Tenderer.

## SECTION – III

## PART – IV

## LIST OF DRAWINGS

**CHENNAI METROPOLITAN WATER SUPPLY AND SEWERAGE BOARD**

From
The Superintending Engineer,
Contracts & Monitoring,
C.M.W.S.S. Board,
No.1, Pumping Station Road,
Chintadripet,
Chennai – 600 002.

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**Lr. No. CMWSSB / C&M / CNT / INSURANCE / 2008, Dated 18.06.2008**

Sir,

Sub: CMWSSB – C&M Wing – Contracts – Contract Labour payment of compensation incorporation of a provision in Agreement for taking an Insurance Policy under Workmen's Compensation Act by the contractor – Reg.

Ref: i) This Office Lr. No.C&M / CNT / GL / 207 / 96, dated 11.09.1996
ii) Executive Director note approval dated 18.06.2008

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It has been decided that the terms and contract shall compulsorily include the provision of Workmen's Compensation Act, 1923 to cover for the labourers as per condition. In this regard, it is to be informed that as per the existing Tender Document issued to the bidders vide reference cited under Clause 67 of Section – II, Part – I, General Stipulation and Conditions, the following Clause with regard to the Insurance of Contractor's employees have already been included.

INSURANCE OF CONTRACTOR'S EMPLOYEES

The liabilities of all the Labourers and other employees of the contractor should be covered by the Workmen's Compensation Act 1923.

The following additional conditions are incorporated under the bid document.

Workmen's Compensation Act 1923

The contractor shall also take out the Insurance under Workmen's Compensation Act 1923 covering the total number of workmen employed by him on any work pertaining to this contract or contractors. He shall also ensure that similar Insurance under Workmen's Compensation Act 1923 covering the total number of workmen employed by his sub contractor if any, also included in this policy. All such policies of workmen of the main contractor as well as the sub contractor shall be got registered by the main contractor with the Site Engineer concerned before the commencement of the work. Site Engineer shall permit the contractor to take up the work only after the policy is registered with him. For any reason, if there is any omission in covering certain workmen in the policy as above and any accident occurs an equivalent amount equal to the compensation payable under Workmen's Compensation Act 1923 according to the nature of accident will be deducted from the bills payable to the contractor for the work done or from any other dues payable to the contractors and kept in deposit account for being paid ultimately to the injured person or the heirs in case of death.

You are requested to adopt the Rate of Wages under Minimum Wages Act. It is hereby informed that you should adhere to the above additional conditions which is part and parcel of the agreement to be executed for the work.

SUPERINTENDING ENGINEER (C&M)

**DECLARATION**

I .....hereby acknowledge that I have read and understood the Safety and Preventive measures and Provisions of Labour laws brochure available in Contracts & Monitoring Wing in CMWSSB and I shall abide by the various clauses therein.

Signature of the Contractor.

**DECLARATION**

i) I .....S/o ..... Proprietor / Partner / Director of ..... do hereby declare and undertake as under:

ii) That in the capacity of Contractor by M/s..... I will comply with the provisions of Contract Labour (Regulations & Abolition) Act, 1970 (G.O. No.425 dated 12.08.2022) by obtaining a valid license under the Act and the Rules thereto and similarly under Factories Act wherever applicable.

iii) I will pay the wages in accordance with the Minimum Wages Act to all my employees.

iv) The staffs who have been employed by the contractor should also have ESI & EPF number in their names. The contractor has to pay ESI & EPF contributions towards the staff every month. The employee's contribution has to be deducted from his salary only and will not be reimbursed by the Board under any circumstances. The quoted value should be exclusive of employer's share towards ESI and EPF. The copies of the remittance challans of the ESI and EPF contributions should be submitted along with the bill for reimbursement of Employer's share of ESI and EPF and for claiming the subsequent monthly payment. If the evidence of ESI and EPF remittance are not produced, both employee and employer share will be recovered from the bill. Further payments will not be made in case of failure in adhering the procedure. Similarly, the contribution/premium/tax etc. payable to any other statuary authorities should be remitted by the contractor directly, after registering with the respective departments.

v) I further declare and undertake that in case of any liability pertaining to my employees is to be discharged by the Principal Employer for my lapse, I undertake reimburse the same or the Principal Employer is authorised to deduct the same from my dues as payable.

vi) I will maintain the Registers and records about the Contract Labour employed under Section 29 of Labour (Regulation & Abolition) Act wherever applicable.

vii) 1) I shall not employ any child labour in a house / worksite / establishment and other places.

2) As per section 2 (ii) of the child labour (Prohibition and Regulation) Act 1986, child means a person who has not completed his 14 years of age.

SIGNATURE OF THE CONTRACTOR.

## UNDERTAKING

**ADDITIONAL CONDITIONS FOR THE CLEANING AND MAINTENANCE OF SEWERAGE SYSTEM (INCLUDING SEPTIC TANKS)**

I / We …… aged about.....Years, S/o..... ……residing at ..... am / are aware of the Tamil Nadu Government Gazette No.425, Part III – Section 1 (a) published on 12.08.2022 and the orders of the Government of Tamil Nadu vide G.O. (Ms) No.110, M.A.& W.S. (MA.2) Department, dated 12.08.2022, The Tamil Nadu Prohibition of employment as manual scavengers and their rehabilitation rules 2022, regarding the ban on manual scavenging and on the entry of sanitary workers into the sewerage system. I undertake to abide by the said directions of the Government Order (Ms) No. 110, MA & WS (MA.2) Department dated 12.08.2022 in this regard.

Signature of the Contractor with seal.

**FORMAT FOR DECLARATION BY THE TENDERER FOR DEBARMENT/ BLACKLISTING**
**CLAUSE 4.5 (A) & 4.8 OF ITB**

I/We hereby confirm that our firm has not been blacklisted Disqualification/Debarring done due to works executed in World Bank/any State/ Central Government Departments, or State / Central Undertakings/ Boards/ Corporations, Municipalities and Municipal Corporations, Urban Developments Authorities will disqualify any entity from participation in the tender.

I/We _____declare that the information furnished in the tender is true to the best of my/our knowledge. If any false/fictitious information is found I/We agree to the rejection of the bids and consequence action.

| **Description** | **To be filled by the Tenderer (Yes/No)** | **Details if any** |
|---|---|---|
| We confirm the above declaration | | |