



# KERALA RURAL WATER SUPPLY AND SANITATION AGENCY

**Name of work: Sustainability Support to Highrange, Rajeev  
gandhi Moopankuzhi , Ganga Muttilpara , Anora , Jyothis  
Ambalakunnu WSS in Puthuppadi GP in Kozhikkode District**

**E-TENDER No: 014/KRWSA/KNR/SUS/PPDY/22-23**

**Last date of submission: 28.11.2022, 05.00 pm**

NOTICE INVITING TENDER

VOLUME – 1

**OFFICE OF THE REGIONAL PROJECT DIRECTOR  
KERALA RURAL WATER SUPPLY AND SANITATION AGENCY  
RPMU KANNUR  
KERALA STATE**

# **KERALA RURAL WATER SUPPLY AND SANITATION AGENCY**

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## 1. E-TENDER NOTICE

The Regional Project Director, Kerala Rural Water Supply and Sanitation Agency, Kannur invites sealed competitive electronic tenders in **ONE/TWO** level system for the following work on **Percentage/Item rate/lump-sum/EPCM** basis from Registered **Class A/ Class B/ Class C/ Class D** contractors of Kerala Water Authority or contractors Registered in other departments in Kerala State / in other states in India/ in equivalent class and manufacturers eligible for **A/B/C/D class** license from Kerala Water Authority/PWD/CPWD/reputed contracting firms in India. The tenderers shall have experience in implementing similar works.

The tender is invited in **Single Cover/Double cover** system from the registered and eligible firms through e-procurement portal of Government of Kerala (<https://www.etenders.kerala.gov.in>). Prospective bidders willing to participate in this tender shall necessarily register themselves with above mentioned e-procurement portal.

The tender timeline is available in the critical date section of this tender published in [www.etenders.kerala.gov.in](http://www.etenders.kerala.gov.in).

The brief details of tender are as follows :

Tender No.	<b>014/KRWSA/KNR/SUS/PPDY/22-23</b>
Name of Project:	Sustainability Support to Community Managed Water Supply Schemes
Name of work:	Sustainability Support to Highrange, Rajeevgandhi Moopankuzhi , Ganga Muttilpara, Anora, Jyothis Ambalakunnu WSS in Puthuppadi GP in Kozhikkode District
Nature of works	Renovation works at various schemes
Location	Puthuppady Grama Panchayath in Kozhikkode District
Probable Amount of Contract:	Rs.20,46,947/- (Tendered PAC)
Period of Completion	90 days from date of Award of work
Source of Fund for this work:	State Plan Fund
Sale of Tender Documents	Documents are available in the site <a href="http://www.etenders.kerala.gov.in">www.etenders.kerala.gov.in</a> for free download
Tender forms received by	The Regional Project Director, Kerala Rural Water Supply and Sanitation Agency, RPMU Kannur
Tender fee	Rs.2,500/- + GST (GST is to be remitted by the bidder on reverse charge basis while filing his return)
EMD	Rs.50,000/- (Rupees Fifty thousand only)
Mode of payment (Tender fee & EMD)	Online payment

Pre- bid meeting	16.11.2022 at 11.00 AM
Site visit	Up to 15.11.2022, 02.00 PM
Clarification regarding bid	All clarifications sought up to 16.11.2022 at 11.00 am will be answered in the pre- bid meeting and published in the portal.
Corrigendum	Corrigendum if any will be published in web site
Last date and time of submission of tenders electronically to the tendering Authority	28.11.2022 at 05.00 PM
Last date and time of submission of attachments in hard copy to the tendering Authority	30.11.2022 at 11.00 AM
Date and time of opening of tenders	30.11.2022 at 11.00 AM
Validity of Bid (Firm period)	90 days from the last date of submission of bid (electronically)
Place of execution of agreement	Office of the Regional Project Director, Kerala Rural Water Supply and Sanitation Agency, RPMU Kannur

Interested bidders can get further details regarding the work from the office of the Regional Project Director, Kerala Rural Water Supply and Sanitation Agency, **KERALA RURAL WATER SUPPLY & SANITATION AGENCY Regional Project Management Unit, 2<sup>nd</sup> Floor, Bldg.NoIII/253, Near AKG Hospital Talap Kannur – 670002 Phone : 0497 – 2707601**  
Email : rpmukannur@gmail.com

All other relevant rules followed by KRWSA shall be applicable.

# KERALA RURAL WATER SUPPLY AND SANITATION AGENCY

## 2. DETAILED TENDER NOTICE

1. Sealed competitive tenders are invited for and on behalf of Executive Director, Kerala Rural Water Supply And Sanitation Agency, by the undersigned, from Registered **Class A/Class B/Class C/ Class D** Contractors of Kerala Water Authority/Contractors Registered in Other Departments in Kerala State or other States in India equivalent class and also Manufacturers/reputed contracting firms in India, eligible for **A/B/C/D** Class license from Kerala Water Authority/PWD/CPWD/reputed contracting firms in India, with experience in similar works in water supply schemes for the following works as per the scope of work in Volume II.

*Name of project* : **Sustainability Support Project**

*Name of work* : **Sustainability Support to Highrange, Rajeevgandhi Moopankuzhi , Ganga Muttillpara, Anora, Jyothis Ambalakunnu WSS in Puthuppadi GP Kozhikkode District.**

2. Intending tenderers may enroll themselves for e-tendering in the website [www.etenders.kerala.gov.in](http://www.etenders.kerala.gov.in). One time registration is valid for all KRWSA tenders. The contractors who are registered for e-tendering and have valid password can only view / download the Tender Documents. The Tender Schedule shall be filled up in the prescribed format provided in tender document. For uploading the tender documents, the tenderer has to remit the amount towards cost of tender documents as well as the prescribed EMD through online payment mechanism for e-procurement system of Govt. of Kerala. Tenderers are advised to visit the "Downloads" section of e-Procurement website ([www.etenders.kerala.gov.in](http://www.etenders.kerala.gov.in)) for detailed instructions on making online payment using **internet banking facility only**. Only those tender schedules which are downloaded from the website and uploaded after filling only will be considered. Bidders can make use of the links "help for Contractors", "FAQ", "Bidders Manual Kit" etc. in the above website for more details on registration and bid submission. For further assistance they can also contact over phone or by mail to the regional offices of Kerala State IT Mission in the addresses available in the website.

The tenders shall be submitted electronically to The Regional Project Director, Kerala Rural Water Supply and Sanitation Agency, RPMU Kannur in the method available at the web site [www.etenders.kerala.gov.in](http://www.etenders.kerala.gov.in). The tenderer has to remit the amount towards cost of tender documents and EMD through online payment in time. The bid submission is allowed up to the last date and time given in this tender notice. Submitting bid documents in no way for a right or / eligibility for pre-qualification of awarding the work. The pre-qualification criteria are described in the bid document.

The bidder shall fill up the prequalification sheet, technical bid sheet and price bids in prefixed formats along with NIT, Scope of work or any other document uploaded by the Regional Project Director and upload in the website. Additional documents if any are to be scanned and uploaded in the website. The price bid shall be submitted electronically only. The tenderer shall produce before **30.11.2022, 11.00 AM**, the originals of the documents uploaded including those scanned and uploaded (except price bid) with the preliminary agreement executed in the prescribed Kerala Stamp paper (Rs. 200/-).

~~Technical Bid shall be opened in the presence of the Bidder or their authorized representative who chooses to attend the specified tender opening. After the evaluation of Technical Bid, the the Regional Project Director will intimate the bidders who have qualified in Technical bid, the date and time of opening of the Price bid which will be fixed subsequently.~~ The

participating bidders can view the bid opening online and view the rates of competitors after tender opening. Bidders are requested to furnish Telephone No/Fax No/Email ID for speedy transfer of information.

The Regional Project Director will not be responsible for any cost or expenses incurred by bidders in connection with preparation or delivery of bid or loss of any document during transit. Date extension will not be allowed without specific reasons and which is beyond the control of KRWSA. In the event of any of the specified date being declared a holiday, the event will take place at the same time and place on the next working day. All other conditions of invitation of tenders will be as per prevalent rules in Kerala Rural water Supply and Sanitation Agency.

3. Site visit: A site visit for the intending tenderers who have purchased the tender documents will be arranged by the Regional Project Director, Kannur on any working day from up to 02.00 PM till 15.11.2022. Clarifications, if any shall be asked before 11.00 am on 16.11.2022.
4. A pre-bid meeting will be convened by the Regional Project Director at Regional Project Management Unit, Kannur office on 16.11.2022 at 11.00 am to clarify any issues raised by the intending tenderers in advance. The minutes of such pre -bid meeting shall also form part of this tender document and a copy of the same duly signed by the Tenderer /firm shall be enclosed with the tender submitted.
5. Period of completion of the work tendered will be 90 days.
6. The tenders shall be submitted electronically before 28.11.2022, 05.00PM. The bidder shall fill up the prequalification sheet, technical bid sheet and price bids in prefixed formats along with NIT, Scope of work or any other document uploaded by the Regional Project Director and upload in the website. Additional documents if any are to be scanned and uploaded in the website. The price bids in prescribed format should be submitted electronically only. Hard copy of all other documents uploaded in original shall be submitted before 30.11.2022, 11.00AM. This shall include his pre-qualification details such as his financial standing, solvency certificate, audited statement of accounts, statement showing major projects carried out by him, income tax clearance certificate, list of his technical personnel, list of equipments available for deployment at site, certificates from reputed organizations in proof of the required experience, copy of schedule bar charts, procurement chart and CPM schedule that he has used for the completed projects, technical design and specifications of the various components he proposes to install for the present project, along with necessary drawings, specifications and literature of the machineries/equipments etc. that he proposes to supply for the project along with the procurement plan and such other details as required for this tender and as per the formats Q1 to Q8 as per Clause 7.7 and 7.8 of NIT Volume I. The cover shall also contain Preliminary agreement. The signed NIT (Volume I & II) along with copy of minutes of pre - bid meeting (signed by the tenderer), shall also be enclosed in cover together with a **checklist**. The above tender attachments shall be submitted in a single sealed cover superscripted with Tender number, Name of work and Name of contractor/ firm quoting for the work along with the covering letter. **The covering letter submitting the tender shall be in the form given in Chapter 3.**
7. The electronically submitted price bid of those contractors who have satisfied the necessary prequalification criteria as per NIT only will be opened by the Regional Project Director/Authority after giving due information about the time and date to all the selected bidders in advance and in the presence of the bidders present at the time of opening. The decision of the Regional Project Director / Authority regarding the eligibility to be selected for the opening of the financial bids will be final and **it shall not be appealable.**

The hard copy of tender as detailed in earlier paragraph (Para 6) should reach the office of the Regional Project Director, Kerala Rural Water Supply and Sanitation Agency, RPMU Unit, 2<sup>nd</sup>

**Floor, Bldg NoIII/253, Near AKG Hospital Talap Kannur – 670002 Phone : 0497 – 2707601** Email : [rpmukannur@gmail.com](mailto:rpmukannur@gmail.com) within three days from the date of submission of bid electronically or such date prescribed as the last date for the receipt of tender. Late tenders shall not be accepted. The tenders shall be accepted only through registered post/courier service.

8. The tenders shall be opened electronically at **11.00 AM on 30.11.2022**. The bidders are advised to be present for the opening of tender or they can view the opening through the web site. Tenders without requisite EMD and other particulars shall not be considered further but will be retained with KRWSA.

8. The cost of tender form, for this tender is not refundable even though the tender is cancelled or rejected at any stage.
9. Those contractors who are either blacklisted or failed to complete the works, or refrain from executing the agreement and completing the work shall not be eligible to participate in this tender.

### 3. LETTER SUBMITTING THE TENDER

(Shall be submitted in this format after filling the details along with hard copies)

Ref. No. :

Place :

Date :

From

To

The Regional Project Director

Kerala rural water Supply and Sanitation Agency, Regional Project Management Unit

2<sup>nd</sup> Floor, Bldg No III/253, Near AKG Hospital Talap Kannur – 670002.

Sir,

Sub : Submission of E Tender documents – Sustainability Support to Highrange, Rajeevgandhi Moopankuzhi , Ganga Muttalpara, Anora, Jyothis Ambalakunnu WSS in Puthupadi GP Kozhikkode District

Ref : Your e-tender Notification No. 014/KRWSA/KNR/SUS/PPDY/22-23

1. I/We.....on behalf of .....  
..... as the duly authorized person (s) in my/our official capacity as..... of the aforesaid firm, hereby submit this tender for your consideration. I / we have read and understood all conditions of this document in full spirit and meaning. I/We hereby agree to accept all the conditions put forth in the succeeding pages of this document without any deviations or with the exceptions, which may be expressly admitted and accepted by the tender accepting authority before the award of work. Preliminary agreement duly executed and signed in Rs. 200/- worth stamp paper is also enclosed. Copy of the specifications duly signed is also enclosed.
2. EMD for **Rs. 50,000/- (Rupees Fifty Thousand only)** has been remitted through **internet banking facility only**.
3. I / We further agree to complete the whole work in all respects within **90 days** from the date of award of work.
4. I/We agree to keep the tender open for acceptance for a period of **90 days** from the last date prescribed for submission of tender.
5. I / We agree that Authority shall without prejudice to any other right or remedy be at liberty to forfeit the said earnest money absolutely if :
  - a) In case we fail to keep the tender open as aforesaid or make any modifications in the terms and conditions of the tender.
  - b) After the Tender is accepted, I/we fail to execute the agreement as provided in the tender conditions or to commence the execution of work as provided in condition.
6. The tender submitted is fully in accordance with NIT and I / we agree to all NIT conditions and any other conditions prevailing in KRWSA in Toto.
7. I have not included any conditions in quoting for this tender.

Yours faithfully

(Office Seal)

SIGNATURE WITH NAME AND DESIGNATION



#### **4. PARTICULARS SHOWING STATUS OF TENDERER**

(Shall be submitted in this format after filling the details along with hard copies)

4.1.1 Name of tenderer :

4.1.2 Address

Permanent :

Present for communication :

E-mail ID / Fax / Telephone :

4.1.3 Status of the tenderer/individual or Public Ltd. :  
Co. or Private Ltd Co. or registered Partnership  
concern or proprietary concern

4.1.4 Name and address of Chairman of Board of :  
Directors and Managing Director/Managing  
Partner (in case of partnership concern) or  
Proprietor (in case of proprietary concern)  
[Memorandum of Articles and Authorization/  
Partnership deed]

4.1.5 Whether the tenderer is a registered Contractor :  
of KWA/PWD/any State /Central Government  
Department. (CPWD, MES, Railway etc) or  
local bodies (ie Port Trust, District Board,  
Municipality or a statutory body) with Reg. No.  
and year, issuing authority & validity period

4.1.6 Name and address of two responsible persons :  
(preferably Senior Engineers/ Officers of a  
Government Department, Quasi Government  
organization or a local body), to whom  
reference can be made regarding experience and  
performance.

4.1.7 Whether Authorization to act on behalf of the :  
firm presented or not

(OFFICE SEAL)

SIGNATURE WITH NAME & DESIGNATION

## 5. FORMS OF AGREEMENT

### (A) FORM OF PRELIMINARY AGREEMENT

"Preliminary Agreement entered on this ..... day of .....Two Thousand and **Twenty Two**, between the Regional Project director, RPMU Kannur for and on behalf of Kerala Rural water Supply and Sanitation Agency of the one part and Sri. .... ,..... (full name and address of the tenderer). Here in after called the contractor of the other part for the execution of the agreement as well as for the execution of the work **of Sustainability Support to Highrange,Rajeevgandhi Moopankuzhi , Ganga Mutttilpara,Anora,Jyothis Ambalakunnu WSS in Puthuppadi GP Kozhikkode District.**

Kerala Rural water Supply and Sanitation Agency (KRWSA) invited tenders for the work as stated above by Notification **No.014/KRWSA/RPMU/KNR/PPDY/22-23** Dated **14/11/2022** in [www.etenders.kerala.gov.in](http://www.etenders.kerala.gov.in) and the notice inviting tenders stated as follows :

Within **14 days** after the date when the acceptance of the tender has been intimated to him, the tenderer shall submit security deposit for the proper fulfillment of the same and shall execute an agreement for the work in the stipulated manner. If the contractor fails to execute the original agreement within the stipulated time, the earnest money shall be forfeited to KRWSA without any notice or in the case of the contract, fails to maintain a specified rate of progress and reason for delay is solely attributable to the contractor (to be specified in each case in the tender schedule) KRWSA shall terminate the contract as per the prevailing rules and rearrange the work at the risk and cost of the contractor and fresh tenders shall be called for or the matter otherwise disposed off.

If as a result of such measures due to the default of the tenderer to pay the required deposit to KRWSA results in any loss to KRWSA, the same will be recovered from him as arrears of revenue. The original contractor shall have no claim whatever to the sum that may be due to the contractor on this or any other subsisting contracts or under the Revenue Recovery Act or otherwise the KRWSA may decide.

NOW THESE PRESENT WITNESS AND it is mutually agreed as follows :

The terms and conditions for the said contract having been stipulated in the said tender form to which the contractor has agreed, a copy of which forms part of this agreement, it is agreed that the terms and conditions stipulated therein shall bind the part to this agreement extend to which they are abrogated or altered by express terms and conditions herein agreed to and in which accept the express provisions herein all supersede those of the same tender form.

1. The contractor hereby agrees and undertakes to perform/fulfill all the operations and obligations with the execution of the said contract work of **Sustainability Support to Highrange, Rajeevgandhi Moopankuzhi , Ganga Mutttilpara, Anora, Jyothis Ambalakunnu WSS in Puthuppadi GP Kozhikkode District** (Here the name of the work) is awarded in favour of the contractor.
2. If the contractor does not come forward to execute the original agreement within stipulated time (**maximum of 24 days, as per clause 7.22.2**) after the said work is awarded and selection notice issued in his favour, the earnest money shall be forfeited to KRWSA without any notice. If the contractor commits breach of any of the conditions of the contract and not following the work schedule chart, stipulated in the NIT therein KRWSA shall terminate the contract as per the

prevailing rules and rearrange the work at the risk and cost of the contractor, otherwise or loss so sustained by the KRWSA shall be realized from the contractor under Revenue Recovery Act as if arrears of land revenue as assessed, taking into consideration the prevailing PWD rate and after giving due notice to contractor. The acquisition taken by such authority officer or officers shall be final and conclusive and shall be binding on the contractor.

3. The tenderer further agrees that any amount found due to KRWSA under or by virtue of this agreement shall be recoverable from the contractor from his EMD and his properties movable and immovable as arrears of Land Revenue under the provisions of the Revenue Recovery Act for the time being or in any other manner as the KRWSA may deem fit in this regard.
4. The contractor further assures it is clearly understood that the settlement of claims either by part bills or by final bills will be made only according to the availability budget provision and allotment of funds to the Regional Project Management Unit, Kannur under respective heads of account in which the work is sanctioned and arranged and also subject to seniority of such bills. No claim for interest or for damages whatsoever shall be made for the belated settlement of claims of bills.

IN WITNESS WHERE OF the Regional Project Director, RPMU Kannur (here the name of the officers of the KRWSA) for on behalf of the Kerala Rural Water Supply and Sanitation Agency (KRWSA) and .....the tenderer have set their hands on the day and year firm above. Written signed by Regional Project Director, RPMU Kannur/officers of Kerala Rural Water Supply and Sanitation Agency.

#### REGIONAL PROJECT DIRECTOR

In the presence of witness

1.

2.

Signed and delivered by

..... the contractor

In the presence of witness

1.

2.

Note: - The form should be presented in Rs. 200/- valid stamp paper of Govt. of Kerala.

(B) FORM OF FINAL AGREEMENT TO BE EXECUTED ON AWARD OF WORK

AGREEMENT No. :

Date :

**WORKS CONTRACT**

AGREEMENT entered into ..... day of the..... Two Thousand and ..... between ..... of the one part and the Regional Project Director, Kerala Rural Water Supply and Sanitation Agency, RPMU , **2<sup>nd</sup> Floor, Bldg Noll/253, Near AKG Hospital Talap Kannur – 670002 Phone : 0497 – 2707601 Email : rpmukannur@gmail.com** for and on behalf of Kerala Rural Water Supply and Sanitation Agency of the other part for the work of **Sustainability Support to Highrange, Rajeevgandhi Moopankuzhi , Ganga Muttalpara, Anora, Jyothis Ambalakunnu WSS in Puthupadi GP Kozhikkode District.**

by the former for the use of the Kerala Rural Water Supply and Sanitation Agency as per accompanying, plan, specification and conditions of contract approved by the **Manager Technical**, Kerala Rural Water Supply and Sanitation Agency.

**Cost of the Contract**

The total cost of the works (hereinafter referred to as the “total cost”) is Rs. ..../- (Rupees .....Only) excluding GST as reflected in accepted Bill of Quantities.

**Completion time**

The works should be completed within **90 days** from the date of this Agreement. In exceptional circumstances, the time period stated in this clause may be extended in writing by mutual consent of both the parties.

All other conditions as part of NIT document will form a part of this agreement. The following attachments will also be a part of this agreement.

1. Accepted Bill of Quantities
2. Performance security
3. Letter of Acceptance cum Notice to proceed with work
4. NIT Document/Conditions of contract
5. Contractor's Data
6. Any other Specifications or Drawings related to work
7. Action Plan
8. Any other documents in the contract data as a forming part of contract

**Signed and delivered by the above mentioned contractor:**

In presence of witness:

- 1.
- 2.

**Signed and delivered by the Regional Project Director, RPMU Kannur on behalf of the Kerala Rural Water Supply and Sanitation Agency:**

In the presence of witness:

- 1.
- 2.

## 6. DEFINITIONS AND INTERPRETATIONS

1. '*Government*' means Government of Kerala.
2. '*Authority/KRWSA*' means the Kerala Rural water Supply and Sanitation Agency.
3. '*Project Management Unit (PMU)*' means the office of Project Management Unit, Thiruvananthapuram, Kerala Rural water Supply and Sanitation Agency. '*Regional Project Management Unit (RPMU)*' means the office of Regional Project Management Unit, Kannur Kerala Rural water Supply and Sanitation Agency.
4. '*Executive Director (ED)*' means Executive Director (ED) at the office of Project Management Unit, Thiruvananthapuram, Kerala Rural water Supply and Sanitation Agency.
5. '*Director Technical (DT)*' means the the Director Technical at the office of Project Management Unit, Thiruvananthapuram, Kerala Rural water Supply and Sanitation Agency.
6. '*Regional Project Director (RPD)*' means the the Regional Project Director at the office of Regional Project Management Unit, Kannur, Kerala Rural water Supply and Sanitation Agency.
7. '*Manager Technical (MT)*' or '*Executive Engineer*' means the the Manager Technical at the office of Regional Project Management Unit, Kannur, Kerala Rural water Supply and Sanitation Agency.
8. '*Senior Engineer (SE)*' means the the Senior Engineer at the office of Regional Project Management Unit, Kannur, Kerala Rural water Supply and Sanitation Agency.
9. '*Project Commissioner (PC) or Engineer in charge of work*' means the the Project Commissioner at the office of Regional Project Management Unit, Kannur, Kerala Rural water Supply and Sanitation Agency.
10. '*Departmental Officers*' mean officers of the Kerala Rural water Supply and Sanitation Agency not below the rank of a Project Commissioner in charge of the work.
11. '*Work*' means the work / project to be done as per the description in the tender document.
12. '*Tenderer*' means person or persons, firm or partnership or company or consortium of companies submitting a tender for the work as defined under item 8 supra, either directly or through duly authorized representatives.
13. '*Contractor*' means person or persons, firm or partnership or company or consortium of companies who have entered into contract for the execution of the work.
14. '*Drawing*' means the drawing referred to in the tender documents or such other drawings as may from time to time be furnished or approved in writing by the Regional Project Director.
15. '*Site*' means lands and other places, on, under, in or through which the work is to be executed or carried out or any other place provided by the Authority for the purpose of fulfillment of the Contract.
16. '*Departmental rate*' means rate worked out by the Authority based on departmental data and Schedule of Rates plus conveyance plus 10% towards contractor's profit except on the cost of materials issued departmentally.

17. '*Specification*' means the instructions, provisions, conditions and detailed requirements contained in the tender documents.
18. '*M.D.S.S*' means Madras Detailed Standard Specifications (Latest Edition).
19. '*I.S.S*' means Indian Standard Specification, ISO means International standard Organization and BIS means Bureau of Indian Standards. '*B.S. S*' means British Standard Specifications.
20. '*Approved / Approval*' means approval in writing.
21. '*Day*' means a day from midnight to midnight. '*Week*' means seven consecutive days. '*Month*' means from the beginning of a given date of calendar month to the end of the proceeding date of the next month.
22. '*Time tested*' means the performance of an item is in such a manner that it has successfully withstood the service conditions intended originally for a continuous period of not less than 7 years in the past without having shown any unpredicted and unpleasant effect and thus has proved the worthiness beyond doubt.
23. '*Lead Partner/partner in charge*' means the partner who is authorized by an agreement executed by all partners to receive any instructions / communications/ payments from KRWSA and to attend any discussions or other activities in respect of this contract on behalf of all partners.
24. '*Testing*' when a structure / component / equipment is tested to ascertain its strength/durability /material comparison with respect to design / service loads or performance to the satisfaction of the Engineer in charge or as stipulated in the scope of work or as per ISS /BSS, or any such standards / specifications, it is defined as testing.
25. '*Trial Running*' means putting all components together with the service / design conditions so as to ascertain the individual and combined performance of all works under the scope together, with respect to the design performance for a period specified in the scope of works.
26. '*Commissioning*' means having ensured satisfaction in performance with respect to design / service conditions in testing and trial running putting the works under the scope of work into desired real service conditions from a particular moment of time continuously or otherwise as envisaged.
27. '*Training*' means imparting of training to Authority staff with sufficient practical and theoretical knowledge for the operation and maintenance of the service system/ scheme and the knowledge for attending to emergency repairs or acting appropriately on emergency situations that may arise during the life time of the system, as included in the 'work'.
28. '*Manual*' means Manual on Water Supply and treatment third edition Revised and up dated May 1999 (or the latest) of Central Public Health and Environmental Engineering Organization.
29. '*MLD/mld*' means Million liters per day. '*LPS/lps*' means Litres per second
30. '*EPCM*' means Engineering Procurement, Construction and Management.
31. '*Maintenance*' means Maintenance for specified period during the guarantee period mentioned after full commissioning of project.
32. '*ETS*' Electronic tendering system and '*E-tender*' means electronic tender.
33. '*Tender*' refers to all documents submitted by the bidder through electronic media and attachments in hard copy.

## KERALA RURAL WATER SUPPLY AND SANITATION AGENCY

### 7. TENDER CONDITIONS : PART –I

**[CONDITIONS/ CRITERIAS FOR TWO COVER SYSTEM IS NOT APPLICABLE TO THIS SINGLE COVER SYSTEM TENDER]**

#### PRE-QUALIFICATION OF TENDERERS

- 7.1 The Regional Project Director, RPMU Kannur for, and on behalf of the Kerala Rural Water Supply and Sanitation Agency propose to arrange the following work ~~under Percentage/Item rate/EPCM/~~  
~~Lump Sum~~ contract basis

Name of Work : Sustainability Support to Highrange, Rajeevgandhi Moopankuzhi , Ganga Muttilpara, Anora, Jyothis Ambalakunnu WSS in Puthupadi GP Kozhikkode District

- 7.2 The successful tenderer shall be entrusted with the work of design, construction, supply, erection, pipe laying, commissioning and maintaining of all the Civil, Mechanical and Electrical components required for the completion of the project as described in the "Scope of Works" in Volume II.
- 7.3 Contractors who wish to submit their bids must have the technical knowhow, standing experience & proven reputation in the design and execution of the various works which are included in the project proposals/scope of works. They should furnish satisfactory evidence of successful completion and satisfactory performance of similar works done by them in the past (in relevant format provided in this tender document).

Engaging a consultant : In case the tenderers intend to engage a consultant for the purpose of design or any such specialized function for the contract, the name and address of such consultant together with an undertaking from the consultant shall be included in the technical bid package specifying the specialised function.

- 7.4 The tenderers who have submitted the bids, shall be considered as pre qualified for consideration of their bids further only if:
- The tenderer has the technical know - how, standing experience and proven reputation in similar works; the criteria for past experience counted shall be as per clause 7.17.1.2
  - In case of joint ventures consisting of pipe manufacturer/design consultant/and Civil / Mechanical/Electrical Engineering Contractors, where both/all are jointly and severally responsible for the proper and complete execution of the contract, the Civil Engineering Contractor shall act as the lead contractor, he shall have proven reputation in pipe laying works /construction of Water treatment Plant / similar facility and who can show satisfactory evidence of successful time bound completion and satisfactory performance of the facility as described in the scope of work. The partners shall satisfy the requirements as in clause 7.4.1.f.
  - The manufacturer should have adequate capacity and facility for manufacturing the required pipes, BIS certification and minimum 3 year production experience.

In case a pipe manufacturer alone is quoting for this work the firm should have the required qualification criteria among financial status and experience as stipulated in the relevant clauses.

#### 7.4.1 In case the tender is submitted as a JOINT VENTURE:

- i. There shall not be more than four partners in a joint venture and one partner shall be designated as lead partner.
- ii. The lead partner submitting the tender on behalf of the joint venture shall (a) submit complete information pertaining to each such partner and (b) state in the covering letter attached to the tender the name of the lead partner in charge duly authorized for submitting the tender which shall be evidenced by proper power of attorney signed by legally authorized signatories of all the partners.
- iii. Original or notary attested copy of the agreement confirming the intent of all parties to form a joint venture shall be attached with the tender. It shall also distinctly show:
  - a. The financial participation of each member of the joint venture and the responsibility of each member as regards the planning and execution of the work.
  - b. Name of the lead partner in charge who is authorized to incur liabilities and receive instructions for and on behalf of all/any of the partners of the joint venture during the entire period of the contract including any extended period, as well as for receiving payments due.
  - c. An undertaking to the effect that all the partners of the joint venture shall be jointly & severally responsible for the execution of the contract, in accordance with the terms and conditions of the contract.
  - d. A partner or a design consultant who has joined with the lead partner to compete in this bid shall not compete singly or in association with any other tenderer for this work. The tenderer while submitting his bid shall obtain an undertaking in this regard from his design consultant / partner and produce it along with the technical bid.
  - e. The aggregate of the qualification criteria of all partners together shall be sufficient to meet the requirements as if a single tender only on financial criteria.
  - f. A lead partner of the joint venture shall meet at least 40% of the qualification criteria in terms of annual turnover and net worth and any other partner shall meet at least 25% of the qualification criteria.
  - g. The extent of participation of each partner shall be specified as also experience of all such partners in the relevant field. However, a partner only for design and consultancy shall not be reckoned for the purpose of clause (f) above.
  - h. Where the tender submitted is as per clause (g) above for the purpose of attaining pre - qualification as a design and management consultant of the prime contractor, then full information shall be given on the consultancy firm's proposed participation. An undertaking from the consultant for providing professional assistance to the contractor shall accompany the tender together with the complete details regarding the technical man power and experience of such consultant.
  - i. Status of persons signing the tender on behalf of the firm in the event of the tender being submitted by a firm, the person signing the tender on behalf of the firm shall state his position in the firm as to whether he is the proprietor, partner or Manager etc. He shall also furnish with the tender, the letter or other documents (in original) authorizing him to act on behalf of the firm.



#### 7.4.2. CHANGE IN THE FIRM'S CONSTITUTION

- 7.4.2.1 In the case of contract entered into by partnership firm, any change in the constitution of the firm shall forthwith be notified by the contractor to the Regional Project Director and to the officer with whom the agreement has been executed.
- 7.4. 2.2 The contractor, shall not without the previous sanction in writing of the authority accepting the tender, execute any power of attorney in respect of any matter implying this contract and any such power of attorney executed without such sanctions shall not be recognized by or be binding up on the Authority either to grant such sanction or to refuse it or revoke a sanction once given.
- 7.4. 2.3 In the case of partners who are in joint venture for executing the agreement, no change in the individuals of the firm shall affect the liability of the person who may sign the agreement. Any such change shall be forthwith notified by the contractor to the Agreement Authority and the Regional Project Director for information.

#### 7.5 TENDERS TO BE IN PRESCRIBED FORM

Tenders, which are not submitted in the prescribed form, shall be summarily rejected.

#### 7.6 HOW TO SUBMIT THE BID

The prequalification details in FORMATS Q1 to Q8, particulars showing status of tenderer shall be submitted **electronically and in hard copy**. **The price bid in FORMATS BOQ shall be submitted electronically only**. The tenderer shall also upload all pages of the NIT in proof of the understanding and acceptance of all the tender conditions.

The tender attachment such as NIT, Formats Q1 to Q8, Preliminary agreement, solvency certificate, letter accompanying the tender, deed for joint venture/partnership firm, clarifications issued, and all other supporting documents shall be submitted in hard copy and uploaded as well.

The tender attachment shall be submitted in a single sealed outer cover super scribed with tender number, name of work and name of contractor/firm quoting the work with two inner covers marked A and B.

**Cover A** - This sealed cover should contain preliminary agreement, Solvency and Certificate of joint venture in original or true copy attested by a Notary

**Cover B** - shall contain the following information documents for prequalification (including technical bid) to be submitted as part I & II. This cover also contains a checklist of all documents containing the technical bid. All the pages in the Technical Bid shall be serially numbered for each part. The tenderer shall sign all pages of NIT in proof of the understanding and acceptance of all the tender conditions and enclosed.

Solvency certificate issued within a maximum period of six months before the date of tender from scheduled bank /Tahsildar for a minimum amount of 20% of estimated PAC subject to a maximum value of Rs. 5.00 Crores should be provided unless the Tenderer is a public Limited Company.

No opportunity shall be given for providing proof of the solvency after submission of bid. Solvency certificate shall be provided in Q4A. Solvency shall be a minimum of *Rupees.....*

**Part I** - This part should contain NIT and relevant details as per the NIT conditions. This should also contain all information required for financial pre-qualification of the tenderer, such as copies of audited account, details of works done previously, work in hand etc. and such information should be furnished in specified formats Q1 to Q8,

**Part II**- shall contain Design, Product information (Specifications, Manufacturers etc.) and such other required detail satisfying the requirements in the **SCOPE OF THE WORK**.

## **7.7 HOW TO SUBMIT PRE - QUALIFICATION BID**

7.7.1 It is mandatory that each pre-qualification application shall contain the following.

**A** Information called in formats Q1 to Q8 in section 7 with supporting documents submitted through electronic media.

**B** Annual account statement of the applicants for the three consecutive years certified by registered independent auditors prior to the financial year of this tender. If the audit report for the year is not available, the latest audit report for the three consecutive years just previous to last year shall be considered.

7.7.2 All financial data/monetary values entered in the formats for the works executed /works in hand should be stated in Indian rupees. For details of contract submitted in support of past experience, the contract amount in original currency should also be stated along with Indian rupees exchange rates as applicable on 30 days prior to the last date of submission of tender and as determined by the Reserve Bank of India.

7.7.3 All details furnished should be complete and as applicable six months prior to the last date of submission of tender.

7.7.4 Applicants are particularly advised to fill the details strictly as per the enclosed formats Q1 to Q8. Applications will be rejected if required details are not furnished in prescribed form and if it do not meet the minimum qualifications/requirements mentioned anywhere in this document. **Any formats furnished in lieu of prescribed formats will not be accepted.** The applicants may furnish any additional information, which in his opinion will highlight his capacity to perform, along with the attachments. The applicant shall furnish the list and number of equipments with registration numbers intended to be deployed for this work.

7.7.5 While, applications are under consideration, applicants and their representatives or other interested parties are advised to refrain from contacting by any means KRWSA officers on matters related to the applications under scrutiny. Applicants will not be permitted to change the substance of their applications after they have been opened. Non compliance with these provisions shall be a cause for disqualification.

7.7.6 No firms/ partner of any firm, consultant including design consultant or individual be, who have submitted the tender for a work shall associate with any other bidder in the particular tender. EMD in such cases shall be forfeited and both the tenders will be treated as rejected.

## **7.8 HOW TO SUBMIT THE TECHNICAL BID (Cover – B Part II)**

7.8.1 There shall be a brief description of the systems offered as a prelude to the bid under the title "Brief description of the systems offered" and numbering each of the paragraphs. This shall be followed by details of the civil structures under the title "Particulars of civil works." This shall contain the

particulars regarding length, breadth, total height, water depth and sizes of the different components and the specifications of the materials proposed for construction of the various parts of these components and the method of execution. The civil structures shall be deemed to include all pipelines in case of Treatment plants/ Reservoirs. The tenderer is bound to execute all the works described in NIT even though if it is not expressed in brief description of systems offered by the contractor.

The particulars of the civil structures shall be followed by details of the electrical and mechanical equipments giving a clear picture as to (i) number of each equipment /components / valves offered (ii) quoting relevant standard specifications to which the materials conform (iii) manufacturers of the various items (iv) full size capacity of the equipments (v) locations where they are proposed and so on in as much details as possible.

- 7.8.2 The details shall, wherever possible, be furnished in the form of rows and columns (Tables) for enabling a quick evaluation of the offer,
- 7.8.3 A preliminary design substantiating the above shall be enclosed.
- 7.8.4 Drawing required for explaining any of the items above shall be prepared to scale and appended.
- 7.8.5 deleted
- 7.8.6 Any other information the tenderer feels essential for a better evaluation of his tender shall also be appended after the drawings.
- 7.8.7 The documents of the Technical bid as per Clause: 7.8.1 to 7.8.6 shall be arranged in the same order.
- 7.8.8 In case of pipeline work the MOU signed with the pipe manufacturers shall be enclosed
- 7.8.9 In case of work which involves supply of materials/equipments, the proposed vendors list shall be appended. The selection of vendor shall vest with the tendering authority.
- 7.8.10 The itemized schedule of works explained under the scope of works shall be prepared and a copy of the same without the rates and cost shall be furnished in the technical bid. Detailed design for construction shall be furnished after the award of the work. **The cost or rate shall not be disclosed any where in this sheet, as it shall render the tender invalid.**
- 7.8.11 ALTERNATE OFFERS AND DEVIATIONS

Any alternative offer deviating from the scope of work and specifications provided in the NIT will not be entertained and shall render the tender invalid.

## **7.9 HOW TO SUBMIT THE PRICE BID**

- 7.9.1 The price bid in format BOQ should be submitted electronically only. **The cost or rate shall not be disclosed anywhere in this sheet, as it shall render the tender invalid.** The price Bid shall be submitted only in the format specified for that purpose (Form BOQ).
- 7.9.2 The price bid shall not be used for expressing or putting forth any techno commercial conditions of the tender. **Violation of this stipulation shall result in rejection of the tender after the opening of the price bid even if it may happen to be the lowest.**

### **7.9.3 VARIATION OF PRICE BID**

The tenderer is bound to carry out the work as per the specification at the quoted rate. Nothing inferior to specification as per the scope of work included as part of this NIT shall be acceptable. Price variation on any account shall not be permitted if not explicitly specified otherwise in this NIT and the tenderer is expected to follow sound engineering practices in his designs and cost calculations. Changes in statutory taxes/levies, if any, shall be applied on cost of pipe in case of pipeline works, involving pipe supply. In all such cases the duties, levies, and taxes in percentage that he has considered in the quoted amount and the cost of pipes shall be declared by the tenderer while submitting his price bid. Any escalation/ reduction in statutory duties and levies will be applied only on the basic price of pipes and specials. No escalation in statutory taxes, duties and levies etc. shall be allowed beyond the approved period as per the procurement schedule, accepted and included in the agreement.

### **7.10 ATTESTATION OF CORRECTIONS AND ADDITIONS**

Care shall be taken to prepare the tenders without corrections/over writings / erasing etc. However, if any corrections, additions or pasted slips shall become necessary, the same shall be signed by the tenderer.

### **7.11 LANGUAGE OF THE TENDER**

Tenders shall be submitted in English and all information in the tender shall be in English. Information in any other language shall be accompanied by its translation in English. However, the details as read in the English text will be governing. Failing to comply with this direction may be considered as a sufficient reason for disqualifying a tender. Any communication should be in writing. Tenderers can make correspondence with the tendering authority through E mail, by fax, or by post.

### **7.12 CERTIFICATE OF NON -RELATIONSHIP**

1. Persons related to any officer of the Kerala Rural water Supply and Sanitation Agency, who is in charge of or having control over the work, are strictly prohibited from tendering for the work. Relationship in this respect is restricted to father, mother, husband, wife, son, daughter, brother, sister, nephew, father -in-law, brother in-law, mother- in-law, sister- in-law and first cousin of the officer concerned. The tenderers shall declare that they are not related to any officer of the Kerala Rural water Supply and Sanitation Agency who is in charge or having control over the work.
2. If at any stage, the above condition is found to have been contravened, the earnest money /security deposit of the tenderer shall be forfeited and contract entered into shall be cancelled and the work arranged at his risk and cost.

### **7.13 FIRM PERIOD OF TENDER**

Tenders shall be firm for acceptance for a period of **90 days** from the last date prescribed for submission of tender. No tender can be withdrawn or altered before the firm period is over. Any tenderer who withdraws or alters the tender before the expiry of the firm period shall do so at the risk of the tenderer and the earnest money will be forfeited to KRWSA.

### **7.14 PERIOD OF COMPLETION, SCHEDULED IN CPM / PERT**

The work shall be completed in all respects within **90 days** months from the date of award of work. This period of execution is inclusive of monsoon season. The Contractor shall follow the work schedule prepared by the Tendering Authority in CPM / PERT, which will be made available to the contractor in the form of Gantt chart and AON diagram provided with the bid document to complete

the work within the stipulated time period. The execution of work shall be done in monsoon season also by taking all necessary precautions.

#### **7.15 AUTHORITY ACCEPTING THE TENDER**

The final acceptance of the tender vests with the Regional Project Director, RPMU Kannur, KRWSA which is not bound to accept the lowest tender or assign any reason for rejecting any tender. The Authority reserves to itself the right of re-advertising the tender for the work for carrying out the work in any manner that may be deemed fit, subsequent to this invitation of tender.

#### **7.16 EVALUATION OF TENDER**

The tender submitted by a tenderer/firm shall be evaluated in two phases.

**Phase I** : Pre – qualification of tenderers

**First stage** : Pre-qualification of tenderers based on :

- (a) Financial Standing
- (b) Past Experience and
- (c) Organizational Capacity.

**Second stage** : Evaluation of technical particulars and designs as submitted for the present project according to scope of work described.

**Phase II** : Evaluation of price bid of the pre qualified tenderers.

#### **7.17 EVALUATION OF PREQUALIFICATION APPLICATION**

All formats, Q1 to Q8 shall be furnished with all required particulars.

##### **7.17.1 MINIMUM ELIGIBILITY CRITERIA FOR PREQUALIFICATION.**

The applicant must be a well - established contractor/ reputed firm/ manufacturer with experience and capabilities in executing works similar to the work tendered. The applicant can either be a single or a joint venture as per clause 7.4.1 of this NIT. The minimum qualification expected for eligibility for pre qualification will be based on the following.

1. Financial standing
2. Past experiences
3. Organizational capacity
4. Technical capability

##### **7.17.1.1 FINANCIAL STANDING**

In case of joint venture/ partnership, financial standing of all partners may be added together for explaining the capacity for pre -qualification subject to clause 7.4.1 of this NIT. It should be ensured by the tenderer that all the documents furnished are duly verified and authenticated by him. No additional documents will be called for or accepted after the submission of the tender to prove financial standing. (A) Net worth

1. For all works above 300 lakhs, net worth alone shall be the main criteria for qualifying the tenderer financially irrespective of the bid capacity. From certified annual accounts for the previous financial year submitted by the contractor, his net worth shall be evaluated based on what he owns and owes. The amount owned consists of total assets in the form of fixed and

current assets and the amount owed are the total liabilities. The details shall be furnished in the format Q4.

The net worth of the applicant shall be more than 15 % of annual turnover (taken as average over the preceding 3 years). Also the net worth shall not be less than 10% of the average annual estimated cost of this contract. Minimum period of calculation of net worth shall be considered as one year even if the time of completion of work is less than one year. For time of completion more than one year, the net worth calculation shall be done proportionate to the actual period.

Example :

PAC - 6,00,00,000 Completion period 18 months

**(A) NetWorth**

1. 10% of annual estimate cost =  $(6,00,00,000 / 1.5) \times (10/100) = 40,00,000$

2. 15% of the annual turn over

Minimum turn over as per clause B = 1,20,00,000

Minimum net worth =  $1,20,00,000 \times 15 / 100 = 18,00,000$

Maximum of the two, Rs.40,00,000

2. The net worth of the applicant shall be more than **Rs.....**
3. In the case of joint venture, every member shall furnish credit rating from a scheduled bank, which shall be equivalent to a minimum of 10% of the estimated cost.
4. If the Net worth is less than the required amount but greater than two third of the same, then there should be an over draft facility available from a scheduled Bank amounting to twice the amount by which the net worth is less which is to be submitted in format Q.4B.

**(B) Annual Turn Over**

The minimum average annual turnover of the tenderer submitting this bid shall be greater than 20% of the estimated cost of the work subject to a maximum requirement of Rs. 500 lakhs.

Example:

PAC = 600,00,000 Completion period = 18 months.

Minimum annual turnover = 20% of the PAC subject to a maximum of 500 lakhs i.e.,  
 $600,00,000 \times 20 / 100 = 1,20,00,000$

1. The minimum average annual turnover of the tenderer submitting this bid shall be greater than *Rupees.....*
2. The average annual turnover of the tenderer shall be calculated from the certified annual accounts of the preceding 3 financial years.

Or

From the certified annual accounts of the bidder who is having the required average annual turnover for the preceding two years and turnover along with one year good financial standing during the last 5 years.

### 7.17.1.2 PAST EXPERIENCE

7.17.1.2.1 No experience is insisted for any components of the work costing less than 10% of the TPAC

7.17.1.2.2 A bidder who has lagged in two or more works, for which Liquidated Damages (LD) were imposed in the ten year period prior to tender date, shall not be considered for pre-qualification.

Contractor shall submit an undertaking stating the details of delayed works if any, clearly certifying that he has not delayed two or more works, for which Liquidated Damages (LD) had been imposed in the past five years prior to the date of tender.

7.17.1.2.3 For any specialized nature of work (like SCADA/Telemetry/HDD/Micro Tunneling/Smart Meter etc) which is not covered under the qualification requirement, to ensure quality and better competition in tendering. The tender inviting authority can stipulate qualification requirement with the written approval of the concerned **Manager technical.**

7.17.1.2.4 Experience of joint venture does not pre-qualify any of its partners individually. In the case of dissolution of JV a partner can claim experience only for that part of the scope of work for which he was responsible as a partner in the JV, as certified by the Agreement Authority.

It was not compulsory to mention the responsibility of a JV partner in his experience certificate in previous KRWSA contracts (prior to 28/09/2018). Hence, experience certificates issued by the agreement authority to a JV partner as per previous KRWSA contracts shall also be considered for pre-qualification.

Past experience certificate of his own can be considered for sole/ partner of joint venture subject to clause 7.4.1 and 7.17.1.2.4 of NIT.

Experience of Joint Venture can be considered only for the same JV.

Experience as a partner of one joint venture can be considered for sole/partner of another joint venture subject to clause 7.4.1 and 7.17.1.2.4 of NIT.

7.17.1.2.5 **Construction of civil structures except Water Treatment Plant (WTP) and Sewage Treatment Plant (STP):-**

- a. The bidder must have experience of having successfully completed a single work (which includes any RCC structure like Overhead water tank, Ground level tank, Sump / Weir / Intake well / Framed RCC buildings / Stadium, Godowns, Subways, Tunnels, Underpass, Warf, Jetty / Bridges / Aqueduct / Culvert / Retaining wall / Water Treatment Plant / Sewage Treatment Plant, etc.) worth minimum 40% cost of major civil component included in the particular tender for his Sole / Joint Venture / Partner of the Joint Venture within the last ten years.

Annual escalation @ 5% (simple interest) will be allowed for the cost of works completed in the previous years

- b. No experience is required for components in the scope of work of projects costing less than 10% of the Tendered PAC.

**7.17.1.2.6 Construction of Water Treatment Plant upto 5 MLD output capacity.**

Must have constructed a Water Treatment plant in the past with any technology for a minimum of 1 MLD output capacity for his sole/Joint Venture/Partner of the Joint Venture.

**7.17.1.2.7 Construction of Water Treatment Plant above 5 MLD output capacity**

Must have constructed a Water Treatment Plant in the past with any technology for a minimum of 40% output capacity subject to a maximum of 40MLD for his sole/Joint Venture/ Partner of the Joint Venture.

**7.17.1.2.8 Construction of water treatment Plant with modern technology (except Conventional Filters, Lamella, Plate settler, Tube settler)**

- a. Must have constructed a Water Treatment Plant in the past with any Technology for minimum of 40% output capacity subject to a maximum of 40MLD for his sole/Joint Venture/ Partner of the Joint Venture.
- b. In addition to the above, Must have constructed a Water Treatment Plant in the past with similar Technology for minimum of 10% output capacity of the proposed treatment plant for his sole/Joint Venture/Partner of the Joint Venture.(If the bidder has 40% experience in the same innovative technology, no further experience in conventional technology is required).

**7.17.1.2.9 Rehabilitation work of Water Treatment Plant.**

Must have constructed/rehabilitated Water Treatment Plant in the past with similar Technology for minimum of 25% output capacity for his sole/Joint Venture/Partner of the Joint Venture.

**7.17.1.2.10 O&M work of Water Treatment Plant.**

Must have constructed/rehabilitated/Operated & maintained Water Treatment Plant in the past with similar Technology for minimum of 25% output capacity for his sole/Joint Venture/Partner of the Joint Venture.

**7.17.1.2.11 Construction of Sewage Treatment Plant upto 5 MLD capacity**

Must have constructed a Sewage Treatment Plant in the past with any technology for a minimum of 0.5 MLD capacity for his sole/Joint Venture/Partner of the joint Venture. Experience Certificate issued by Agreement Executing Authority of registered private firms will also be considered.

**7.17.1.2.12 Construction of Sewage Treatment Plant of capacity above 5 MLD**

Must have constructed a Sewage Treatment Plant in the past with any technology for a minimum of 10% capacity for his sole/Joint Venture/Partner of the joint Venture. Experience Certificate issued by Agreement Executing Authority of registered private firms will also be considered.

**7.17.1.2.13 Supplying and laying of Water Supply pipes upto and including 400mm diameter pipes of any material.**

For pipe laying works of any type of pipe of diameter upto 400mm, no experience will be insisted upon.

**7.17.1.2.14 Supplying and laying of Water Supply pipes above 400mm and up to and including 800mm diameter pipes of any material.**



- a) Experience will be insisted with respect to the highest diameter of the pipe in the scope of the work. Irrespective of its length in the scope of work, but subject to the general condition that no experience is required for components costing less than 10% of the Tendered PAC
- b) Subject to the criterion (a) above, for works with the total length of laying greater than 1000m- Must have supplied and laid a total of 1000m of 300mm or higher sized pipes of any material in the past in a single work for his sole/Joint Venture/Partner of Joint Venture.
- c) Subject to the criterion (a) above, for works where the total length of pipe line to be laid is less than or equal to 1000m- the experience is supplying & laying of 500m of 300mm or higher sized pipes of any material in the past in a single work for his sole/Joint Venture/Partner of Joint Venture is enough.

**7.17.1.2.15 Supplying and laying of Water Supply pipes above 800mm diameter any material.**

- a) Experience will be insisted with respect to the highest diameter of the pipe in the scope of the work, Irrespective of its length in the scope of work, but subject to the general condition that no experience is required for components costing less than 10% of the Tendered PAC
- b) Subject to the criterion (a) above, for works with the total length of laying greater than 1000m- Must have supplied and laid a total of 1000m of 500mm or higher sized pipes of any material in the past in a single work for his sole/Joint Venture/Partner of Joint Venture.
- c) Subject to the criterion (a) above, for works where the total length of pipe line to be laid is less than or equal to 1000m- the experience is supplying & laying of 500m of 500mm or higher sized pipes of any material in the past in a single work for his sole/Joint Venture/Partner of Joint Venture is enough.

**7.17.1.2.16 Supply and Installation of Pumps & Motors, Transformer and other electrical equipments.**

MoU with Manufacturer/Authorized Dealer and a MOU with “A Class Electrical Licensee is required.

**7.17.1.2.17 Supplying and laying of sewerage pipes upto and including 400 mm diameter pipes of any materials.**

The Tender Inviting Authority shall fix the experience with the approval of the Technical Sanction issuing Authority based on the requirements and local conditions so as to ensure competence.

**7.17.1.2.18 Supplying and laying of sewerage pipes above 400mm and upto including 800 mm diameter pipes of any materials.**

The Tender Inviting Authority shall fix the experience with the approval of the Technical Sanction issuing Authority based on the requirements and local conditions so as to ensure competence.

**7.17.1.2.19 Supplying and laying of sewerage pipes above 800mm diameter pipes of any materials.**

The Tender Inviting Authority shall fix the experience with the approval of the Technical Sanction issuing Authority based on the requirements and local conditions so as to ensure competence.

- 7.17.1.2.20 The tenderer shall submit sufficient testimonials from the clients for whom he has executed similar type of work during the past ten years. The tenderer shall also furnish past performance data of the works carried out by him in format Q1 and Q3. The tenderer shall also furnish his commitments in respect of work in hand on the date of pre-bid meeting of this tender in format Q2.
- 7.17.1.2.21 Certificates of experience issued by the Agreement Executing Authority or an Officer in Charge of the plant/pipeline work not below the rank of Regional Project Director of Central/State Govt/Public Sector undertakings only will be considered for evaluation. In the case of subcontractors/sublet works, experience will be reckoned only if there is provision in the original contract for subletting/subcontracting and such sub contractors are approved by the original client. Also in such cases certificates issued by original client (Not by the contractor) shall only be considered towards experience. The date of award of such works, date of agreement and period of completion as per agreement and actual date of completion should be mentioned. The certificates furnished will be verified. If required in case any poor/false performance in the work undertaken by the tenderer is evident on verification, the offer will not be further considered/processed.( In case of construction of Sewage Treatment Plant, experience certificate issued by agreement executing authority of registered private firms will also considered as provided in clauses 7.17.1.2.11 & 7.17.1.2.12.

### **7.17.1.3. ORGANISATIONAL CAPACITY**

The Organizational Capacity of a tenderer will be judged based on data furnished by him in respect of the personnel and experience in the design of the project components, planning of project, implementation, execution of project, number & capacity of construction plants, equipment and vehicles in good working condition which he shall deploy for the project implementation in case the work is awarded to him, the details should be furnished in formats Q5 & Q6. The tenderer shall also deploy adequate number of supporting staff and any additional plant and equipment other than those mentioned in the list as and when required for successful completion of the project.

The tenderer shall employ Technical personnel in addition to other supporting staff as detailed below for tenure of the contract for works supervision depending upon the cost of work.

a) For works, Estimated cost from Rs.5 crores to Rs. 20 crores :

1. Works Manager – 1 No. (Civil Engineering Graduate with minimum 3 years experience)
2. Site Engineer – 2 Nos. (1 No. for supervision and 1 No. for Quality Control) – (Civil Engineering Graduate with minimum 1 year experience)
3. Site Engineer – 2 Nos. (Civil Engineering Diploma holder with minimum 1 year experience)
4. Supervisor (Mechanical) (if required) -1 No. (Mechanical Engineering Diploma holder with minimum 1 year experience)

b) For works, Estimated cost above Rs. 20 crores :

1. Works Manager – 1 No. (Civil Engineering Graduate with minimum 5 years experience)

2. Site Engineer – 3 Nos. (2 No. for supervision and 1 No. for Quality Control) – (Civil Engineering Graduate with minimum 3 year experience)
3. Site Engineer – 4 Nos. (Civil Engineering Diploma holder with minimum 2 year experience)
4. Supervisor (Mechanical) (if required) -1 No. (Mechanical Engineering Diploma holder with minimum 2 year experience)

#### **7.17.1.4 TECHNICAL CAPABILITY**

##### **(A) TECHNICAL PARTICULARS AND DESIGN**

The technical particulars such as structural design of civil works/design and selection of pipes, design and selection of electrical/mechanical equipments, and their proposed suppliers/manufacturers etc. shall be in conformity with the requirements of the scope of work and technical bid package.

##### **(B) PROJECT MANAGEMENT STRATEGY**

*The Contractor shall follow the work schedule prepared by the Tendering Authority in CPM / PERT, which will be made available to the contractor in the form of Gantt chart and AON diagram provided with the bid document to complete the work within the stipulated time period.*

#### **7.17.1.5 All formats, Q1 to Q8 shall be furnished with all required particulars.**

**7.17.1.6** In case of joint venture partnership, bid capacity and financial standing and machinery and personnel of all partners may be added together for explaining the capacity for pre-qualification. It should be ensured by the tenderer that all the documents furnished are duly verified and authenticated by him. No additional documents will be accepted after the submission of the tender.

#### **7.18 Offers are liable to be rejected if**

- 1) The information given in formats Q1 to Q8 is incomplete / misleading or false (such application will be considered as non -responsive)
- 2) The facts are miss-represented. (In this case the EMD is liable to be forfeited).
- 3) The records of poor performance are found out at any time after submission of bid.
- 4) The contractors who are blacklisted or failed to complete the works, or refrained from executing the agreement and completing the work which they had agreed in the tender.

#### **7.18.1 Tenders will be rejected if**

- 1) EMD is not proper and sufficient
- 2) NIT is not accepted in Toto
- 3) If the tender is conditional
- 4) If the formats Q1 to Q8, and BOQ are not submitted.

**7.19** The successful bidders who are qualified in the pre-qualification evaluation will alone be invited for attending the opening of the price bid.

### **7.19.1 WITNESSING OF TENDER OPENING**

Only one authorized representative will be permitted to witness the bid opening at both the occasions as in clause 7 of Detailed Tender Notice in Chapter 2.

### **7.20 FINAL DECISION MAKING AUTHORITY**

The Authority reserves the right to accept or reject any of the applications for pre qualification without assigning any reasons thereof and Authority's decision shall be final.

### **7.21 PERFORMANCE GUARANTEE AND ADDITIONAL PERFORMANCE GUARANTEE**

(see Corrections and modifications separately attached)

Performance guarantee, the amount collected at the time of executing contract agreement, will be 5% of the contract value (agreed PAC) and the deposit will be retained till the expiry of Defect Liability Period. At least fifty percent (50%) of this deposit shall be collected in the form of Treasury Fixed Deposit and the rest in the form of Bank Guarantee or any other forms prescribed in the revised PWD Manual

Additional Performance Guarantee will be required in all cases where quoted rate falls below 10% of the estimate cost but the maximum permissible lower limit is 25% below the estimated cost. The 10% standard exemption will be applicable to all estimates quoted below estimate cost upto 25%. If the rate quoted by the contractor is "x%" below estimate cost (where x lies above 10% and upto 25%) the performance guarantee for an amount equal to (x-10)% of the estimate amount shall be obtained from the contractor.

The tender with lowest quoted rate less than 75 % of the estimated PAC (below 25 % of estimated PAC) shall not be rejected if sufficient competition is ensured and the rate quoted by the second and third lowest bidder are also comparatively nearer the lowest bidder. The tender inviting authority shall obtain a statement from the lowest bidder quoting rates below PAC regarding the reasonableness of the rate quoted to assess that whether the quoted rates are workable. If the contractor quotes less than 75% of the estimated PAC and variation with all other quoted rates are much higher, the Tender accepting authority shall take appropriate decision based on merit.

### **7.22 EXECUTION OF AGREEMENTS**

**7.22.1** Preliminary agreement in Rs. 200/- Kerala Govt. Stamp Paper duly filled up and signed is to be enclosed in Cover A.

**7.22.2** The successful tenderer shall before commencing the work, execute an agreement within **14 days** from the date of award of the work in Kerala State Government stamp paper of the required value for the due fulfillment of the contract. He shall pay for stamps, forms and legal expenses incidental thereto. Before executing the agreement, the contractor shall finalize his procurement, which shall form part of the agreement. The contractor shall also produce an MOU signed between him and the suppliers/ manufacturers of the equipments / pipes in order to prove and ensure the availability of the materials required for the work and this shall also form part of the agreement. In case the tenderer fails to execute the agreement within 14 days, fine at the rate of 1 % of contract amount subjected to a minimum amount of Rs. 1000/- and maximum amount of Rs. 25,000 / - shall be levied for entering into agreement within the next 10 days after the notified period of 14 days. Tenders will be rejected and selection notice issued shall be cancelled and EMD shall be forfeited if agreement is not executed within **24 days** and work will be awarded to the

next lowest tenderer. Any work recorded as done during the period between the award of work and the end of period allowed to execute agreement will be treated as an asset to KRWSA and no claim will be allowed for the selected tenderer. If the successful tenderer fails to deposit the security amount and execute the agreement as specified above, the EMD of the tenderer shall be forfeited to Authority and the work shall be arranged otherwise. If as a result of such measures due to the default of the tenderer to pay the requisite security deposit, sign contracts and take possession of the worksite, the Authority incurs any loss, the same shall be recovered from him, but should it be a savings to the Authority, the original contractor shall have no claims to the difference. Recoveries on this or any other account shall be made from the sums due to the contractor on this account or otherwise as the Authority may decide, including Revenue Recovery Proceedings, as if the loss is arrears of land revenue

### **7.23 COMMUNICATIONS TO BE IN WRITING**

All notices, communications, references and complaints issued or made by the Authority, the Director Technical or by any such officers of the Authority and by the contractor with regard to this work shall be in writing and no notice, communications, reference of complaint not in writing shall be valid. All complaint notices, communications and references shall be deemed to have been duly made, given or sent to the Contractor, if delivered to the Contractor or his authorized agents in person with acknowledgement or posted to the address given by the Contractor or his authorized agent and such communication, if sent in service by post shall deemed to have been received by the addressee on the date on which the same should have reached such address in the ordinary course of transmission by post and in other cases, on the day on which the same were delivered or left.

### **7.24 ORAL AGREEMENTS NOT BINDING**

The terms of contract cannot be added to varied or reduced by any oral agreements previous or subsequent to its signature. The Authority will repudiate any such oral agreement.

Regional Project Director

## **KERALA RURAL WATER SUPPLY AND SANITATION AGENCY**

### **8. TENDER CONDITIONS: PART –II**

#### **8.1 TENDERS ARE TO BE IN PRESCRIBED FORM**

All the submittals under this tender shall be in the prescribed form. Tenders which are not submitted in the prescribed form shall be summarily rejected.

#### **8.2 PURPOSE OF THE CONTRACT**

All the works executed/ facilities installed under this contract shall perform the services they are intended to do to the utmost satisfaction of Kerala Rural Water Supply and Sanitation Agency, without any defects whatsoever for a minimum period of **12 months** from the date of completion and commissioning of the total works covered under this contract.

#### **8.3 ALTERATION IN DRAWINGS SPECIFICATIONS ETC**

8.3.1 The preliminary drawings and connected details enclosed are only for the reference of the tenderer. The tenderers shall conduct their own specific studies and detailed investigations based on the scope of works before offering the bid amount.

8.3.2 The Authority shall be at liberty to shift the location of structure or component of work within the periphery of the site shown in the site plan at any stage before the commencement of the actual execution of the work and the tenderer shall have no claims for any extra or enhanced rate on this account.

#### **8.4 EXAMINATION OF THE SITE CONDITIONS, DRAWING ETC**

8.4.1 The Authority does not accept any responsibility for the correctness of the description of the preliminary drawing and specifications. These are liable to alterations by omissions, deductions or additions as set forth in the conditions of contract.

8.4.2 The attached preliminary sketches, drawings, specifications, contours etc may become liable to changes at the present situation. The tenderer should verify and ascertain the correctness of these. The submission of the tender shall deem to be prima -facie proof that the tenderer has made such an examination and that this tender is based on the actual situations.

8.4.3 The tenderer shall examine carefully the proposal, drawings and specifications. They shall satisfy themselves as to the character, quality and quantities of the work to be performed, the materials to be supplied and the requirements of the contract with reference to the site and soil conditions. If the tenderer finds any discrepancies or omissions in the drawings, specifications or the tender documents or he should be in doubt as to the true meaning of any part thereof he shall make a written request to the Tendering Authority at least 15 days prior to the last date fixed for the receipt of tenders or during the pre bid meeting whichever is earlier for necessary clarifications. Clarifications, corrections or modifications considered necessary in the tender documents shall be issued by the Tendering Authority to all intending tenderers who had purchased the tender form. The last date for issuing such clarifications, corrections or modifications shall be 10 days prior to the last date for receipt of tender. The scope of works provides the requirement of Authority in this work. The information on the site conditions, sub soil investigation reports etc. as available with the Authority at present are furnished with the tender

documents. The soil investigation reports, information as to maximum water level, minimum water level etc. if furnished in the scope of work have been collected from reliable sources. But the Authority does not certify the correctness of the information. The tenderers shall examine this information critically and ascertain the correctness to their satisfaction. Relying on any information without verifying the correctness/authenticity and thereby leading himself to any loss shall be at the risk of the tenderer. Authority shall not bear any responsibility on such accounts.

8.4.4 The tenderer shall specifically note that the bearing capacity and other details of soil and sub soil indicated in Appendices is only approximate and that the Authority does not give any guarantee regarding their present accuracy. The tenderers shall carry out their own tests visual and field to ascertain the bearing pressure and other details of soil and sub soil at various points before submitting the tender, if they so desire. The Authority shall in no way be liable for payments of any extra amount on account of any variation in the actual bearing capacity or other details of soil and sub soil resulting in any changes in design of foundation of structures etc.

8.4.5 The contractor shall produce total design which should be prepared in association with any leading consultants in the field who have previous experience in handling comparable works of similar nature. However, the final concurrence/approval of the design shall vest with the Authority. The competent authority providing the design for and on behalf of the contractor shall authenticate the same in writing. The Authority by the provisions of the contract reserves the right to return the design/drawing(s) after award of work for resubmission after incorporating necessary corrections as found necessary. Any delay on account of the above shall not affect final completion period initially agreed upon.

## **8.5 SITE VISIT FOR INTENDING TENDERERS**

The Authority shall arrange a visit to the site of the project works on a prefixed date. The intending tenderer can either select this date for his site visit or do the same according to his choice. If the tenderer intends to avail this facility he shall intimate the same to the Engineer in charge at least 3 days earlier to the proposed date of site visit. Late requests may not be entertained. The Manager Technical, Kerala Rural Water Supply and Sanitation Agency, RPMU Kannur in charge of the work can be contacted over phone at his office in telephone number 0497 – 2707601 provided in the tender notice. His postal address is Manager Technical, Kerala Rural Water Supply and Sanitation Agency, 2nd Floor, Bldg NoIII/253, Near AKG Hospital Talap, Kannur. – 670002 Phone: 0497 – 2707601 Email: rpmukannur@gmail.com

## **8.6 PRE BID MEETING**

A pre bid meeting will be conducted by the tendering authority on the date mentioned in the tender notice. Any queries/doubts, which the tenderers may have on the scope of work or tender conditions, shall also be cleared by e-mails / correspondence up to **11.00 AM on 16.11.2022**. Any decision regarding changes in NIT conditions / scope of work taken in the pre-bid meeting shall be final and the same will supersede the original conditions.

## **8.7 SELECTION OF LOCATIONS IN THE SITE**

a) In respect of structures/works other than pipeline works the proposed structures at the site shall be located in such a manner that the different structures form a compact unit leaving

maximum possible area at the site to facilitate future expansion. However, there shall be adequate passage facilities in between, as the circumstances or surrounding areas may demand. Notwithstanding the above condition the tenderer is liable to make essential alterations in the layout during the time of actual execution as may be deemed fit by the Engineer in Charge at no extra cost.

- b) In case of pipe laying works along a public road, the alignment of the pipe line shall be selected giving prime importance to the following points over economy for technical advantages due to the hydraulics or other similar advantages.
- c) The various traffic along the road shall not be blocked except under unavoidable conditions, if necessary, work should be arranged at night without extra cost.
- d) Every possible effort shall be taken to see that the traffic is normal and be permitted with minimum constraints at unavoidable circumstances and need not be blocked.
- e) When blocking of traffic is unavoidable the work shall be arranged in such a manner that blockage can be lifted/relaxed in the shortest possible time under all probabilities.
- f) The alignment runs along the sides of the roads through the berm/close to one side and intrusion to the hard surface/tarred surfaces of pathway to the barest minimum extent only if unavoidable.
- g) Wherever blockage of traffic / imposition of constraints in traffic is unavoidable, prior sanction of the concerned Authority / Department shall be obtained. The contractor shall do all liaison works in such cases.
- h) Giving prior information to police / traffic department, display of caution and notice boards at appropriate places, lighting watching etc. shall be the responsibility of the contractor, but all such information shall be given through the engineer in charge of the works.
- i) Caution regarding existing underground cables of electricity, telecom and other on - ground structures like electric poles, telephone junction boxes, water pipe lines etc. shall be the contractor's sole responsibility.

## **8.8 MOBILISATION ADVANCE**

No mobilization advance shall be paid to the contractor. However the contractor shall raise a claim for **80%** of the value of the tested materials he has supplied at site, at the estimate rate and in accordance with the breakup of payment approved as secured advance, which shall be considered by the authority in accordance with the relevant provisions of the rules for release of secured advance in KRWSA. Sanctioning of such secured advances shall be at the discretion of the agreement authority and shall not be taken as a right of the contractor.

## **8.9. INCENTIVE**

If the works under this contract are completed ahead of the initially agreed period of completion the contractor shall be eligible for an incentive of one percent (1.0%) of the actual cost (accepted PAC) of works for every month saved subject to an overall ceiling of Rs.3.00 Lakhs. For the purpose of calculation of incentive, part of a month, if less than 28 days, shall not be considered. However no incentive shall be considered beyond the original period of completion, irrespective of the grounds on which such extension is ordered. All other conditions are as per G.O (P) No.84/97/PW&T dated 19.8.97.



## 8.10 PENALTY

The contractor for the work shall be liable to pay penalty for the delay in executing the agreement, commencing work etc. as per the provisions of G.O (P) No.84/97/PW& T dated 19.8.97. The Engineer in charge shall also have power to measure up the work of the contractor and later such part as shall be unexecuted out of his hands, and to give it to another contractor to complete, in which case, any expense which may be incurred in excess of the sum which would have been paid to the original contractor, if the whole work had been executed by him (of the amount by which it exceeds, a certificate in writing of the Regional Project Director, shall be final and conclusive) shall be borne and paid by the original contractor and may be deducted from any money due to him by Authority under the contract or otherwise, or from his security deposit or the proceeds of sale thereof, or a sufficient part thereof. Imposition of penalty shall be, however, without prejudice to the rights of Kerala Rural water Supply and Sanitation agency to terminate the contract as per the provisions of the agreement. All other conditions are as per G.O, (P) No.84/97/PW&T dated 19.8.97.

### 8.10.1 LIQUIDATED DAMAGES

Liquidated damages shall be levied at the rate of 0.5% of the cost of balance works for every one week of delay occurred in completing the whole work subject to a maximum of 10% of the contract value. Further, to ensure good progress during the execution of work, the contractor shall be bound, unless the contract provides otherwise, in all cases in which the time allowed for the work to reach any of the set stage of completion/ milestones as per the agreed time schedule of the work, exceeds one month, the contractor shall be liable to pay damages at the rate of 0.5% of the cost of balance works that should have been completed by that time, provided always that the entire damages to be paid under the provision of the 'clause shall not exceed 10% of the contracted value of work which should have been completed by then. All the damages payable under the provision of this clause shall be considered as liquidated damages, to be applied to the use of the Authority without reference to the actual loss sustained owing to the delay. Any appeal of the contractor against the liquidated damages charged against such lapses on his part shall be placed before and disposed of by the Authority.

### 8.11 EARNEST MONEY DEPOSIT (EMD)

(see Corrections and modifications separately attached)

- A. EMD shall be in the form of DD/Call deposit from a Scheduled Bank drawn in favour of the Regional Project Director, KRWSA, RPMU Kannur (Tendering Authority).

The EMD for this particular work is **Rs.50000 (Fifty thousand only)**. No exemption shall be allowed for Govt/ Quasi govt. undertakings unless there is specific order from government / KRWSA to that effect for this particular work. Any such order received from KRWSA, if exists, shall be submitted.

Earnest Money Deposit (EMD) is collected to ensure serious participation in the bidding process and this amount will be returned soon after finalizing the lowest bidder. Taking into consideration of the fact that fixing higher amount will reduce competition the rates of EMD has been revised as follows:

Cost of work	Amount of EMD
i) Upto Rs.2 Crore	i) 2.5% of project cost, subject to a maximum of Rs.50,000

ii) Above Rs.2 Crore upto Rs. 5 Crore	ii) Rs. 1 lakh
iii) Above Rs. 5 Crore upto Rs. 10 Crore	iii)Rs. 2 lakh
iv) Above Rs. 10 Crore	iv) Rs. 5 lakh

#### **B. FOREFEITING OF EMD**

Authority shall without prejudice to any other right or remedy be at liberty to forfeit the said earnest money absolutely if :

1. In case the tenderer fail to keep the tender open as aforesaid or make any modifications in the terms and conditions of the tender which are not acceptable to the Authority.
2. After the Tender is accepted, if the tenderer fail to execute the agreement as provided in the tender conditions.

#### **C. REFUND OF THE EARNEST MONEY DEPOSIT TO UNSUCCESSFUL TENDERER**

The earnest money deposit of the unsuccessful tenderers shall be refunded after the tenders are disposed of.

#### **D. Deleted**

### **8.12 INITIAL SECURITY DEPOSIT AND RETENTION AMOUNTS**

(see Corrections and modifications separately attached)

The successful tenderer shall within fifteen days of receipt of the order of award of work (selection notice), deposit in the Treasury Savings Bank of Government of Kerala or NSC, towards security, 5% of the accepted contract value in favour of the Regional Project Director, KRWSA, RPMU Kannur.

**8.12.1** The EMD deposited by the tenderer shall be released as soon as the security amount as above is deposited. Bank guarantee or other form of Security Deposit shall not be accepted towards security on any account. The initial Security Deposit shall be subsequently increased to 8% of the total contract value by way of retention of 10% from each of the running bills, starting from the first bill, till the Security Deposit reaches the prescribed 8% limit.

**8.12.2** No exemption shall be allowed for initial security deposit and retention amounts for Govt/Quasi Govt. undertakings unless there is specific order from government to that effect for this particular work and approved by the Authority.

### **8.13 INTEREST ON SECURITY AND RETENTION**

**8.13.1** No interest shall be payable upon the security deposit, or amounts payable to the contractor under the contract. **8.13.2** The Authority shall have the exclusive right to collect interest on all Govt. Securities or National Savings Certificates endorsed as aforesaid and all interest collected shall be credited to the accounts of the contractors and the contractor shall not be entitled to claim any sum by way of interest or profit on the said securities or National Savings Certificate, save the amount actually collected by the Authority. The interest so collected may either be refunded or adjusted against the contractor's security at the end of each financial year.

- 8.13.3** The Authority shall not be liable for any depreciation in the value of securities while at its charge nor for any loss of interest thereon.

#### **8.14 REPAYMENT OF SECURITY DEPOSIT**

(see Corrections and modifications separately attached)

- 8.14.1.** On the grant of completion certificate to the contractor by the Engineer in charge of the work and within one month of the commencement of the maintenance period, 5% of contract value out of the total 8% of the security deposit shall be refunded to the contractor. Balance 3% of the security deposit will be released on completion of full guarantee period of **12 months.**

For pipe laying works alone, the work will be treated as “completed” when it is ready for commissioning of all allied civil works with anchor blocks and thrust blocks including fitting of all valves, specials etc. without any gap closing works in the pipe line alignment and after completion of testing of pipe line laid. The completion certificate will be issued by the **concerned Engineer in charge of the work** within one month. Security deposit will be released as per the modified NIT conditions on the grant of completion certificate as specified above.

- 8.14.2.** If there is any reduction in the value of the security deposit by reason of any depreciation in the value of Government Securities, the contractor shall within thirty days of such reduction, make good, in cash or in pledge able securities of National Savings Certificate which shall be suitably endorsed as aforesaid any sum of sums which may have been deducted from or realized from the Sale of his security deposit held in Government securities or any part thereof or from the security deposit held in cash, or any such by which the value of Government Securities has depreciated.

- 8.14.3** The refund of the security deposit as stated above shall however be, subject to the condition that if such time, where shall remain to be executed by the contractor any work as per the agreement or for the proper functioning of the system ordered during such period, the Authority shall be entitled to withhold payment until the completion of such work, so much of the security deposit as shall in the opinion of the Agreement executing authority, represent the cost of the work so remaining to be executed.

- 8.14.4.** Even when various deductions is made against the bank guarantee it shall be the responsibility of the contractor to attend at his cost, works which are essential to make the scheme functional.

#### **8.15 LUMP SUM AMOUNT TO BE QUOTED FOR THE WORK**

- 8.15.1** Bidders shall quote lump sum amount for the work in the prescribed form provided in the tender document and shall be uploaded electronically. There shall not be any indication of the bid amount in any of the documents/papers of technical bid uploaded in which case the tender shall be rejected outright.

For payment purposes, upon execution of agreement by the successful bidder a payment schedule (Billing breakup) shall be prepared by the agreement authority in accordance with the sanctioned estimate of Kerala Rural Water Supply and Sanitation Agency and shall form the basis for billing.

- 8.15.2** GST will be applicable for this contract.

(see Corrections and modifications separately attached)

The lump sum amount quoted shall be inclusive of GST which may be paid or become payable on the completed work within the scope of the tender. In other words, the amount quoted shall be inclusive of GST prevailing as on the due date of the tender and taxes at applicable rates shall be deducted from the payments to the contractor as per the rules without further correspondence. The deductions from contractor's payment shall include Income Tax, Labour Welfare Fund and GST as per the rate in force. However this shall not mean that only this amount shall be deducted. Any excess in taxes and duties within the original contract period shall be borne by the authority and any reduction in taxes and duties within the period shall be deducted from the contractor's bill, on proof of remittance.

## **8.16 PAYMENTS TO THE CONTRACTOR**

**8.16.1** The tenderers shall furnish a break -up for interim payments in line with form B O Q limiting the amounts of such interim payments to the actual cost of work at the various stages, along with the tender itself. The break - up of interim payments approved by the Regional Project Director shall form part of the agreement. The break - up shall be furnished in Cover B in the following manner.

- a) The breakup of payments shall be expressed as percentage of the total contract value.
- b) The breakup of payments of each individual component and sub break up for various stages of a component of the work shall be given.
- c) An amount of at least 5% of the total contract value shall be set apart for trial running and commissioning. If the trial running and commissioning is delayed, not due to the fault of contractor, after six months from the date of completion the above 5% can be released against Bank Guarantee.
- d) An amount equal to 1% of the total contract value shall be set apart for one year of maintenance period, commencing after completion and commissioning.

All such interim payments shall be in line with the percentage progress indicated in the schedule of bar chart and as achieved at site from time to time. The Authority reserves the right to modify the percentage weight of each component of the project with respect to the total project cost based on the physical and financial implication of each of the components before the award of contract and this modified schedule, approved by the Regional Project Director shall form part of the agreement and this approved break up of cost of the project shall form the basis for part payments to the contractor.

**8.16.2** For the purposes of payments the bills are categorized into five as:

- a) Part-Bill - Running Account Bill - Work in progress.
- b) Part - Bill - Running Account Bill - Work completed commissioning pending.
- c) Part - Bill - Running Account Bill - Testing and commissioning completed.
- d) Part - Bill - Running Account Bill - Part Maintenance Period
- e) Part and Final Bill/Final Bill - Contract scope completed.

- 8.16.3** Part bills of categories (a) and (b) shall be paid in accordance with the accepted break up of payments after deducting the statutory deductions as sale tax, works contract tax, income tax or such other dues livable by the Government at source as per the laws prevalent from time to time during the tendency of the contract and other deductions as per the contract agreement.
- 8.16.4** There shall be no deductions due to retention amounts on bills of category (d) and (e).
- 8.16.5** Bills of category (e) shall be treated as final bill and shall be paid as per rules prevalent in the Authority after effecting the deductions of taxes, duties etc.
- 8.16.6** The contractor shall prepare and submit the bills for payment with details of measurements for the quantum of work done. The measurements will be verified by competent Engineer in charge of the work and transfer to Measurement Book issued by authority for this purpose and submitted to the **Manager Technical** in charge of the work. No work will be paid for unless thoroughly good and fully in accordance with the specifications. Should through inadvertence bad works be passed and paid for, it will nevertheless be perfectly competent, for the **Regional Project Director** to strike the same out of the account at any future time and recover the value at any date previous to or at the time of granting the final certificate. The Authority, however, reserves the right to decide and allow/pass the bill submitted by the contractor for payment based on the overall priorities and the delay / non - payments of part bill by the Authority within 30 days of its submission by the contractor shall not entitle him for any compensation against the delayed payments nor shall it be taken as a reason for not maintaining the progress of the work.
- 8.16.7** Bills of value less than 10% of the total amount of the contract shall not be presented unless they are of categories c and e. There shall be a minimum period of 30 days between two consecutive bills raised by the contractor. The maximum number of on account bills including the 90% bill shall be 10 nos.
- 8.16.8** Break up for interim payment, vide Clause 8.16.1 shall form the basis of all “on account” payment, but if in the opinion of the Authority the break up furnished by the contractor is not in keeping with the proportionate value of the work at different stages, the authority may make their own assessment of the proportionate value of the work at the various stages and limit the interim payment to such assessed value.
- 8.16.9** Bill may be submitted by the contractor as soon as the stage of the work as per the break up for interim payment is completed and Executive Engineer shall take the requisite measures for having the same evaluated and the admissible claim as far shall be allowed as per Clause 8.16.5. Certified progress report of the **Regional Project Director** shall be an accompaniment to the bill.
- 8.16.10** From the "on account" payment full deduction shall be made for materials if any, issued by the Authority and any other dues from the contractor. The contractor shall furnish along with such bill detailed measurements and specifications of all items involving the use of cement and M S rods or steel to enable the departmental of facers to check and admit the issue of the departmental materials.
- 8.16.11** "On account payments made to the contractor shall be without prejudice to the final making up of the accounts (Except where measurements are specifically noted in the

measurement books as final measurement and as such have been signed by the contractor) and shall neither be considered nor used as evidence of any fact stated in or to be inferred from such accounts nor of any particular quantity of work having been executed nor of the manner of its execution being satisfactory.

**8.16.12** From the "On account" payments, deductions shall, be made by the Authority at the rate of 1 % of the amount of bill, excluding cost of departmental material if any supplied, towards contribution to the Kerala Construction Workers Welfare Fund Board.

**8.16.13** In case of any dispute arising out of the supply of ISO marked pipes, the Kerala Rural Water supply and Sanitation Agency shall be indemnified by the contractor, to the effect that all liabilities shall be borne by the selected contractor and the Kerala Rural Water supply and Sanitation Agency's responsibility shall end with the payment for the measured quantities in accordance with the agreement for the work.

**8.16.14** Interest for delayed payments: The tenderer/contractor must clearly understand that the settlement of claim either by part bill will be made only according to the availability of budget provision and allotment of funds made with the RPMU Office under the respective head of account in which the work is sanctioned and arranged and also subject to the seniority of such bills. No claim for interest or for damages whatsoever shall be made for the belated settlement of claims of bills. No such claims shall be admitted by the Authority.

**8.16.15** As built drawings of the facilities installed shall be a prerequisite for the payment of 90% bill which will be paid on completion and testing of all the work but for trial run.

**8.16.16** Checklist before making payment which would ensure quality of pipes and quality of work and workmanship should be adopted and its tracking should be done.

## **8.17. FINAL BILL**

**8.17.1** The final bill shall be submitted by the contractor within one month of the completion of the work as otherwise the **Engineer in charge's** measurement shall be accepted as final and binding.

**8.17.2** The contractor shall prepare and submit detailed as laid/ built drawings of all structures, and pipelines, plants and machinery constructed/installed by him in proper scale and clearly marking all the dimensions, levels, chain ages etc. of all such structures and such as built drawings shall invariably accompany the final bill of the contractor and without such detailed as built drawings the contractors work as per this tender will not be considered as complete. The final payment shall be released only after approval of such drawings and submission of 5 (five) additional copies of such approved drawings properly prepared and bound in satisfactory manner together with two soft copies in compact discs for preservation.

**8.17.3** If any amount which by virtue of this contract, may become due to the contractor be not claimed for payment within three months from the date on which it falls due, the same shall be placed in deposit account and if the amount as placed remains for three years thereafter, the contractor or others to whom it may be legally due shall forfeit the same and it shall be finally credited to Authority.

**8.17.4** On no account the final payment shall be made to the contractor before production of clearance certificate of sales tax and proof of submission of Income Tax returns. The compound rate of Sale Tax with effect from 1.4.1992 in respect of Civil Works as per section 7(7) is 2% of the total contract amount plus surcharge at 5% of the tax where the total turnover is above Rupees One lakh but below Rupees Ten lakhs or surcharge at 8%, where it exceeds Rupees ten lakhs and the same shall be deducted from the contractors bill. Tenderers are however advised to collect necessary clarifications from the authorities concerned for ensuring the extent of various taxes applicable to the work before quoting their rate.

**8.17.5** The release of amounts shall not be made if there is litigation with the contractor.

#### **8.18 PAYMENT FOR EXTRA ITEMS**

Over and above the scope of the work, the agreement executing authority shall order, in writing, to the contractor to do any extra items of work and the contractor shall be bound to comply with such orders of the Agreement Executing officer. The Authority shall pay the contractor for such extra items of work at the departmental rates prevailing at the time of the execution of original agreement. If there is no departmental rate, prescribed for such extra items of work, the rate payable to the contractor for the particular items shall be the market value of the materials plus the cost of labour actually engaged for the extra items for the work at departmental schedule of rate plus the contractor's profit of 10%.

#### **8.19 (A) PAYMENTS WHEN ALTERATIONS ARE INVOLVED**

No authorized variation shall vitiate the contract. The Authority shall have the right to make any alteration in the original project proposal/designs during the progress of the work and the contractor shall be bound to carry them out. The lump sum amount agreed to for the work shall be varied by adding to or deducting there from as the case may be, the value of all authorized alterations, additions, or omissions, the valuation being made on the same basis as for the extra items.

#### **8.19 (B) Variation in quantity:**

When there is variation in tender quantity, the rate quoted in form BOQ shall be for the specific quantity as per the NIT and scope of work. However, this quantity may increase or decrease by a maximum extent of 15%. In case of the quantity increase, the contractor will be paid at the rate as given in the BOQ schedule and in case of the quantity decrease, the quantity of pipe not laid thereby (i.e. the difference between the scheduled quantity and actual quantity) shall be taken into account of Kerala Rural water Supply and Sanitation Agency and an amount worked out at department rate for laying and all such associated works will be deducted from the contractor's bill.

#### **8.20. PRICE ESCALATION**

This contract does not have provision for price escalation under any circumstances except in the case of variation in statutory taxes and levies as noted in Clause 7. 9.3. Even if extension of time of completion has been granted under this contract, under any relevant provision, no escalation in price shall be admissible.

#### **8.21. NO CLAIMS ON ACCOUNT OF FLUCTUATION OF RATES, IDLING OF LABOUR ETC.**



**8.21.1** No claim shall be entertained on account of fluctuation of rates of labour and materials, railway freight, income tax etc. at any stage.

**8.21.2** No claim for idle labour, due to non -supply of materials by the Authority or for any other reason shall be entertained.

## **8.22. TESTING OF COMPLETED WORK**

All tests necessary to ensure that the structure, equipment, pipe lines and fittings which form part of the work, comply with the specifications, shall be carried out at the site at the contractor's cost. First 200m laid will be tested first in order to check the quality of pipes and work executed. After that testing can be done as per the instruction of Kerala Rural water Supply and Sanitation Agency officials. Such tests shall be carried out within one month of the completion of the work and shall satisfy the requirements included under the Technical Specifications. If the completed work or any portion thereof is found to be defective before the works executed by the contractor are taken over by the Authority, the Regional project Director will give the contractor a notice in writing setting forth the particulars of such defects, and the contractor shall forthwith make the defective part, good or replace the same for satisfying the requirements of the contract. Should he fail to do so within the time specified by the Regional project Director, the Regional project Director may make good the defective part or replace the same at the cost of the Contractor and such replacement shall be carried out by the Regional project Director to the same specifications as in the contract. In the event of contractor refusing to comply with the instructions of the Regional project Director within the specified period, the contractor is liable to be penalized as per clause 8.10 above.

## **8.23 GUARANTY PERIOD**

**8.23.1** For L.S tenders, the guarantee period shall be **24 months** after successful testing and trial running. For EPCM contracts, the guaranty period shall be **24 months** from the date of completion certificate which is inclusive of the maintenance period of first **24 months** from the date of such handing over. In cases where ISO specifications are allowed, the guarantee period shall be **60 months** from the date of completion certificate.

**8.23.2** If it becomes necessary for the contractor to replace or renew any defective portion of the work, the provision of this clause shall apply to the portion of the work so replaced or renewed until the expiration of **18 months** from the date of such replacement or renewal or **24 months** from the date of completion whichever is earlier. If the defects are not remedied within the notified time, the Regional project Director may proceed to do the work at the contractor's risk and expense, but without prejudice to any other right, which the Regional project Director may have against the contractor in respect of such defects. Until the final certificate of having completed the warranty period successfully has been issued, the contractor shall have the right of entry at his own risk and expenses by himself or duly authorized representatives whose names shall have previously been communicated in writing to the Regional project Director, at all reasonable working hours for the purpose of inspecting the work and taking notes there from and if he desires, at his own risk and expense, making any tests, subject to the approval of the Executive Engineer,

**8.23.3** Any defects noticed during the warranty period shall be properly rectified to the satisfaction of the Authority by the contractor at his own risk and cost.



## **8.24 MAINTENANCE PERIOD AND TRAINING OF THE OPERATIONS**

After the completion of the work and issue of completion certificate by the **Regional Project Director**, the system shall be run, operated and maintained by the contractor for a period of **24 months** for **EPCM** contracts. The satisfactory and efficient functioning of all the components installed by the contractor for this project should be conclusively proved to the satisfaction of the Regional Project Director. During the period of maintenance, the chemicals and all other consumables and the required staff for the operations shall be supplied by the contractor at his cost. **Only power charges shall be borne by the KRWSA**. The contractor shall also train the Authority staff during the period of maintenance in running and maintaining the system independently and in an efficient manner i.e. during **the 24 months** maintenance period the Authority staff and contractors personnel shall be simultaneously engaged in the operation of the system.

## **8.25 EXTENSION OF TIME OF CONTRACT**

Time is considered as the essence of this contract. Any delay due to exceptionally adverse climate conditions or other special circumstances of any kind other than default on the part of the contractor shall fairly entitle the contractor for consideration of extension of time of completion for the work without any extra claim. However, such extension shall be at the sole discretion of the employer and without prejudice to the rights of the Authority to terminate the contract treating time as the essence of the contract. The Authority is not bound to take into account any extra ordinary circumstances unless the contractor has submitted full and detailed particulars within 15 days of the incident, which affected the progress of the work. Further, any such extension granted shall not relieve the contractor from the interest on the advance, if any, drawn by him. Nor shall he be eligible for the incentive for earlier c completion of the works during the extended period. All other conditions are as per G.O (P) No.84/97/PW&T dtd 19.8.97)

## **8.26. HANDING OVER OF WORK AND CLEARANCE OF SITE**

**For LS tenders, handing over shall be after successful testing and trial running of the facility. For EPCM tenders, the maintenance period shall start after successful completion and trial running and the handing over shall be after one year of operation and maintenance period.**

**8.26.1** The contractor shall hand over all works executed under the contract to the Authority complete in all respects, and to the satisfaction of the Regional Project Director at the end of satisfactory completion of the maintenance period.

**8.26.2** The Regional Project Director shall determine the date on which the work shall be regarded as having been completed as contemplated in sub clause above and shall, in support of his determination, grant a certificate to the contractor on an application being so made to him, that the work was duly executed and completed in all respects, on a date to be specified in the certificate and such certificate shall for all purposes be deemed to be the conclusive proof of the date on which the work was so completed. The **Executive Engineer** shall also from time to time determine the date on which any particular stage of the work shall have been completed and shall, on application, grant a similar certificate to the contractor who shall be bound to follow all such determination in all subsequent dealings with the Authority on the subject matter of the contract in regard to the work.

**8.26.3** On completion of the contract, the contractor shall clear away and remove from the site all construction plant, surplus material, rubbish, debris and all temporary works of every kind and leave whole of this site and work in a neat and clean condition to the satisfaction of the Regional Project Director. No final payment in settlement of the account of the work shall be made to the contractor until, in addition to any other condition necessary for such final payment, the site clearance shall have been effected by him, and in the event of the failure of the contractor to comply with the provision of this Sub Clause within 7 days after receipt by him of a notice to that effect, such clearance may be made by the Regional Project Director at the expense of the contractor and in all such cases the Authority shall not, in any way be liable for any loss or damage to any property of the contractor left at the site caused by such removal, therefrom and such removal may without prejudice to any other mode of removal be effected by means of public sale of such materials and property or by such other means as may be deemed fit and convenient to the Regional Project Director.

**8.26.4** The contractor shall also furnish the following on instructions from the Regional Project Director :

1. Photographs of different stages of all components and special type of works taken during the course of execution (at least at ten instances and not less than a total of 60 photos)
2. Video taken at different stages during progress of works (at least thrice during the critical execution events and completion period).
3. 3-Dimensional models (1 set) and perspective drawings (5 copies) prepared for the entire scheme.
4. 4 colour copies of As laid maps of pipe lines and also its soft copy saved in DVD.

## **8.27. SETTLEMENT, ARBITRATION OF DISPUTES AND NON APPLICABILITY OF ARBITRATION**

**8.27.1** Settlement of disputes by Arbitration shall not be applicable to this contract.

**8.27.2** In the case of any disputes arising between the parties to this contract on any of the matters covered under this contract, the same shall be settled solely by a competent court having jurisdiction within the State of Kerala, and by no other Court.

## **KERALA RURAL WATER SUPPLY AND SANITATION AGENCY**

### **9. TENDER CONDITIONS: P ART – III**

#### **CONTRACT CONDITIONS**

##### **9.1 LAW GOVERNING THE CONTRACT**

- 9.1.1** All contracts or terms thereof entered into between the Authority and the contractor under these conditions of contract shall be governed and regulated in general by the relevant laws in force in the territory of India relating to contracts.
- 9.1.2** The contractor shall strictly conform to the provisions, for the time being in force, of any laws relating to works or any regulations and bye-laws made by any local authority or any water and lighting companies or any undertakings within the limits of the jurisdiction of which it is proposed to execute the work or to obtain connection with their systems or undertakings for the purpose of such work, and where the contractor considers that variations in the drawings or specifications of such work are necessary to enable him to comply with the provisions of the law or regulations or bye-laws, as aforesaid, he shall give to the Agreement Executing Authority and the Regional Project Director a notice in writing specifying the variations, and no action in this behalf shall be taken by the contractor until he receives instruction in writing from the **Executive Engineer** in respect thereof. The Contractor shall be bound to give to the authorities concerned such notices as may be provided in the law, regulations or bye-laws as aforesaid, and to apply all fees and taxes payable to such authorities in respect thereof.

##### **9.2 COMMENCEMENT OF WORK**

- 9.2.1** The contractor shall commence the work within **20 days** after the receipt, by him, of an order in writing to this effect from the tendering authority and shall proceed with the same with due expedition and without delay, except as may be expressly sanctioned or ordered by the tendering authority or be wholly beyond the contractors' control. If the contractor fails to start work within the time specified by Kerala Rural Water Supply and Sanitation Agency after signing the agreement or fails to maintain the specified rate of progress, the security deposit shall be forfeited to Kerala Rural Water Supply and Sanitation Agency and the matter will be disposed of suitably by the Authority. If such measure results in any loss to Authority, such loss shall be recovered from the contractor as arrears or revenue but should it be a savings to the Authority, the original contractor shall have no claim whatsoever to the difference. Recoveries on this or any other amount will be made from the sum that is already due or may become due to the contractor on this or any other existing contracts or under the Revenue Recovery Act, or otherwise as the Authority may decide.
- 9.2.2** It shall be the joint responsibility of KRWSA and the contractor to get appropriate sanction from the related authority.

##### **9.3 OCCUPATION OF LAND**

No land belonging to or in possession of the Authority shall be occupied by the contractor without the permission of the Authority. The contractor shall not use or permit to use such land occupied by him for the purpose other than the execution of the works.

#### **9.4 WATER, POWER AND APPROACH ROAD**

The contractor shall, at his own cost, make arrangements for obtaining supply of water and power necessary for the work.

- 9.4.1** The Authority may supply to the contractor part/or whole of the quantity of water required for the execution of the work, from the existing water supply system, if any, near the site of the work if feasible on such, terms and conditions and on such charges as shall be determined by the Authority observing the relevant rules prevailing in KRWSA for such connection and payable by the contractor, provided that the contractor shall at his own expense, arrange to effect the connection and lay additional pipelines to the site.
- 9.4.2** Notwithstanding the provision contained in Clause 9.4.1, the Authority shall not guarantee the supply of water and no claim for compensation for any failure or short supply of water by the Authority shall be entertained.
- 9.4.3** The Authority shall render necessary assistance to the contractor for obtaining the power connection, but the expenses for such connections and Electrical Energy charges shall be borne by the contractor.
- 9.4.4** For testing of pipelines and water retaining structures during the progress of work, the contractor must arrange his own supply of water.
- 9.4.5** The Authority does not undertake to construct or make available any approach road or other means of approach to the proposed work site and the tenderer shall get acquainted with the available means of approaches to the proposed site and quote for the various items. The Authority shall not be liable for any claim raised later, on the plea of non –availability or non-access to the site.

#### **9.5 TEMPORARY SHEDS AT WORKSITE**

- 9.5.1** The contractor shall at his own expense, provide himself with site office sheds, store house and yard in such situations and in such number as is requisite, in the opinion of the **Executive Engineer**, for efficiently carrying out the work and the contractor shall keep at each of such sheds, store houses and yards, sufficient quantity of materials and plant in stock so as not to delay the carrying out of the work with due expedition and the **Executive Engineer** and his assistant shall have at all reasonable times, free access to the said sheds, store houses and yards for the purpose of inspecting the stock of materials and plant stored therein, and any materials or plant objected to by the Regional Project Director shall be forthwith removed from the shed, store house or yards by the contractor. The contractor shall at his own expense provide and maintain suitable arrangements and equipment as may be deemed necessary by the Authority for the proper execution of the work.
- 9.5.2** When temporary sheds, stores etc. Put up by the contractor are no longer required in the opinion of the Authority, the contractor shall remove them at his own expense and in such manner as the Regional Project Director may direct. In the event of any failure on the part of the contractor to remove any such temporary work, the Regional Project Director shall cause the same to be removed and all the costs of such removal including the cost of supervision and other incidental charges shall be recovered from the contractor.

- 9.5.3** If temporary huts provided by the contractor on the land of the Authority for the accommodation of labour engaged by him in connection with the work are no longer required after the completion of the work, it shall be the duty of the contractor to hand over to the Authority vacant possession of the said land, and if the contractors labour refused to vacate and has to be evicted by the Authority, all expenses incurred by the Authority in connection therewith shall be met by the contractor or be recovered from him.

## **9.6 SETTING OUT**

- 9.6.1** The contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position, levels, dimensions and alignments of all parts of the work and for the provision of all necessary instruments, appliances and labour in connection therewith. If at any time during the progress of the work, any error shall appear or arise in the position, levels, dimensions or alignments of any part of the work, the contractor on being required to do so by the Regional Project Director shall at his own expense rectify such error to the satisfaction of the Regional Project Director. The checking up of any setting out or any line or level by the Regional Project Director or his assistant shall not in any way relieve the contractor of his responsibility for the correctness thereof and the contractor shall carefully protect and preserve all bench marks, site and rails, pegs etc. used in setting out the work.
- 9.6.2** The contractor shall keep at his own cost all portions of work free from water or dampness due to spring, seepage or inclement weather and in a neat and sanitary condition.

## **9.7. EXECUTION OF WORK**

- 9.7.1** The decision of the Regional Project Director shall be final, conclusive and binding on all questions relating to the meaning of drawings and specifications and to the quality, workmanship and materials used on the work.
- 9.7.2** The whole of the work shall be executed in perfect conformity with the specifications and drawings of the work approved by the Authority. If the contractor performs work in a manner contrary, to the specifications and drawings or any of them, he shall bear all costs arising or ensuing there from and shall also be liable to the Authority for any loss.
- 9.7.3** The whole of the work specified and provided for in the contract or that may be necessary to be done in order to form and complete any part thereof shall be executed in the best and most substantial 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 as referred to in any additional particular instructions and drawings as may be found requisite to be given during the execution of the work and to the entire satisfaction of the Regional Project Director.

## **9.8. WORK DURING NIGHT AND SUNDAYS AND HOLIDAYS**

- 9.8.1** The contractor shall not carry out any work between the hours of sunset and sunrise without the previous permission of the Regional Project Director or his assistant in writing.

**9.8.2** No work shall be done on Sundays and holidays without the written permission of the Regional Project Director or his assistant.

**9.8.3** However, when work is unavoidable or necessary for the safety of life, property or works, the contractor shall take necessary action forthwith and report to the Regional Project Director immediately.

## **9.9 FACILITIES OF INSPECTION**

**9.9.1** The contractor shall afford the Officers of Kerala Rural Water Supply and Sanitation Agency every facility for entering in and upon any portion of the work at all hours for inspection or for any other purpose and shall provide all labour, materials, planks, ladders, pumps, appliances and things of every kind required for the purposes aforesaid and the Director Technical or his assistant shall at all the times have access, free of cost, to every part of the work and to all places at which materials for the work are stored or being prepared.

**9.9.2** The contractor shall give at least seven days notice in writing to the Regional Project Director and his Assistant whenever any work or materials are intended to be covered up in the earth in bodies or walls or otherwise to be placed beyond the reach of measurements so that the work may be inspected or the correct dimensions thereof may be taken before the work is so covered or placed beyond the reach of measurement and where the contractor defaults to give such notice the same shall at the opinion of the Executive Engineer or his assistant be uncovered and measured at the expenses of the contractor or in the alternative, no payments shall be made for such work or materials.

**9.9.3** Should the Director Technical or any other Engineer / Supervisor authorized in writing by him to supervise the work, at times, consider it necessary for the purpose of enabling him to make any inspection or tests or analysis or to verify or ascertain the quality or strength of any part of the work or of any materials the contractor shall if and when so required to do by the Regional Project Director or the person authorized as aforesaid, open up the work or the materials for inspection or testing or analysis, or pull down, or pull out the work into any number of parts and make such openings into, under or through any part of the work, as may be directed and provide all things which in the opinion of the Executive Engineer or the person authorized as aforesaid, may find necessary to enable the inspection or tests or analysis of the work or any part thereof or of the materials or workmanship to be made and the contractor shall close up, cover, re-build, and make good the whole at his own cost, as and when directed by, and to the satisfaction of the Executive Engineer, provided always that the work, in the opinion of the Executive Engineer is found to be satisfactory and in accordance with the contract, the expenses incurred by the contractor for such examination, inspection or test shall, upon a certificate in this behalf by the Regional Project Director, be borne by the Authority.

## **9.10 SUSPENSION OF WORK**

**9.10.1** The contractor shall not suspend any work without the prior written permission of the Executive Engineer in charge of the work under any circumstances. Any such suspended work shall be treated as incomplete and abandoned by the contractor and the Authority shall have the right to get such works completed through any other manner at the risk and cost of the contractor.

- 9.10.2** The contractor shall, on an order issued by the Regional Project Director that for any reason the work shall not be commenced or shall be suspended or stopped before completion, the contractor shall be paid for the work actually done and materials actually supplied up to the date of stoppage but the Authority shall be held in no way responsible for any further liability.

#### **9.11 ALTERATION IN THE WORK TO BE AUTHORISED**

- 9.11.1** No alteration in, or additions to, or omissions from or abandonment of any part of the work shall be deemed to be duly authorized except under written instructions from the Regional Project Director and it shall be the duty of the contractor to obtain in time such written instructions in every case.
- 9.11.2** If any work over and above that in the contract is required to be executed at the site the contractor shall have no right to be entrusted with the execution of the work and the same may be carried out through another contractor or contractors or by other means at the discretion of the Authority.
- 9.11.3** The Regional Project Director shall have full powers to send persons upon the premises to execute fittings, other works etc., not included in the contract for whose operations the contractor shall afford every reasonable facility during ordinary working hours, provided that such operations shall be carried out in such a manner as not to impede the progress of the work, included in the contract, but the contractor shall not be responsible for any damage which may happen to or be occasioned by any such fittings or other works, provided that he complies with the Regional Project Director's instructions in connection there with and provided that the damage is not caused by himself or his employees. The contractor shall, at all times, cooperate, assist, attend on, and afford facilities for such specialists, as may be employed by the Regional Project Director or other works, in connection with the work. The contractor shall also cause such special work or protect it as instructed to avoid injury during progress of the work. For failure, so to protect, the contractor must make good any damage caused. If any part of his work depends for proper execution upon or results from the work of the other contractor, the former shall inspect and promptly report to the Regional Project Director any defect in the work of the latter likely to render it unsuitable for proper execution and results. The failure of the contractor entrusted with the work so to inspect and report shall, for all purposes be deemed to constitute an affirmative approval of the work of the other contractors as being fit and proper for the receipt of his work, except as to defects which may develop in the work of the latter contracts after the execution of his work.

#### **9.12 PRECAUTIONS DURING PROGRESS OF WORK**

- 9.12.1** The contractor shall be responsible to see that the levels, profiles, bench marks, masonry pillars or other marks set up by the Authority for guidance in the execution of the work are not disturbed, removed or destroyed and if any such marks as in the opinion of the Regional Project Director or his assistant, found disturbed, removed or destroyed, they will be replaced by the Authority at the cost of the contractor.
- 9.12.2** During the execution of the work, the contractor shall at his own cost provide adequate materials for all works relating to shoring, timbering, strutting, scaffolding etc. and execute the same in such a way as to ensure, in abundant measure, the stability and safety

of all structures, excavations and works and further ensure that no physical injury or harm is likely to be caused to any person or no damage or loss is caused to any property. When two or more contractors are engaged on work in the same vicinity, they shall work together in a spirit of co-operation and accommodation. The contractor shall not take or cause to be taken any steps or action that may cause disruptions, discontent or disturbance to the works, labour and arrangement of other contractors in the neighboring or other project localities. In case of any difficulties amongst the contractors, the Regional Project Director shall conduct his work so far as it affects the others.

- 9.12.3** Existing roads or water courses shall not be blocked, cut through, altered, save to the extent permitted by the Regional Project Director. All compensation claimed by the authorities concerned for any unauthorized closure, cutting through, alteration, diversion or obstruction to such roads or water courses by the contractor be deducted from any sums which is due to or may become due to him in terms of the contract, or otherwise according to law.
- 9.12.4** The contractor shall be responsible for taking all precautions to ensure the safety of the public, whether on the property belonging to the Authority or others and shall post such look-out men, as may in the opinion of the Regional Project Director, be required to comply with the regulations pertaining to the work.
- 9.12.5** The contractor shall be responsible for safety arrangement of all equipment used for construction and shall employ trained workmen conversant with the safety regulations. The contractor shall employ only tested equipment and tools for safety and shall periodically repair them to the satisfaction of the Regional Project Director. All test certificates shall be made available to the Regional Project Director at the site of the work. If at any time, in the opinion of the Regional Project Director or his assistant, this provision is not complied with the contractor shall forthwith replace equipment and tools.
- 9.12.6** The contractor shall display notices and arrange for proper fencing at such places where hazardous work is being carried out. The contractor shall provide at his own expense on the work to the satisfaction of the Regional Project Director proper and sufficient firefighting equipment, first aid appliances etc. which shall at all times be available for use.
- 9.12.7** The contractor shall at all times comply with all rules and regulations made by the Government, local bodies and such directions as may be issued by the Authority from time to time in regard to safety, first aid and health measures. The contractor shall be legally and financially liable for any lapse in taking precaution during execution of works.

### **9.13. PROCEDURE TO RECTIFY DEFECTIVE WORKS**

- 9.13.1** If it shall appear to the Regional Project Director or his assistant, at any time during the progress of the work or at any time prior to the expiration of the guarantee period of the work, that any work has been executed with unsound, imperfect or unskilled workmanship or with materials of inferior description, or that any materials or articles provided by the contractor for the execution of the work are unsound or of a quality inferior to that contracted for, or otherwise not in accordance with the contract, the



contractor shall, on demanding in writing by the director Technical or his assistant to specify the work, materials or articles, complained of and within the period of time mentioned in the demand, pull down, take up, or take out the work so complained of or objected to, remove from the site or separate from other materials or sort out the materials or articles or part thereof shall have been included any (on account) payment to the contractor, the same shall be taken in to account and deducted from any subsequent payment due to the contractor. The contractor shall also remove from the work and site any equipment fixed or otherwise objected to by the Regional Project Director or his assistant or any other persons authorized in writing by him.

**9.13.2** The contractor shall forthwith rectify or remove and reconstruct the works so specified either in whole or in part, as the case may require, or as the case may be, and provide proper and suitable materials or articles for material or articles complained of or objected to. If the contractor fail to remedy any defect within the period specified in demand mentioned in sub clause above and in the manner required, or if he shall fail to remove from the site any materials or articles condemned as unsound or otherwise not in accordance with the specifications or to substitute suitable articles for the materials complained of or objected to, the Regional Project Director or his assistant may cause such work to be carried out and such material s or other articles to be replaced by such means as he think fit, and all expenses consequent thereon, or incidental thereto, auxiliary thereof, shall be met by the contractor and borne by him and shall be recoverable from him by the Authority or may be deducted by the Regional Project Director from any moneys due or that may thereafter become due to the contractor.

**9.13.3** Should the Regional Project Director consider that the work, although not executed in strict accordance with the specifications may be allowed to stand, payment for the same shall be made at such reduced rate as may be fixed but this procedure is quite optional on his part and shall have the concurrence of the Director technical.

**9.13.4** In case of quality of work done is found to be poor, contractor will be liable to compensate for cost of rectification/replacement, and shall be blacklisted from participating in future tenders

## **9.14 SUPPLY & TESTING O F MATERIALS**

**9.14.1** The Contractor shall supply all the materials including pump sets, compressors, electrical panel boards, electrical and wiring materials, pipes and specials covered under the contract at his own cost. The pipes, specials, pumps etc. should be tested at the factory by one of the Third party inspection agencies acceptable to KRWSA and witnessed or by the technically qualified officers of KRWSA if the contract value exceeds Rs. 100 lakhs and by departmental officer deputed by KRWSA if the contract value is less than Rs. 100 lakhs. Inspection certificates should be produced along with the materials. This third party inspection is mandatory for all pipes, specials and pumping and electromechanical equipments supplied by the contractor. Also ISI/ISO marked materials should alone be accepted, wherever ISI/ISO specifications are available for such item. In respect of ISO marked pipes the contractor shall furnish third party inspection certificates from internationally recognized inspection agencies at no extra cost to the KRWSA. Any disputes between the contractor and the supply in fixing the inspection agencies shall be a matter for settlement among themselves and the KRWSA

shall not be a party to such disputes. The lump sum amount quoted shall be inclusive of the cost of all materials and inspection as specified herein. **Qualified officers/Agency engaged by Regional Project Director according to KRWSA norms will be engaged for pre delivery inspection conducted in the manufacturing unit.**

9.14.1.1 All materials shall be supplied by the contractor in a phased manner as per the phased supply schedule prepared by the agreement executing authority. Quantity and time of each supply shall be specifically mentioned in this schedule in tune with the time of completion.

9.14.1.2 Schedule for phased supply of pipes and specials shall be prepared by the agreement executing authority based on the following criteria:

- a) Targeted progress of pipe laying works
- b) Availability of permission from other agencies (PWD, NH, NHAI, KSTP, KRFB, Corporation, Panchayath, etc.) for laying pipes

9.14.1.3 Each supply of material shall be done by the Contractor only after getting written instruction from the Regional Project Director concerned.

9.14.1.4 The Regional Project Director in - charge shall direct the Contractor to place supply order in each phase after evaluating actual progress of laying of pipes supplied in the previous phase.

9.14.1.5 Agreement executing authority shall have the authority to modify the schedule for phased supply of remaining materials during the progress of work, if there is variation from the targeted progress.

9.14.1.6 **On each supply, Contractor may submit bills for materials supplied not exceeding 80% of estimate rate /quoted rate of materials, whichever is less.**

**9.14.2** Before using any material for the work, the contractor at his own cost, shall submit to the Regional Project Director for his approval such samples of materials as are proposed to be used. The materials shall strictly conform to the specifications approved by the Authority. Notwithstanding anything contained in this clause, the contractor shall be held fully responsible for the quality and soundness of all the materials and machinery that are supplied by him for execution of the work and completion of the project and the Regional Project Director's approval and inspection by third party inspection agency before delivery shall not in any way absolve him of his responsibility in this matter.

**9.14.3** The contractor shall test or obtain the approved analysis of or weigh all materials required by the specification to be tested or analyzed or weighed where so required by the Regional Project Director and shall, if any when so required to do, test the whole or each part of the work or the materials in such manner at such times and such place or places, whether before or by the specifications or as may be directed by any of the persons aforesaid.

**9.14.4** The contractor shall, if and when so required by the Regional Project Director to do, prepare and /or submit samples of works and materials for the approval of the Regional Project Director such samples shall be retained by the Regional Project Director and no materials which are required to be so tested or analyzed or weighed or of which samples

have to be submitted, shall be used in the work, until tests, analysis, weights or samples as the case may be shall have been approved in writing by the Regional Project Director.

- 9.14.5** All materials for the work must comply with the requirements or specifications laid down in the tender form and must satisfy the tests and / or analysis laid down in the specifications of the Bureau of Indian Standards/International Standards Organization or such other recognized specifications as the Regional Project Director may direct as being equivalent thereto, and in either case, with such additional tests and I or analysis as the Regional Project Director may order or in the absence of such standards or specifications, with such requirements, tests and analysis as in the opinion of the Regional Project Director, are fair and suitable.

## **9.15 TOOLS AND PLANT SUPPLIED BY AUTHORITY**

- 9.15.1** It shall be the duty of the contractor to provide adequate tools and equipment needed to do the work efficiently and expeditiously. In case any required item of equipment or machinery is available with the Authority the same may be supplied to the contractor on hire at the discretion of the Regional Project Director at the rate fixed by the Regional Project Director and on conditions current in the Authority. The contractor shall bear the running expenses excluding the pay of the Authority staff attached but including cost of restoring the same in good condition at the time of return, due allowance being made for fair wear and tear.
- 9.15.2** In the event of any departmental material including plant and equipment being made available, the contractor shall arrange for transportation and safe up-keep of the same.
- 9.15.3** No extension of time will be granted for delay in the procurement of construction equipment and / or spare parts by the contractor.
- 9.15.4** The contractor shall take responsible care of all tools and plant belonging to the Authority and issue to the contractor for the purpose of the work and shall be liable for any damage or loss caused to the same by him, his agents or his workmen or others whilst the same were in his charge. The contractor shall sign valid receipts for the tools and plant issued to him by the Regional Project Director from time to time and on completion of the work, shall be bound to carry out repairs and shall be liable for any damage done thereto.

## **9.16 SUBLETTING OF CONTRACT**

The contractor shall not at any time assign, sublet his contract or any part thereof to any person or allow such person to become in any way interested therein in any manner what so ever without the prior permission in writing of the Regional Project Director in charge of the work. Any contravention of this condition shall entitle the Authority to rescind the contract and shall also tender the contractor liable for payment to the Authority in respect of any loss or damage arising out of or ensuing from such recession of the contract. Provided further that where the subletting of the work by the contractor, in any case, is permitted' by the Authority, the contractor shall not, at any time, be absolved of any obligation or responsibility under the contract or any part thereof and shall continue to be responsible for all acts or omission and commissions of the sub contract, his agents, servants or workmen as fully and effectually as if the same were acts of omissions and commissions of the contractor, his agents, servants or workmen, as the case may be.

## **9.17 CONTRACTOR'S AGENT:**

- 9.17.1** The contractor shall, when he is not personally present at the site of the work invariably place and keep at such site a properly qualified agent, duly authorized and empowered to act on his behalf and to receive on his behalf the orders and instructions required or permitted under the contract to be given to the contractor by the Regional Project Director or his subordinates to supervise the work. All such orders and instructions given to, and all acts done by agents shall be binding on the contractor as if such orders and instructions were given to him or, such acts had been done by him.
- 9.17.2** Before absenting himself, the contractor shall furnish the name, the designation and the address of the Agent.
- 9.17.3** Prior to the appointment of such agent, the contractor shall submit to the Regional Project Director the name and other relevant details of the person intended to be appointed as his agent and no appointment shall be made until the Regional Project Director has approved the same and notified his approval in writing to the contractor and whenever the contractor desires to change his agent the same procedure as for the appointment of a new or fresh agent shall be followed.
- 9.17.4** From the moment the agent so approved and appointed takes charge of the work, he shall be held to be fully authorized and empowered to present and act for and on behalf of the contractor for all or any of the purpose of the contract, and notwithstanding the absence of any formal authority or definite' instructions from the Contractor to the said agent or any defects therein, or the imposition of any restrictions or limitations on the power or authority of such agent by the contractor, nothing whatsoever shall in any way affect, qualify or limit the full authority or power of such agent, or absolve the contractor of his liabilities or obligations under the contract.
- 9.17.5** The contractor shall forthwith remove from the site and works and not to re – employ without the written permission of the Regional Project Director, obtained in his behalf, any agent whose removal the Regional Project Director have asked for in writing, or any assistant whom he may consider incompetent or is sufficiently qualified or to have been guilty of misconduct or negligence and whose removal the Regional Project Director may have asked for in writing.

## **9.18 SUPERVISORY STAFF OF THE CONTRACTOR**

- 9.18.1** The contractor shall not employ any person who was in the service of the Authority or the Government without definite written sanction of the Authority. The staff employed at the site by the contractor shall be the same as he has agreed for in the relevant format included in this tender document. Any change from the same shall have proper written acceptance of the Regional Project Director.
- 9.18.2** The contractor shall at all times place and keep on the work an adequate number of efficient and competent staff to give necessary directions to his workmen in the execution of the work and to see that the workmen execute the work in a sound and proper manner and shall employ only such supervisors, workmen and laborers in or about the execution of the work, as are careful and skilled in their various trades and callings.

- 9.18.3** The contractor shall forthwith remove from the work any supervisor, workmen or laborer objected to by the Regional Project Director, and if and whenever so required by the Regional Project Director the contractor shall submit the correct return showing the name of all staff and workmen employed by him or about the work.
- 9.18.4** If, in the opinion of the Regional Project Director, the contractor is not employing on the work such number of staff and workmen as is reasonably necessary for the, proper completion of the work within the time prescribed he shall forthwith communicate his opinion in writing to the contractor, and the contractor shall within seven days of the receipt of the said communication, employ such additional staff and labour as may be required by the Regional Project Director and any failure on the part of the contractor to comply with such instructions shall entitle the Authority to rescind the contract.
- 9.18.5** The contractor shall engage not less than one Engineering Graduate and one Engineering Diploma holder at the work site at his cost and any failure in this regard will be treated as breach of contract and shall entitle the Authority to penalize the contractor/rescind the contract.

## **9.19 DAMAGES PAYABLE BY THE CONTRACTOR**

### **9.19.1 DAMAGE TO PROPERTY AND PERSON**

1. The contractor shall, at his own expenses and to the satisfaction of the Executive Engineer, reinstate and make good or be liable for any compensation for any injury, loss or damage occasioned to any property or right whatsoever, including the property and right of the Authority, servants or employees of the Authority, being injury, loss or damage arising out of or in any way connected with, the execution or purported execution of the contract, and further the contractor shall indemnify the Authority, private person, in respect of any such injury including, any injury resulting in death or disability to person or property, including all claims which may arise under the Workmen's Compensation Act, or under any other law for the time being in force or otherwise.
2. The contractor shall (except if and so far as the specifications otherwise provide) indemnify and keep indemnified the Regional Project Director for all losses and claims for injuries or damages to any person or property whatsoever including surface or other damage to land being or crops being on the side suffered by tenants and occupiers which may arise out or in consequence of the construction and maintenance of the works and against all claim, demands, proceedings, damages, costs charges and expense whatsoever in respect thereof or in relation thereto, provided always that nothing therein contained shall be deemed to render the contractor liable for or in respect of or to indemnify the Authority against any compensation or damages for or with respect to
  - a. The permanent use or occupation of the land by the work or any part thereof (save in respect of damage to crop as aforesaid).
  - b. The right of the authority to construct the work or any part thereof on, over, under in or throughout the land.
  - c. Interference whether temporary or perm anent with any right of light, airway or water or other easement or quasi-easement which is the unavoidable result of the construction of the work in accordance with the contract.

- d. Injuries or damages to person or property resulting from any act or neglect done or committed during the currency of contract by the Authority /Departmental officers, servants or other contractors (not being employed by the contractor) or in respect of any claim demand, proceedings, damage, cost, charges and expenses in respect thereof or in relation thereto.
3. If compensation has to be paid to court attachment or judgment etc. due to damage of person or property, such amount will be recovered from the contractor / tenderer.
4. The contractor shall insure all the employees employed in the work site as per rules against any accidents and further claim. KRWSA will not be responsible for any such accidents/claims of employees of the contractor.

#### **9.19.2 METHOD OF RECOVERY**

1. Damages payable by the contractor under the terms of the contract may be deducted by the Regional Project Director from part of his security deposit or from any other sums due, or which may become due to him from the Authority or through revenue recovery proceedings.
2. In every case in which under any clause or clauses of this contract, the contractor shall have rendered himself liable to damages amounting to the whole of his security deposit, the **Executive Engineer** shall have powers to rescind the contract altogether and to have the work completed without further notice, at the contractor's risk or expense as the Agreement Authority/ Regional Project Director may deem best suited to the interest of the Authority and the contractor shall have no claim to compensation for any loss that may accrue from any material he may have collected or engagements he may have entered into, on account of the work and the Regional Project Director shall have powers to deduct whatever amount may be expended on the completion of the work, from any sums that may be due or become due from the Authority to the contractor on account of this or any other work or recover such sums from him and his assets, movable and immovable under the provision of the Revenue Recovery Act for the time being in force, as if they were arrears of land Revenue or otherwise as the Authority may choose. And in case the contract shall be rescinded under the provision afore said, the contractor shall not be entitled to recover or be paid any sum of any work actually performed under this contract unless and until the Regional Project Director shall have certified the performance of such work and the value thereof and he shall only be entitled to be paid the value so certified.
3. In the event of the Regional Project Director 's putting in force the powers vested on him under the preceding clause, he may, if he so requires it, take possession of all tools, plant, materials and stores or any portion thereof, on the place where the works were to be performed or on other land of the Authority adjoining thereto, paying or allowing for the same in account, at the contract rates, or if not specially provided for therein at current market rates, otherwise the contractor may be required to remove such tools, plant and materials or stores from the premises, and in the event of his failing to do so, the Regional Project Director may remove them at the contractors expense or sell them by auction on account of the contractor. The Regional Project Director may devote all, or such portion as may be requisite, any guarantee or reserve fund or any moneys due

to or become due to the contractor for this or any other work to make good, bad or indifferent work, on the part of the contractor in such manner as he may think desirable.

4. If it shall appear to the Regional Project Director or his subordinate in charge of the work, that any work has been executed with unsound imperfect or unskilled workmanship, or with materials of an inferior description, the contractor shall on demand in writing forthwith rectify, relay, remove or reconstruct the same in whole or in part, as the case may require, at his own cost, and in the event of his refusing to do so within a period to be specified by the Regional Project Director or his subordinate or if he shall fail to remove, from the site of the work within a specified period any material or article which is considered by the same officers as unsound or of bad quality or not agreeable to the terms of the contract and to provide immediately suitable materials or articles in lieu of these condemned, then the contractor shall be liable to pay damages at the rate of one percent on the amount of the estimate for every day not exceeding ten days that he fails to comply with the written demand of the Executive Engineer or his subordinates. And in the event of non – compliance of the written demand even after the lapse of ten days the contract is liable to be terminated at the risk and cost of the contractor without further notice.
5. All compensations or other sums of money payable by the contractor to the Authority under the terms of this contract with the Authority or under any other contract with the Authority, shall without prejudice to any other mode of recovery, be recoverable from the contractor by way of deduction or payment, out of the sale proceed of a sufficient part of the security deposit held in Government Securities or in National Savings Certificate or out of the interest accrued thereon or out of the said security deposit held in cash or out of any sums which may be due or may subsequently become due, to the contractor from the Authority, on any account what so ever and in the event of the value of his security deposit being reduced by reason of any such deductions the shortage shall be made up by effecting extra recovery from subsequent bills or sales.

## **9.20 RELICS AND EXCAVATED MATERIALS**

- 9.20.1** All gold, silver and other materials of any description and all precious stones, coins, treasures, relics, antiquities and other similar things which shall be found in or upon the site shall be the property of the Government and the contractor shall duly preserve the same to the satisfaction of the Authority and shall, from time to time, deliver the same to such person or persons as the Authority may appoint to receive the same.
- 9.20.2** The contractor shall not sell, or otherwise dispose of or remove, any sand, stone, clay, ballast, earth, rock or other substances or materials which may be obtained from any excavation made in or upon the site, or any building or produce standing upon the site at the time of obtaining the delivery or possession thereof and all such substances, materials, buildings and produce shall be and shall continue to be the property of the Authority provided that the contractor may, with the permission of the Regional Project Director use the same for the work at such cost as may be determined by the Regional Project Director.

## **9.21 REPORTING OF ACCIDENT**

The contractor shall be responsible for the safety of all employees or workmen employed or engaged by him on and in connection with the work and shall forthwith report to the **Executive Engineer** or his assistant all cases of serious accidents/injuries to any of them, however caused and whatever occurring on the work and shall make adequate arrangements for rendering all possible aids to the victims of the accidents.

## **9.22 WORKMEN'S COMPENSATION ACT**

In every case in which, by virtue of the provisions of Sub Section (1) of Section 12 of the Workmen's Compensation Act 1923, if the Authority is obliged to pay any compensation to a workman employed by the contractor in the execution of the work, Authority shall recover from the contractor the amount of the compensation so paid and, without prejudice to the rights of the employer under Sub Section (2) of Section 12 of the said Act, the Authority shall be at liberty to recover such amount or any part thereof by deducting it from the security deposit or from any sum due from the Authority to the contractor, whether under these conditions or otherwise. The Authority shall not be bound to contest any claim made against him under Sub Section (1) of Section 12 of the said Act except on the written request of the contractor and upon his giving to the Authority full security for all the costs for which the Authority may become liable in consequence of contesting such claim.

## **9.23 WAGES TO LABOUR**

**9.23.1** The contractor shall comply with the provisions of the Minimum Wages Act and the rules made there under in respect of all employees or workmen employed or engaged by him on road construction or in building operations or in stone breaking or stone crushing for the purpose of carrying out the contract.

**9.23.2** If, in compliance with the terms of the contract, the contractor supplies any Labour to be used wholly or partly under the direct orders and control of the Authority whether in connection with the work being executed by the contractor or otherwise for purposes of Authority such Labour for the purpose of this clause, be deemed to be persons employed by the contract.

**9.23.3** If any money shall, as a result of any claims or applications made under the said Act, be directed to be paid by the Authority, such moneys shall be deemed to be moneys payable to the Authority by the contractor, and on failure of contractor to repay the Authority any moneys as aforesaid within 7 days after the same shall have been demanded, the Authority shall be entitled to recover the same from any money due to the contractor under the contract or any other contract with the Authority.

**9.23.4** The Authority shall also be entitled to deduct from any money due to the contractor (whether under the contract or any other contract with the Authority) money paid or payable by the Authority by way of any compensation under the said Act or on account of costs or expenses in connection with any claims thereto and the decision of the Regional Project Director on any question arising out of the application of this clause shall be final and binding upon the contractor.

**9.23.5** In respect of all labour directly or indirectly employed, in works for the performance of the contract as part of this agreement, the contractor shall comply with or caused to be complied with all rules framed by the Authority from time to time for the protection of



health and sanitary arrangements for the workers employed by the Kerala Rural Water Supply and Sanitation Agency and its contractor.

#### **9.24 LABOUR RETURNS**

Monthly labour returns shall be submitted by the contractor to Regional Project Director in the proper forms so as to reach him not later than the first of every month. In addition to the above, the contractor shall also maintain daily and weekly returns of labour employed by him and these shall be made available for verification by the officers of Kerala Rural Water Supply and Sanitation Agency as and when called for.

#### **9.25 CONTRACT DOCUMENTS AND MATTERS TO BE TREATED AS CONFIDENTIAL**

All documents correspondences, decisions and orders concerning the contract shall be considered as confidential and / or restricted in nature by the contractors and he shall not divulge or allow access to them by any unauthorized person.

#### **9.26 MATERIALS TO BE SUPPLIED BY THE AUTHORITY**

It shall be the responsibility of the contractor to arrange for materials and the Authority shall not issue any material to the contractor.

#### **9.27 CONTRACTOR'S RESPONSIBILITY FOR STORES**

The materials such as Cement, MS Rods, tor steel and other materials including pipes and specials required for the work shall be procured by the contractor and the lump sum amount quoted should be inclusive of the cost of cement, steel and all other materials. The cement supplied for use shall be as per ISS 269/1976 and steel as per ISS 1786/1985 with latest amendments, if any. The materials should bear the relevant ISI/ISO certification marks. Before using any material for the work, the contractor, at his own cost, shall submit to the Regional Project Director for his approval such samples of material as are proposed to be used. The materials shall strictly conform to the specifications approved by the Authority. Notwithstanding anything contained in this clause, the contractor shall be held fully responsible for the quality and soundness of all the materials and machinery that are supplied by him for the execution of the work and completion of the project and the Regional Project Director's approval shall not in any way absolve him of his responsibility in this matter. The standard tests as per ISS to ensure the quality of cement, steel and other construction materials shall be got done by the contractor at their cost as per the direction of the officers of Kerala Rural Water Supply and Sanitation Agency to ascertain the quality. The Authority reserves the right to super check the results. If the materials supplied are found to be not passing the tests, the same shall be rejected by the Regional Project Director and the contractor shall be bound to dismantle and remove such constructions already made using such sub standard quality materials if found during the erection of the work and the contractor shall be fully responsible and liable for such losses to the Kerala Rural Water Supply and Sanitation Agency.

#### **9.28 MATERIALS AND PLANT AT WORK SITE**

All materials and plants brought by the contractor in or upon the site or on the land occupied by the contractor in connection with the work and intended to be used for the execution thereof shall not be removed from the site of work without the permission of the Regional Project Director.

## **9.29 GENERAL**

All other conditions shall be as in force in the Kerala Rural Water Supply and Sanitation Agency, if it is found relevant to explain any clause of this N.I.T. Otherwise the conditions are strictly independent.

**REGIONAL PROJECT DIRECTOR**

## **KERALA RURAL WATER SUPPLY AND SANITATION AGENCY**

### **10. GENERAL TECHNICAL SPECIFICATIONS**

#### **10.1 GENERAL**

**10.1.1** Generally, the specifications of all materials and work pertaining to this contract shall be governed by the relevant Indian Standards and by MDSS. In the absence of Indian Standards, the British Standard Specifications shall be followed. The specifications furnished hereunder are only to enlighten the tenderer on the requirements of Kerala Rural Water Supply and Sanitation Agency and are not intended to be against any other specifications stipulated by BIS or other standards and common practices widely adopted in the country at present. In case of a doubt regarding the specifications, the Engineer in charge will clear the doubts and give final decision based on the written request of the contractor. The decisions intimated in writing shall be binding on the contract work.

**10.1.2** The successful completion of this contract calls for site surveys, investigation, planning, hydraulic and structural design of the components, assessment of capacity/standard of mechanical, electromechanical and electrical items to be procured, preparation of procurement schedule, preparation of implementation schedule etc. The tenderer shall see that he always sticks on to conservative designs based on time tested and well accepted practices as per the guidelines and norms prescribed by BIS, CPHEEO or such other institutions.

#### **10.1.3. REPORTS, DESIGNS AND DRAWINGS**

1. Reports, designs and drawings etc. connected with the work shall be furnished by the contractor for approval, minimum in triplicate copies or as called for by the Engineer in charge.
2. Contractor shall prepare and submit to the approving authority seven additional copies of the approved drawings immediately on receipt of approval for transmission to various field offices.
3. On completion of approval of all items connected with the project, the contractor shall prepare three copies of bound volumes of the approved documents and furnish to the approving authority. The preparation and binding of this document should be in such a manner that during the long period of future reference and recorded life, it shall not get disintegrated nor legibility lost.

#### **10.1.4 ECO -FRIENDLY SYSTEM FFER**

The system offered and as completed shall be environment friendly and shall not affect /alter the environment beyond any permissible limits stipulated by concerned institutions.

#### **10.1.5 MAN MADE STRUCTURES, OTHER UTILITIES - AFFECTING THE WORK**

1. When the works under this contract are executed situations may arise when the works are affected by other manmade structures either in service or abandoned. It is also likely that other utility services installed by various Government bodies are affected by the works under this contract. It shall be the duty of the contractor to ensure whether adequate sanction has been obtained from the authority concerned for the work with the help of Kerala Rural Water Supply and Sanitation Agency before the

works of such affected portions are undertaken. Any damage caused to any of the manmade structure or any of the utility services will have to be made good by the contractor at his cost. The contractor has to restore the original position if he has to demolish any structure like culverts, compound walls etc during the course of work at his own cost.

2. However, restoration of PWD roads is exception to this. The KRWSA will bear the cost of such restoration of roads provided damaging of the road was essential for the execution of works under this contract.

## **10.2 EARTHWORK EXCAVATION**

Earthwork excavation means earthwork in all classes of soils / rocks whenever removal shall be not by blasting. Earthwork excavation shall be done with adequate care so that underground service lines or adjacent structures are not damaged and appropriate protective measures such as shoring / strutting / sheet piling etc. are adopted for such items as required and approved by the Engineer in charge of the work. The width of trench should be as per the requirement and as per standard data book and a minimum cover above crown of pipe should be maintained as per clause 10.13. If the width of trench exceeds the minimum requirement as noted above, due to faulty workmanship /protection/shoring etc. the additional payment for the extra damaged road width payable to PWD/NH local bodies etc. shall be recovered from the contractor's bill. Excavation by blasting shall be got done only through persons holding valid license for use of explosive material and for blasting purpose. Further all rules prescribed by the Inspectorate of Explosives shall be strictly adhered to whenever blasting is resorted to. Blasted material like the excavated rock shall be the property of KRWSA. Disposal of the materials up to a distance of 10 km from the site as well as cartage of excavated material during excavation and back filling up to a maximum distance of 5.0 km will have to be done whenever essential by the contractor at no extra cost.

## **10.3 FILLING / BACK FILLING**

Filling / back filling shall be done only with approved materials. It shall be compacted to get the following results. The density of the filled materials at different depths shall not be less than 95% of the natural field density in case of back fill and shall not be less than 95% of maximum dry density obtained in proctor compaction test or such other approved tests whenever filling is done to get the desired formation ground level. It shall be ensured that the density thus obtained under compaction is uniform at all depths of the fill. The contractor is bound to bear the cost of any test conducted to ascertain the above condition in case of doubt. The filling/backfilling done along PWD roads or such properties owned by other department/institutions, the same shall be further governed by specifications of such owner.

## **10.4 SHORING**

Shoring shall be essential in excavation in all classes of soils whenever depth of excavation exceeds 1.50m and labourers have to work in trenches or close to edges of trenches as per the direction of Engineer in Charge. In ordinary soils and loose soils, shoring shall be done for trenches of shallower depths also considering the chances of collapse of sides. Shoring shall be done as approved/directed by the Engineer in charge of work.

## **10.5 FENCING**

Fencing shall be done in the approved manner along the side of pipeline trenches on roads or other places for preventing accidents on both sides, if required in the opinion of the Engineer in charge.

## **10.6 FORMATION OF ROADS**

Formation of roads shall be done as per IRC rules and regulations for the use of desired class of vehicles mentioned in the scope of the work. Whenever road formation comes in the scope of the work, it shall be understood that all cross drainage work, side drain works, radius of curvature and super-elevation etc. are included in the scope.

## **10.7 RUBBLE MASONRY**

Rubble masonry works using approved quality blasted rubble either as random rubble masonry or coursed rubble masonry shall be permitted. Minimum width of the random rubble masonry shall not be less than 450mm in any case. Only cement mortar 1:6 or richer shall be used for such works. Mixing by weight at the above ratio for mortar shall be permitted only when the fine aggregate is in dry condition. Exposed surfaces or rubble masonry shall be pointed using 1:3 cement mortar to have a pleasing appearance provided it is left unplastered with cement mortar.

## **10.8 BRICK WORK**

Brick masonry using wire cut bricks / first class country burned bricks having a minimum crushing strength of 35 Kg / cm satisfying other tests specified by BIS and least dimensions not less than 70mm shall be permitted. Brick masonry works shall be of minimum 200 mm width, constructed in English bond with cement mortar 1: 6 or richer and plastered with cement mortar 1: 4 or richer in all cases. However, in each case of parapets or other dwarf walls of height less than 700 mm, thickness of masonry can be reduced from 200mm provided pilasters of minimum 200 x 200 mm are constructed monolithic with such walls at a center to center spacing of maximum 3000mm.

## **10.9 PLAIN AND REINFORCED CONCRETE**

### **10.9.1 DESIGN ASSUMPTIONS**

IS 3370 Code of Practice for concrete structure for storage of liquids

**Part I :** 1965 (or latest edition) General requirements

**Part II :** 1965(or latest edition) Reinforced concrete structures.

**Part IV :** 1967(or latest edition) Design tables

IS 2502/1963 (or latest edition) Code of practice for bending and fixing of bars for concrete reinforcement. All RC C/Steel structures shall be based on the relevant IS Codes. Strict adherence must be established to accepted codes of Practice relating to design. Minimum cover to reinforcement for RCC work shall be provided as per IS 456 -2000 (or latest edition). The effect of seismic forces shall be taken into account in the design as per the relevant code of practice.

### **10.9.2 CEMENT**

The contractor will have to procure the cement for the work. The cement used in the work of plant or water front structures should be sulphate resistant - Portland cement of reputed companies having ISI mark. The KRWSA will have the option of rejecting the cement procured by the contractor and ask for replacements, in case of any doubt on quality and age

of cement supplied at site. Random /grab sampling and test of the cement will be got done by KRWSA.

#### **10.9.3 REINFORCING STEEL**

Only Corrosion Resistant Steel (CRS) is to be used for the steel structures. The contractor has to procure all the steel required for the work. The steel so procured should be from reputed companies like SAIL, TISCO etc. and the KRWSA will have the option to select the brand and to ask for replacement, if the material is found not having adequate quality. The MS/T OR rods supplied for the work shall be cleaned and scrapped to be free of scales rust etc., before placing in forms for RC.C work.

#### **10.9.4 AGG REGATES**

The coarse and fine aggregates shall comply with IS 388 -1980 or latest edition and may be used after sufficient tests have been carried out and approved by the Regional Project Director. All aggregates shall be stored on hard impervious surface to ensure exclusion of all foreign materials.

#### **10.9.5 WATER**

The water for mix shall be clean and free from harmful matter as per IS standards and taken from a source approved by the Regional Project Director.

#### **10.9.6 ADMIXTURES**

Only where a beneficial effect is produced shall any admixture to be used and that too after tests have been carried out to convince the Regional Project Director that no harmful effect will be produced by the use of such admixture and after approved by the Regional Project Director. Time tested admixtures shall be permitted to be used for concrete based on testimonial of performance to improve the quality of concrete with respect to its strength, water tightness or for other specified purposes as required for the work.

#### **10.9.7 MIXING**

The grade of concrete shall be as per IS 456:2000 or its latest revision. All water retaining or water front structures and machine foundations shall be made in RCC mixes not leaner than M25. The mixing time shall be between 2 to 4 minutes. The contractor should produce mix design for all grades of concrete to be used for the work and get approval from the **Regional Project Director** before commencement of concreting.

#### **10.9.8 CONCRETING**

The concrete mix shall be in specified proportions satisfying the maximum aggregate size/water cement ratio and required cube strength and workability. Such concrete must be adequately vibrated to form solid mass without voids. External vibration by the use of pneumatic hammers shall be deemed adequate except for thin sections.

#### **10.9.9 TRANSPORTATION AND PLACING**

Transportation and deposition of concrete mix shall be done rapidly and accurately with minimum re-handling. The mix must not be dropped from such a height as may cause segregation and air entrapment. When the mix is placed in position, no further water shall be added to provide easier workability. No concrete mix shall be used for the work if it has been left for a period exceeding its initial setting time before deposited and vibrated into its final position in the member. Sufficient number of cubes must be made for testing as per the relevant BIS code specifications. It shall be tested as per the specification and a complete

register of entries shall be maintained by the contractor. It shall be brought to the notice of the Engineer in charge as and when directed by the departmental officer. The cost of all such testing shall be borne by the contractor.

#### **10.9.10 CONSTRUCTION JOINTS**

Construction joints shall be avoided wherever possible, and if found necessary, should be of such form to encounter direct compression. A stepped joint being preferred in such a case.

#### **10.9.11 CURING**

Curing shall be done as per relevant provisions in the IS code to allow the concrete attain strength through normal hydration and to avoid excessive shrinkage or harmful effect to the member. The method adopted shall be effective and any special method used must be approved by the Executive Engineer.

#### **10.9.12 REMOVAL OF FORM WORK**

Removal of form work shall be done as per the provisions in the BIS and as per direction of the Executive Engineer and in such a manner that no damage is caused to the deflection to minimum deflection, when unsupported and as per the direction of the Executive Engineer.

### **10.10 DOORS, WINDOWS AND VENTILATORS**

**10.10.1** Wooden doors and windows and ventilators shall be made with teak wood only and the size of doors, frames, shutters etc shall be not less than the sizes specified in MDSS, PWD standard data book etc. All parts of the door shutter or frame shall contain only hard wood seasoned. Wooden doors and shutters shall be provided for interior doors of office room s/private rooms etc.

**10.10.2** Steel doors, windows and ventilators shall strictly conform to the specifications of BIS. Steel doors, windows and ventilators shall be permitted only for locations where aggressive conditions damaging the doors do not exist and when appearance of the same do not adversely affect the pleasing appearance of the main view and aesthetic condition of the structure. Steel windows and ventilators shall have crossbars for preventing through passage of solid materials of least dimension of 120mm in open position provided in aesthetically pleasing manner.

**10.10.3** For areas directly facing the main views of the structure, aluminium doors, windows and ventilators shall be provided for improving the front view of the structure so far as there are no aggressive surroundings damaging the life or the pleasing appearance. All aluminium Sections shall be anodized as per ISS.

**10.10.4** PVC doors of specifications conforming to those of BIS or of better quality may be used for water closets, bathrooms or other locations where splashing of water may affect the life of other type of doors.

### **10.11 PLASTERING OF EXPOSED SURFACES**

All exposed concrete surfaces shall be plastered with cement mortar 1:4 or richer mixes. Exposed surface means exposed to air or water or any other gaseous or liquid medium. Surfaces of concrete structures other than water retaining structures can be permitted to be left unflustered under the following conditions:

- a) The surface left unflustered is perfectly even without markings of form work or undulations or unevenness greater than 0.5mm.
- b) The surface texture is perfectly uniform and the appearance is pleasing.

## 10.12 TESTING OF WATER RETAINING STRUCTURES

All water retaining structures shall be filled with water and tested for water tightness before the commencement of plastering. For water retaining structures the requirement of the test shall be deemed to be satisfied if the external faces show no sign of leakage and remain apparently dry, over a period of observation of seven days after filling up to maximum water level and allowing seven days period for absorption, if the structure does not satisfy the condition of the test and the daily drop of water level is decreasing, the period of test may be extended for a further period of seven days, and, if the specified condition of the tests are satisfied, the structure shall be considered to have withstood the test.

## 10.13 PIPES AND PIPE LAYING

The material and class of pipes used for the contract shall be as specified in the Scope of Works or tender drawings in the "Scope of Works." In case the pipes have not been specified for an item of work, the contractor shall put forth his proposal in accordance with CPHEEO guidelines and rules of BIS and get prior approval from the Engineer in charge. Pipe laid underground shall have a minimum earth cover of 1.00 m above its crown and in such a manner that the bedding angle is not less than 1:20, and the loads of pipe carrying liquid and the overlaying substance transmitted to the soil uniformly through the entire barrel of the pipe. For AC pipes, such cover above the crown shall be 1.20m at the alignment over which heavy traffic is expected. Whenever special fill materials are required to achieve this goal, sandy soil / river sand shall be provided at no extra cost by the contractor and on the approval obtained from the Engineer in charge. Wherever the cover for the pipe is less than 1.00 m, approved protective measures shall be taken and necessary works executed to see that the pipes are not damaged due to any external loads. In cases where the pipes are laid at ground level, adequate protective works ensuring the safety, serviceability and durability of pipes as approved by the Engineer in charge shall be undertaken as part of the contract. When pipes are over the ground; the support shall be designed and spaced in such a manner that the total stress induced in the pipe shell material at any section does not exceed the safe permissible values. In no case, the socket or spigot shall be allowed to transmit weight of other parts. For design purposes, minimum vertical and horizontal loads of 150 kg/m shall be assumed to act on the pipeline over and above the other known loads. Pipes rising vertically or at angles greater than 20° to the horizontal and which cannot carry / transmit the load through the shell of the barrel uniformly shall be only of flanged pipes. These pipes shall be supported appropriately both vertically and horizontally to ensure the positional fixity in the desired axis in such a manner that no part of shell of the barrel is subjected to stresses above safe permissible values.

During lying of pipe line, the open end of pipes shall be kept closed with dummies, blank flanges or end plugs at closure/suspension of work to prevent entry of soil, or, other unwanted material inside the pipe. No pipe shall be left open for period exceeding 30 minutes even in the presence of responsible personnel. Lying of pipes should be done in accordance with relevant IS codes with its latest amendment and revisions.

### **GENERAL**

This specification covers supply, testing and delivery of **DI, GI & PVC pipes** of required length. The pipes are to be designed to withstand the effect of internal water pressure, external loads and surge pressure.



The intending tenderers should produce an undertaking with the manufacturers of pipes and specials regarding the capability to cope up with the contract, specification /quality etc. and submit it along with the tender.

#### **Quality of materials and manufacture**

Quality of materials and manufacture of pipes and specials should confirm to the relevant BIS or ISO Specification and shall have the respective certification marks of the Standard organization

#### **Marking on Pipes**

Each pipe shall be legibly marked with the following details :

- i. Manufacturer's name or trade mark
- ii. Nominal size (as per relevant ISS) Pipe description - class and grade.
- iii. Relevant ISI/ISO Certification markings

All dimensions and specifications shall strictly adhere to the relevant I.S codes/ISO Standards and as amended up to date.

#### **Testing of pipes**

The field test pressure to be applied shall not be less than the greatest of the following.

1. 1.5 times the maximum sustained operating pressure
2. 1.5 times the maximum pipeline static pressure
3. Sum of maximum sustained operating pressure and maximum surge pressure
4. Sum of the maximum static pressure and surge pressure subject to a maximum for any pipe and fittings incorporated.

#### **SURGE PRESSURE:**

The maximum surge pressure should be analyzed based on the data supplemented and in no case the sum of maximum operating pressure and the calculated surge pressure should exceed the allowable field hydrostatic test pressure. Computer model analysis shall be got done for the pumping line right from the pump's delivery point up to the exit point of water by any reputed institutions approved by the Authority and detailed reports of the institutions shall be furnished to the Authority.

#### **HYDRAULIC DESIGN OF PIPE LINES**

Hydraulic design of pipelines etc. where design based on Hazen William's formula as recommended by the Water Supply Manual is used, selection of the formula shall be done to get the higher design values.

#### **Design of fittings**

The following information shall be clearly marked on each fitting.

- (1) Nominal size and weight / wall thickness
- (2) Classification based on pressure
- (3) Manufacture's name.

### **10.13 SUPPLY OF MATERIALS**

#### **10.14.1 SUPPLY OF PIPES**

All pipes as per the scope of the work supplied should be factory tested and test certificate as per relevant specification/latest code of practice should be produced along with the pipe supplied. The testing of pipes and the authentication of test certificate should be done by an approved third party inspection agency agreeable to KRWSA and witnessed by the technically qualified officers of KRWSA, if the contract value exceeds Rs.100 lakhs and by a Departmental Officer deputed by KRWSA if the contract value is less than Rs. 100 lakhs. In case the pipes are imported from abroad, samples for metallurgical and mechanical tests shall be taken from pipes selected at random and the final acceptance of the pipes will be based on the results of such tests conducted at any of the reputed laboratories.

#### **10.14.2 SUPPLY OF M.S PIPES: LINING**

MS pipes are to be lined at the contractors own arranged site located in or around the project area in the presence of Authority Officers. Shop lined pipes will not be accepted. Lining should conform to IS 1916 - 1989 or its latest edition. Minimum lining thickness, cement content, Characteristic compressive strength etc. should be as per the IS specifications. River sand used should be properly cleaned and sieved and only aggregates conforming to IS 383 (or latest edition) and with required uniformity coefficient shall be used.

##### **(a) INSIDE LINING**

Clean the surface of the pipe for removing rust and other unwanted matter by sand blasting or other approved methods. Mound the pipe on the spinning machine and get the cement mortar of 1:2 applied and compacted uniformly by centrifugal action over the entire area. The line pipes shall have a smooth surface inside it and shall be free from racks and patches after curing. At joints the pipes should be given lining of minimum thickness as per IS specification with CC 1:1 using wire mesh of approved gauge.

##### **(b) OUT SIDE LINING WITH CEMENT MORTAR:**

The surface shall be cleaned as in (a) above. A wire mesh of 50 x 50 x 3 mm or nearest size approved by the Engineer in charge shall be wound over the pipe keeping a uniform gap of 13mm from surface of pipe and fix the same by use of spacers, welding etc. in the approved manner. Cement mortar 1:3 shall be applied by guniting or other approved techniques to attain minimum thickness as per IS specifications and cured appropriately. The surface so finished shall have a fairly uniform finish and shall be free from cracks and patches.

##### **(c) OUTSIDE LINING WITH COALTAR etc.**

Outside lining with hot applied coal tar / as phalticenameel reinforced with fiber-glass fabric yarn as per IS 10221 -1982 or its latest edition or relevant American / British standards shall be provided based upon the observed soil receptivity in Ohms -cm.

##### **(d) ALL TENDERERS SHOULD QUOTE FOR INSIDE LINING WITH CEMENT MORTAR**

Tenderers who have quoted only for lining with cement mortar inside and outside lining with hotappliedcoaltar(alternateoffer)willnotbe considered.

(e) After inside lining, pipes should be cured in a curing pond for a minimum period of 7 days or as provided in the latest IS 5822. Minimum cover of pipe as per IS / Manual shall be provided. The detailed specification of site welding of joints should be furnished by the contractor with relevant IS / British / American standards. The welding electrodes used should also conform to relevant IS / British /American Standards.

### **10.14.3 SUPPLY OF SPECIALS**

The supplied specials should be tested as per relevant specification and latest code of practice. The certificate of testing should be authenticated by the technically qualified officers of KRWSA or a third party agreeable to KRWSA.

### **10.14.4 .SUPPLY OF EQUIPMENTS**

The works to be executed under this contract shall call for procurement of a number of mechanical items and equipments. The contract or shall procure any equipment / item only after the Authority has approved the manufacturer of the same. Any item / equipment procured and used shall, as far as possible bear certification marks of BIS, BSS or such other standard institutions of international repute and shall be brand -new only. Further care shall be taken that any part / component of such equipment, which require periodic replacement, shall be readily available in the market. Equipments requiring periodic replacement of nonstandard, unpopular or odd items shall not be procured or used for the fulfillment of this contract. Equipments requiring periodic maintenance shall be identified and a preventive maintenance schedule prepared for such equipments and handed over to the Authority.

### **10.14. 5 ELECTRICAL INSTALLATIONS:**

All electrical installations shall be done as per the IE rules and with the concurrence of the Electrical Inspectorate and /or Kerala State Electricity Board. All electrical works shall be done only through approved / licensed persons having qualification, experience and expertise to do the work. It shall be the contractor's sole responsibility to get any clearance from the Electrical Inspectorate.

### **10.14.6 ELECTRICAL AND ELECTRO - MECHANICAL ITEMS**

All electrical and electromechanical items shall be procured from the manufactures approved by the Authority. Any item procured shall bear certification marks of BIS / BSS or another institution of international repute. For any equipment / system requiring periodic maintenance, preventive maintenance schedule shall be prepared and handed over to the Authority as part of fulfillment of this contract.

### **10.14.7 VALVES**

- a. Valves shall be as per IS Specification. Valves shall be double -flanged valves unless specifically permitted by the Engineer in charge. It is permitted to use valves of small diameter than the pipe diameter where it is used provided the valve diameter is not less than 67% of the pipe diameter and approved tapers are provided on both sides to ensure that the changes in the cross sectional area is attained gradually. Valves shall have hand wheel except where provisions of hand wheel shall hinder some other specifications requirements. Valves of diameter 400 mm and above shall be geared / butterfly valves. Valves shall be provided with an appropriate seating so that weight is not transmitted to the adjacent pipe body. Anchoring of pipes at bends or such other locations shall be done in such a manner that the joints of the bend with the straight pipes are not embedded in concrete and easy working of the joints is possible. Scour valves shall be as per the standard specification.
- b. Zero velocity valves / pressure relief valves / surge arrestors etc. shall be used wherever necessary for ensuring the safety of the pipelines. The tenderer should do the water hammer analysis of pumping main and provide appropriate water hammer devices. The system and location proposed should be specifically mentioned in technical bid.

The provision of such installations shall be subject to the condition that (i) the hydraulic design of these items are approved by KRWSA (ii) the particular brand valve proposed to be used is a time tested one as per the testimonials furnished, (iii) the guarantee card of the system issued by the manufacturer is handed over to the Engineer in charge (iv) such guarantee issued by the manufacturer / tenderer is valid for a period of not less than 5 years of service and (v) the terms and conditions of the guarantee are accepted to KRWSA / Engineer in charge. Fabricated pipes and specials shall be permitted to be used, provided (i) they shall have definite advantages at the particular place proposed, (ii) they satisfy all design requirements for the efficient and long lasting performance of both hydraulic and other functions and (iii) fabrication shall be attained by the seamless continuous welding.

#### **10.14.8 AIR VALVES**

Suitable air valves shall be as per standard specifications conforming to relevant G& K catalogue. Air valves shall be invariably provided at essential locations inside a valve chamber and all Air valve shall be supported with same size of control valve below it. For more details in scope of work may be referred.

#### **10.14.9 BENDS & SPECIALS**

Bends may be in horizontal plane, vertical plane or in both planes and at angles varying from 11 1/4 ° to 90°. Care must be taken to avoid 90° bends as far as possible and in case it becomes inevitable, permission for the same must be obtained from the Engineer in charge, before laying of pipeline at that section. Bends and specials shall be procured from manufacturers whose products are time tested and have the approval of BIS. The name of manufacturer/or registered trademark and hydraulic proof test shall be marked on all such specials/fittings. As a special case, non-standard MS fabricated bends/specials will be permitted according to site conditions for non -standard bends with the approval of the Engineer in-charge of the work.

#### **10.14.10 CAST IRON MANHOLE COVERS AND FRAMES**

The basic requirements of the manhole covers to be used shall be of Heavy Duty grade and Square shape for water supply and circular for drainage work. The manhole covers shall be that manufactured from appropriate grade of cast iron, which shall not be inferior to FE 150 conforming to IS 210 (1978) or latest edition. The manufacture and workmanship shall conform to clause 5 of IS 1726 -1991, IS 210 -1978 & IS 4905 -1968 or their latest versions. Suitable locking devices including that with a Galvanized chain and lock or any such foolproof devices as approved by the Engineer before the supply and erection, the manhole cover/frame shall be provided. The minimum dimension of the manhole cover shall not be less than 60 cm and shall be coated with approved quality of materials as per IS 1726-1991. Each manhole cover and frame shall have embossed on them an identification mark i.e., the mark "KRWSA" to denote Kerala Rural Water Supply and Sanitation Agency together with the manufacture's name /trade mark.

#### **10.14.11 MECHANICAL EQUIPMENT**

The mechanical equipment to be installed in intake structures are as noted below:

##### **(i)Sluice Gates**

Sluice gates on the water front side of the intake structure at minimum 3 levels so as to draw the raw water from the surface of river during flood, normal and drought seasons. The sluice gates must have facility to operate from the deck slab of the pump house and necessary gear

and wheel arrangements must be provided. The opening in the intake structure (the sluice gate) must be provided with cast iron gratings so that the solid or floating material will not enter inside the intake. Such grating or screens shall be easily cleanable of the debris adhering to them.

#### **(ii) Float & Scale Type Water Level Indicator**

Water level indicator of float and scale type fabricated with corrosion resistant material approved by the Engineer in Charge must be provided in the Intake well. The location of the indicator and its design etc. must have the approval of the Engineer before its fabrication / installation. The details must be furnished before the Engineer as a submittal with detailed drawings and specification of construction. The float shall be of Copper, Brass or other corrosion resistant material approved by the Engineer, floats shall have appropriate guide for vertical movement, which shall facilitate easy vertical sliding. The guides shall be corrosion resistant material and fixed in such a manner that the floats in case of any repair, can be removed and kept back in position without disturbing the guides or easy and quick dismantling and refitting is possible.

#### **(iii) Overhead gantry crane**

The pump house shall be equipped with gantry cranes of appropriate capacity and as per Volume II (scope of work). The gantry crane with pulley block shall have sufficient freedom of movement so that the entire pump house area can be covered by it. The design and other particulars of the gantry crane must be furnished to the Engineer in charge as a submittal before its procurement and got approved by him.

#### **(iv) Pumps and Motors**

The pumps and motors supplied and installed at intake structures and at any pumping stations of the project shall be of reputed make. The design of pump set shall be in such a way that energy consumption during the starting and operating conditions are minimum. Pumps shall have optimal efficiency for the specified / desired discharge as per tender throughout the design life of pump set. The selection of number of pump sets shall be made in such a way that at least 50% stand by is available at any time if the number of pump sets required at each station is not otherwise specified. In case of more than one pump working in combination, either in parallel or series, the different working conditions shall be separately studied and the best energy – economy condition shall be selected. The analysis on operation conditions, the design and the performance characteristics of the pump sets shall be furnished to the Engineer in Charge as a submittal and his prior approval of the same is essential before the actual procurement and installation. In case the tenderer is not the manufacturer of a particular item, he shall disclose the manufacturer of each and every item he proposes to procure for the project. In every such case, he shall present a list of not more than two manufacturers from whom he is planning to procure the items in the order of preference. For preventive maintenance of the pumps, motors and switch gears, consumable spares for the next two years after the completion and commissioning of the work shall be provided by the contractor. The contractor shall also furnish the list of vendors from whom such spares can be procured in future.

#### **(v) Motors, Gear etc.**

Motors, gears or such other equipments having constantly moving parts while in service, if installed out door, shall invariably be kept only in metallic boxes / other protective enclosures to protect the equipment from intense sun light, rain and dust. Such items should be quite durable and free from deterioration due to environmental conditions.

#### **(vi)ElectricalPanelBoards&Switchgears**

It shall be the responsibility of the contractor to supply and install suitably designed electrical panel boards, which shall have necessary provision for taking the power supply from KSEB. All such panel boards shall satisfy and comply with the rules and regulations of the Electrical Inspectorate. The contractor shall carry out all such electrical works through a licensed electrical contractor as per the requirements of I E rules. The design and details of the electrical system at each station together with the specifications of the proposed panel board, circuit breakers, fuse units etc, shall be submitted to the Engineer in charge for his approval, before actual commencement of work and submission to the Electrical Inspectorate. All such items shall be of reputed make and the manufacturer /supplier of each item shall be specified in the submittal along with all other relevant details. The panel boards shall be painted with anticorrosive epoxy paint of approved colour and each installations shall be suitably indicated with name plated on the panel boards. The electrical panels, motors etc. shall be suitably indicated with name plates on the panel boards. The electrical panels, motors etc. shall be suitably indicated with name plates on the panel boards earthed as per IE rules. It shall also be the duty of the contractor to obtain necessary clearance and approval of the electrical inspectorate in all the electrical and electro-mechanical equipments provided for the project as a part of this contract. Instances may occur when it may become necessary for providing transformers for drawing power from KSEB and in all such cases, the supply and erection of transformers, yard structures, switchgears and panel boards shall have to be done as a part of this contract as per IE Rules and Regulations. The contractor shall fully envisage these things and shall have to execute all such works through licensed personnel and obtain the clearance of Electrical Inspectorate for the proper commissioning and functioning of the system.

#### **(vii)Spares andConsumables**

~~The contractor shall supply the following while handing over the system at the end of one year maintenance period.~~

~~a) Disinfecting agent for a period of one month use.~~

~~b) Chemicals or other similar daily consumable for three month use.~~

~~c) Reagents for the Laboratory for three months.~~

~~d) Spare pipes and fittings etc.~~

~~• For CI/DI/PVC/HDPE pipes the quantity spares to be supplied are,~~

~~— Pipes up to 300mm diameter ————— 3%~~

~~— Pipes of diameter 300mm and above ————— 2%~~

~~• Standard specials — The estimate sanctioning Authority can fix the minimum requirement of specials as per site conditions subject to a maximum of 3% of the cost of specials~~

~~• For MS pipes, no provision for the purpose of the maintenance needs to be included.~~

~~• After defect liability period, spare pipes can be taken into account under the division store of O & M division and all the procedures shall be followed as in the case of other materials of the store.~~

- e) ~~Two sets of essential tools that will be required for maintenance and urgent repair works except lifting tools as pulley blocks.~~

#### **10.15 VALVE CHAMBERS**

Valve chambers shall be constructed as per the dimensions provided on the Scope of Work. The construction shall be done only as per the drawing approved by the Engineer in charge. The material used for construction shall be best quality wire cut bricks and both sides plastered / RR with inside plastering / RCC depending upon the design load conditions, availability of space environmental impacts etc. Underground valve chambers along motor able roads shall be of RCC. The design of the valve chamber including that of the cover slab indicating the location, size and class of the manhole cover etc. must be furnished to the Regional Project Director before the actual construction, and, his approval must be received before the commencement of the work at site.

#### **10.16 ANCHOR BLOCKS**

All the bends in pipelines (from 11 1/4) shall be provided with suitably designed Anchor blocks. The design of Anchor blocks shall be prepared as per the Water Supply Manual and relevant I.S. Codes and got approved by the Engineer in charge before execution.

#### **10.17 DISCHARGE OF EFFLUENT**

Discharging any effluent which may either be a bye product of the system or waste from the system, as a result of trial run or otherwise, shall be done carefully not inviting opposition / resistance / objection from any corner. If such discharge requires any form of treatment or any type of civil or other structures for the preservation of original environment conditions, the tenderer shall include such works also in his of forever though such a work has not been envisaged in this document.

#### **10.18 ARCHITECTURAL FEATURE**

Architectural features of the structures constructed shall be pleasing, attractive and matching to the site conditions. Selection of colour combinations, ornamental works, materials used for such ornamental works etc. shall be done bearing in mind the following properties as (1) fading phenomenon, (2) resistance to severe climatic conditions (3) strength to withstand unexpected forces that may act on the material / member etc.

#### **10.19 NON DESTRUCTIVE TEST FOR STRENGTH:**

Any constructed structure or erected equipment shall be subject to a non destructive test to ensure or certify about its capacity to yield the desired service if required by the Engineer in charge. Such tests shall be the ones specified by the ISS / BSS / CPHE EO Manuals or a more severe test. An equipment / component shall be deemed to have satisfactorily passed such a test only if the Engineer in Charge of the works is satisfied on the performance under test conditions.

#### **10.20 TRAINING TO AUTHORITY STAFF**

The Engineer in charge will furnish a list containing the names and designations of the various staff to whom the training in the operation, maintenance and attending to emergent situations are to be given. When the contractor is satisfied that sufficient training both in theoretical and practical aspects have been imparted to the staff thus deputed, shall issue a certificate in that respect which shall be forwarded to the Engineer in Charge. The training shall preferably be in the place of the project work. However, if requested, the contractor

shall be permitted to give part of the training to the Authority staff at his place of choice after due consideration of all aspects.

**10.21 If any of the conditions above are in contradiction to any of the clauses in the scope of Work, the clause/conditions of the Scope of Work shall prevail**

**10.22** Contractors/Firms shall not appoint/employ directly/indirectly the retired employees of Kerala Rural Water Supply and Sanitation Agency within 3 years of their retirement/Voluntary retirement

**Regional Project Director**



## **Corrections and modifications to be incorporated in Volume I of the NIT**

**The Following clauses in NIT Vol – I to be read as given below.**

### **7.21 PERFORMANCE GUARANTEE AND ADDITIONAL PERFORMANCE GUARANTEE**

As per proceedings No. KWA/HO/WN 33/97 dated 25/01/2017, Government Order No. GO(P)No 19/2016/fin dated 03/02/2016 of the Finance (Industries and Public works-B) Department and Government Order No GO(P) No.124/2016/fin dated 29/08/2016 G.O(P) No.1/2019/Fin dated 10-01-2019 (Copies of GOs given separately) of the Finance (Industries and Public works-B). Department are implemented in KRWSA too. Again as per GO(P) No.7/2021/Fin dated 7-01-2021 has made certain modification in relaxing the requirement of performance guarantee, additional performance guarantee, EMD, bid security for execution of work which is extended to KWA also vide Order No.799/AE12/2021/KWA dated 21-01-2021. This is applicable for this tender.

Accordingly certain corrections and modifications are to be incorporated in Volume I of this NIT. The security deposit mentioned in Vol. 1 of NIT is redefined as Performance guarantee. So wherever the term security deposit comes in Vol. 1 of NIT shall be read as performance guarantee. The collection, repayment and all the matters regarding Security Deposit in Vol. 1 of NIT will be according to Performance guarantee mentioned in the above Government order.

The performance guarantee mentioned in vol. 1 of NIT is redefined as Additional performance guarantee. So wherever the term performance guarantee comes in Vol. 1 of NIT shall be read as Additional performance guarantee. The collection, repayment and all the matters regarding performance guarantee in Vol. 1 of NIT will be according to Additional performance guarantee mentioned in the above Government order.

The retention amount collected from the bills of the contractor mentioned in Vol. 1 of NIT is redefined as Performance security deposit. So wherever the term retention amount/retention comes in Vol. 1 of NIT shall be read as Performance security deposit. The collection, repayment and all the matters regarding retention and security deposit in Vol. 1 of NIT will be according to Performance security deposit and performance guarantee and mentioned in the above Government order.

### **8.11 EARNEST MONEY DEPOSIT (EMD)**

As per the above Government order the EMD is redefined and hence the clause 8.11 of Vol. 1 of NIT is modified according to item 2 of the above Government order.

All the modifications as per the above proceedings are applicable for this tender.

**8.12 INITIAL SECURITY DEPOSIT AND RETENTION AMOUNTS (*Performance Guarantee, Additional Performance Guarantee, Performance Security Deposit*)** The successful tenderer shall within **fourteen days** of receipt of the order of award of work (selection notice), shall deposit a sum equal to 5 (Five) percent of the contract value as security for the proper fulfilment of the work. At least fifty percent (50%) of this deposit shall be in the form of treasury fixed deposit and the rest in the form of bank guarantee and or any other forms prescribed in the revised PWD manual. 8.12.1 The Performance guarantee, Additional performance guarantee and Performance security deposit shall be applicable to this tender as per GO(P) No.429/15/Fin

dated: Thiruvananthapuram 28/09/2015, GO(P) No.19/2016/Fin dtd.03.02.2016, GO(P) No.124/2016/Fin dtd.29/08/2016, GO(P) No.168/2018/Fin dtd.02.11.2018, and GO(P) No.1/2019/Fin dtd.10.01.2019, (*Copies of GOs given separately*).

#### **8.14 REPAYMENT OF SECURITY DEPOSIT**

**8.14.1.** For pipe laying works alone, the work will be treated as “completed” when it is ready for commissioning of all allied civil works with anchor blocks and thrust blocks including fitting of all valves, specials etc. without any gap closing works in the pipeline alignment and after completion of testing of pipeline laid. Then completion certificate will be issued by the concerned Executive Engineer in charge of the work within one month. Release of performance guarantee, additional performance guarantee and performance security deposit will be as per GO(P) No.429/15/Fin dated: Thiruvananthapuram 28/09/2015, GO(P) No.19/2016/Fin dtd.03.02.2016, GO(P) No.124/2016/Fin dtd.29/08/2016, GO(P) No.168/2018/Fin dtd.02.11.2018, and GO(P) No.1/2019/Fin dtd.10.01.2019, (*Copies of GOs given separately*).

#### **8.15.2. GST will be applicable for this contract**

All bidders should have a valid GST registration. The rates quoted by the bidders shall include all taxes and duties, construction workers welfare fund contribution, etc. except the GST. The rate quoted **shall be exclusive of GST** which may be paid or become payable on the completed work within the scope of this tender. In other words the amount quoted shall be exclusive of GST prevailing as on the due date of the tender and other taxes at applicable rates shall be deducted from the payments to the contractor as per rules without further correspondence. The deductions from contractor’s payment shall include Income Tax, and Labour welfare fund as per the rate in force. However this shall not mean that only this amount shall be deducted. The payments and deductions shall be made as per Circular No. 18/2019/Fin dated 01/03/2019 of the Finance (Industries and Public Works –B) Department, Government of Kerala. (*Copy of the circular is attached for reference.*). Any tax rules issued by Govt. as and when will be applicable to this tender.

The GST implemented by Government of India with effect from 01-07-2017 is applicable for this tender.

The GST implemented by Government of India with effect from 01-07-2017 is applicable for this tender. GST will be implemented as per the Order No. 18/2019/Fin dated 01-03-2019 of Government of Kerala. **The lump sum amount quoted shall be exclusive of GST. The deductions from contractors payment shall include Income Tax, Labour Welfare Fund as per the rate in force. However this shall not mean that only this amount shall be deducted. Any excess in taxes and duties with in the original contract period shall be borne by the authority and any reduction in taxes and duties within the period shall be deducted from the contractor’s bill, on proof of remittance GST amount will be paid to the contractor as extra.**

**8.17.4** On no account the final payment shall be made to the contractor before production of clearance certificate of taxes and proof of submission of Income Tax returns. The contractor shall produce document of remittance of GST before final payment. The Taxes as per prevailing rate shall be deducted from the Contractor’s bill. Tenderers are however advised to collect necessary clarifications from the authorities concerned for ensuring the extent of various taxes applicable to the work before quoting their rate.

Sl. No.	Item Description	Quantity	Units
1	2	4	5
1	<b>HIGHRANGE WSS</b>		
1.01	100.98.229 : Supply of uPVC Pipe, IS 4985: 2000 , 10kg/cm2, 20mm.	90.0000	metre
1.02	100.98.234 : Supply of uPVC Pipe, IS 4985: 2000 , 10kg/cm2, 63mm Dia.	50.0000	metre
1.03	100.9.1 : Laying UPVC pipes of class 2 to class 6 and specials, lowering to the trenches already made, placing in position aligning the pipe line to the lines and levels and jointing the pipes and specials with solvent cement and testing the pipe line with water to the required test pressure (excluding cost of pipes and specials). 20 mm nominal outer dia pipes.	90.0000	metre
1.04	100.9.6 : Laying UPVC pipes of class 2 to class 6 and specials, lowering to the trenches already made, placing in position aligning the pipe line to the lines and levels and jointing the pipes and specials with solvent cement and testing the pipe line with water to the required test pressure (excluding cost of pipes and specials). 63 mm nominal outer dia pipes.	50.0000	metre
1.05	100.1.1 : Excavating trenches of required width for pipes, cables, etc including excavation for sockets, and dressing of sides, ramming of bottoms, depth up to 1.5 m, including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20 cm in depth, including consolidating each deposited layer by ramming, watering, etc. and disposing of surplus excavated soil as directed, within a lead of 50 m : All kinds of soil (Ref. Item No. 2.10.1 of DSR)	25.2000	cum
1.06	18.12.2 : Providing and fixing G.I. pipes complete with G.I fittings including trenching and refilling etc. External work 20 mm dia nominal bore	12.0000	metre
1.07	18.12.3 : Providing and fixing G.I. pipes complete with G.I fittings including trenching and refilling etc. External work 25 mm dia nominal bore	30.0000	metre
1.08	18.12.6 : Providing and fixing G.I. pipes complete with G.I fittings including trenching and refilling etc. External work 50 mm dia nominal bore	18.0000	metre

1.09	100.54.3.1 : Desilting open wells of dia above 3.5m and up to 6.0m and depth up to 4.5m by earth work excavation in or under water, after closing the inlet valves and plugging any holes in the steining by engaging divers with breathing accessories, bailing out water using pumset of suitable capacity, lifting the excavated silt/mud/clay using ropes, pulleys and buckets and disposing the same within minimum lead of 50 m from the periphery of the well, including engaging coolies for scrapping the inner side of the well, without causing any damages to the existing structures and installations, including hire and conveyance of tools and plant and as per the directions of the department officers etc. complete.	24.0000	cum
1.1	100.7.2 : Bailing out water with engine and pumpset above 5 HP upto 10 HP including conveyance to the site, erection, dismantling and taking back of engine and pump, cost of fuel lubricating oil and other stores pay of staff etc. complete. NEW DATA (Prepared based on PHED SDB - Item No.1070	59.6800	Kwh
1.11	4.1.4 : Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level:1:2:4 )1 cement : 2 coarse sand : 4 graded stone aggregate 40 mm nominal size)	1.0080	cum
1.12	100.60.1.1.2 : Providing 15mm (1/2 inch) house connection with 15mm (1/2 inch) water meter from existing PVC / HDPE mains up to 110 mm dia., up to a length of 5 m using 20mm Indian Standard Class 6 uPVC pipe and uPVC / GM / Brass specials viz. brass ferrule, GM full way wheel valve, Elbow, MTA, FTA, couplers, PVC Service Saddle of suitable size etc. and connecting with the mains, testing the joints etc. complete including trenching and refilling in all kinds of soil up to a depth of 1.50m for main line tracing and trench of average cross section 0.3m x 0.75m for laying connection pipe and service pipe, fixing water meter, lighting, watching, providing caution boards, traffic control etc. complete including cost of materials, hire for tools, cost of consumables and labour charges, including the cost of tested Class B Multijet water meter with ISI mark and weather resistant PP / PE meter box of minimum size 300mm x 200mm x 150mm, but excluding charges for cutting the concrete / tarred / bituminous roads etc, and as per the direction of the departmental officers.	4.0000	no
1.13	100.60.10.4.1 : Providing 20mm (1/2 inch) PVC Air Valve in the water meter assembly for 15mm connection, using 20mm Indian Standard Class 6 uPVC pipes and specials including cost of materials, consumables, hire for tools and labour charges etc. complete and as per the directions of the department officers.	4.0000	no

1.14	100.60.12.3.2 : Providing 15mm PVC Tap in the water meter assembly for 15mm connection, using 20mm Indian Standard Class 6 uPVC pipes and specials including cost of consumables, hire charges for tools and labour charges etc. complete, but excluding cost of materials and as per the direction of departmental officers.	4.0000	no
1.15	100.98.211 : Supply of uPVC Pipe, IS 4985: 2000 , 6kg/cm2, 63mm Dia..	4.0000	metre
1.16	Water quality test	1.0000	no
<b>2</b>	<b>RAEEVGHANDHI MOOPANKUZH WSS</b>		
2.01	100.98.229 : Supply of uPVC Pipe, IS 4985: 2000 , 10kg/cm2, 20mm.	250.0000	metre
2.02	100.98.230 : Supply of uPVC Pipe, IS 4985: 2000 , 10kg/cm2, 25mm.	600.0000	metre
2.03	100.98.231 : Supply of uPVC Pipe, IS 4985: 2000 , 10kg/cm2, 32mm Dia.	300.0000	metre
2.04	100.98.233 : Supply of uPVC Pipe, IS 4985: 2000 , 10kg/cm2, 50mm Dia.	150.0000	metre
2.05	100.98.234 : Supply of uPVC Pipe, IS 4985: 2000 , 10kg/cm2, 63mm Dia.	200.0000	metre
2.06	100.9.1 : Laying UPVC pipes of class 2 to class 6 and specials, lowering to the trenches already made, placing in position aligning the pipe line to the lines and levels and jointing the pipes and specials with solvent cement and testing the pipe line with water to the required test pressure (excluding cost of pipes and specials). 20 mm nominal outer dia pipes.	250.0000	metre
2.07	100.9.2 : Laying UPVC pipes of class 2 to class 6 and specials, lowering to the trenches already made, placing in position aligning the pipe line to the lines and levels and jointing the pipes and specials with solvent cement and testing the pipe line with water to the required test pressure (excluding cost of pipes and specials). 25 mm nominal outer dia pipes.	600.0000	metre
2.08	100.9.3 : Laying UPVC pipes of class 2 to class 6 and specials, lowering to the trenches already made, placing in position aligning the pipe line to the lines and levels and jointing the pipes and specials with solvent cement and testing the pipe line with water to the required test pressure (excluding cost of pipes and specials). 32 mm nominal outer dia pipes.	300.0000	metre

2.09	100.9.5 : Laying UPVC pipes of class 2 to class 6 and specials, lowering to the trenches already made, placing in position aligning the pipe line to the lines and levels and jointing the pipes and specials with solvent cement and testing the pipe line with water to the required test pressure (excluding cost of pipes and specials) 50 mm nominal outer dia pipes.	150.0000	metre
2.1	100.9.6 : Laying UPVC pipes of class 2 to class 6 and specials, lowering to the trenches already made, placing in position aligning the pipe line to the lines and levels and jointing the pipes and specials with solvent cement and testing the pipe line with water to the required test pressure (excluding cost of pipes and specials). 63 mm nominal outer dia pipes.	200.0000	metre
2.11	100.1.1 : Excavating trenches of required width for pipes, cables, etc including excavation for sockets, and dressing of sides, ramming of bottoms, depth up to 1.5 m, including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20 cm in depth, including consolidating each deposited layer by ramming, watering, etc. and disposing of surplus excavated soil as directed, within a lead of 50 m : All kinds of soil (Ref. Item No. 2.10.1 of DSR)	220.5000	cum
2.12	18.12.5 : Providing and fixing G.I. pipes complete with G.I fittings including trenching and refilling etc. External work 40 mm dia nominal bore	10.0000	metre
2.13	18.17.2 : Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end) : 32 mm nominal bore	1.0000	each
2.14	18.17.3 : Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end) : 40 mm nominal bore	1.0000	each
2.15	od198280/2022_2023 : Supplying and fixing Water Meter, Indian Standard, Class B, Multijet, 15mm ( 1/2 inch )&lt;br&gt;including the Surface box in the existing house connection and making the loop for fixing&lt;br&gt;the water meter - tracing, locating and exposing the service line at the required place&lt;br&gt;including earth work excavation, cutting and removing the service line portion and making&lt;br&gt;the connection functional including cost of all specials, labour charges etc complete	50.0000	no

2.16	100.60.12.3.2 : Providing 15mm PVC Tap in the water meter assembly for 15mm connection, using 20mm Indian Standard Class 6 uPVC pipes and specials including cost of consumables, hire charges for tools and labour charges etc. complete, but excluding cost of materials and as per the direction of departmental officers.	25.0000	no
2.17	100.98.210 : Supply of uPVC Pipe, IS 4985: 2000 , 6kg/cm <sup>2</sup> , 50mm Dia.	25.0000	metre
2.18	4.1.3 : Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level:1:2:4 (cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size)	0.4690	cum
2.19	Water quality test	1.0000	no
<b>3</b>	<b>GANGA MUTTILPARA WSS</b>		
3.01	13.37.1 : White washing with lime to give an even shade:New work (three or more coats)	164.5630	sqm
3.02	13.60.1 : Wall painting with acrylic emulsion paint of approved brand and manufacture to give an even shade:Two or more coats on new work	164.5630	sqm
3.03	13.1.1 : 12 mm cement plaster of mix:1:4 ( 1 cement : 4 fine sand)	24.2020	sqm
3.04	15.23.2 : Dismantling tile work in floors and roofs laid in cement mortar including stacking material within 50 metres lead.For thickness of tiles above 25 mm and up to 40 mm	24.2020	sqm
3.05	22.6 : Providing and laying water proofing treatment on roofs of slabs by applying cement slurry mixed with water proofing cement compound consisting of applying : a) after surface preparation, first layer of slurry of cement @ 0.488 kg/ sqm mixed with water proofing cement compound @ 0.253 kg/ sqm. laying second layer of fibre glass cloth when the first layer is still green. Overlaps of joints of fibre cloth should not be less than 10 cm. c) third layer of 1.5 mm thickness consisting of slurry of cement @ 1.289 kg/ sqm mixed with water proofing cement compound @ 0.670 kg/sqm and coarse sand @ 1.289 kg/sqm. This will be allowed to air cure for 4 hours followed by water curing for 48 hours. The entire treatment will be taken upto 30 cm on parapet wall and tucked into groove in parapet all around. d) fourth and final layer of brick tilling with cement mortar (which will be paid for separately. For the purpose of measurement the entire treated surface will be measured)	24.2020	sqm
3.06	18.17.3 : Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end) :40 mm nominal bore	2.0000	each
3.07	18.17.4 : Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end) :50 mm nominal bore	2.0000	each

3.08	100.47.1.3 : Leak rectification work in 50 mm PVC (Class 2 to 6) pipe line including detecting and locating leak, earth work excavation in all kinds of soil for exposing leak portion of the pipe including tar cutting / concrete cutting, cutting the pipe diametrically perpendicular to the axis of pipe line with out causing any damages to the remaining portion, dismantling and lifting the pipe from trenches, smoothening the cut ends, conveying the new pipe to the site, cutting and lowering new pipe in to the trenches,placing in position aligning the pipe to line and level and jointing the new pipe with the existing pipe with solvent cement or or any available joint and testing the pipe line by operating the valves concerned, and rectifying the defects if noticed and without causing any damages to the existing utilities and refilling the trenches using excavated earth in layers not exceeding 20cm depth including consolidating each layers by ramming, watering, charges for removing surplus soil from work site, including hire for tools and plant, conveyance of tools and materials, bailing out water, providing caution boards,lighting,watching, ribbon fencing, traffic controlling etc.complete as per the direction of Departmental officers including the cost of pipe and PVC specials; PVC Pipes and specials shall be of good quality and conforming to relevant standards: All Socketed Jointing.	3.0000	no
3.09	100.47.1.4 : Leak rectification work in 63 mm PVC (Class 2 to 6) pipe line including detecting and locating leak, earth work excavation in all kinds of soil for exposing leak portion of the pipe including tar cutting / concrete cutting, cutting the pipe diametrically perpendicular to the axis of pipe line with out causing any damages to the remaining portion, dismantling and lifting the pipe from trenches, smoothening the cut ends, conveying the new pipe to the site, cutting and lowering new pipe in to the trenches,placing in position aligning the pipe to line and level and jointing the new pipe with the existing pipe with solvent cement or or any available joint and testing the pipe line by operating the valves concerned, and rectifying the defects if noticed and without causing any damages to the existing utilities and refilling the trenches using excavated earth in layers not exceeding 20cm depth including consolidating each layers by ramming, watering, charges for removing surplus soil from work site, including hire for tools and plant, conveyance of tools and materials, bailing out water, providing caution boards,lighting,watching, ribbon fencing, traffic controlling etc.complete as per the direction of Departmental officers including the cost of pipe and PVC specials; PVC Pipes and specials shall be of good quality and conforming to relevant standards: All Socketed Jointing.	3.0000	no



3.1	od191385/2022_2023 : Supplying and fixing Water Meter, Indian Standard, Class B, Multijet, 15mm ( 1/2 inch )&lt;br&gt;including the Surface box in the existing house connection and making the loop for fixing&lt;br&gt;the water meter - tracing, locating and exposing the service line at the required place&lt;br&gt;including earth work excavation, cutting and removing the service line portion and making&lt;br&gt;the connection functional including cost of all specials, labour charges etc complete	40.0000	no
3.11	100.60.10.4.2 : Providing 20mm (1/2 inch) PVC Air Valve in the water meter assembly for 15mm connection, using 20mm Indian Standard Class 6 uPVC pipes and specials including cost of consumables, hire for tools and labour charges etc., complete but excluding cost of materials and as per the directions of the department officers.	40.0000	no
3.12	100.60.12.3.1 : Providing 15mm PVC Tap in the water meter assembly for 15mm connection, using 20mm Indian Standard Class 6 uPVC pipes and specials including cost of materials, consumables, hire charges for tools and labour charges etc. complete and as per the direction of departmental officers.	40.0000	no
3.13	100.98.211 : Supply of uPVC Pipe, IS 4985: 2000 , 6kg/cm2, 63mm Dia..	40.0000	metre
3.14	4.1.3 : Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level:1:2:4 (cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size)	1.4400	cum
3.15	od212465/2022_2023 : Supplying and erection of best quality ISI market brand &ndash;bore well submersible Three phase driven motor pump set working at 360 voltage (IS 14220) with bronze impeller and stainless steel shaft having minimum of 5000lph discharge against 50 m head with suitable ISI marked accessories such as starter(best quality ISI marked fully automatic electronic star delta ),main switch, fuse, capacitor, ELCB ,adequate length of best quality suitable size flat submersible cable, reflux valve, sluice valve, pressure gauge, earthing materials conforming to IS 3043/2000 as amended to date ,ammeter ,voltmeter, selector switch, flickering lamps dry running preventer cum no voltage wire, GI CL B(medium)/column hdpe pipes of suitable size and length , conveying and erecting the motor pumpset and giving all connections earthing etc as per the KSEB/EI rules and regulations .Trial run should be given for 7 days . Any documentation required for proper electric connection shall be arranged by the contractor at their own cost etc.. complete as per the directions of engineer in charge of the work	1.0000	HP

3.16	od212466/2022_2023 : Supplying and erection of best quality ISI market brand &ndash;open well submersible Three phase driven motor pump set working at 360 voltage (IS 14220) with bronze impeller and stainless steel shaft having minimum of 5000lph discharge against 50 m head with suitable ISI marked accessories such as starter(best quality ISI marked fully automatic electronic star delta ),main switch, fuse, capacitor, ELCB ,adequate length of best quality suitable size flat submersible cable, reflux valve, sluice valve, pressure gauge, earthing materials conforming to IS 3043/2000 as amended to date ,ammeter ,voltmeter, selector switch, flickering lamps dry running preventer cum no voltage wire, GI CL B(medium)/column hdpe pipes of suitable size and length , conveying and erecting the motor pumpset and giving all connections earthing etc as per the KSEB/EI rules and regulations .Trial run should be given for 7 days . Any documentation required for proper electric connection shall be arranged by the contractor at their own cost etc.. complete as per the directions of engineer in charge of the work	3.0000	HP
3.17	12.1.2 : Providing corrugate G.S. sheet roofing including vertical/ curved surface fixed with polymer coated J or L hooks, bolts and nuts 8 mm diameter with bitumen and G.I. limpet washers or with G.I. limpet washers filled with white lead, including a coat of approved steel primer and two coats of approved paint on overlapping of sheets complete ( up to any pitch in horizontal / vertical or curved surfaces), excluding the cost of purlins, rafters and trusses and including cutting to size and shape wherever required.0.80 mm thick with zinc coating less than 275 gm/m2	1.4400	sqm
3.18	Name board on wall	1.0000	no
3.19	Water quality test	1.0000	no
3.2	mobile starter for pump	1.0000	no
<b>4</b>	<b>ANORA WSS</b>		
4.01	100.60.1.1.2 : Providing 15mm (1/2 inch) house connection with 15mm (1/2 inch) water meter from existing PVC / HDPE mains up to 110 mm dia., up to a length of 5 m using 20mm Indian Standard Class 6 uPVC pipe and uPVC / GM / Brass specials viz. brass ferrule, GM full way wheel valve, Elbow, MTA, FTA, couplers, PVC Service Saddle of suitable size etc. and connecting with the mains, testing the joints etc. complete including trenching and refilling in all kinds of soil up to a depth of 1.50m for main line tracing and trench of average cross section 0.3m x 0.75m for laying connection pipe and service pipe, fixing water meter, lighting, watching, providing caution boards, traffic control etc. complete including cost of materials, hire for tools, cost of consumables and labour charges, including the cost of tested Class B Multijet water meter with ISI mark and weather resistant PP / PE meter box of minimum size 300mm x 200mm x 150mm, but excluding charges for cutting the concrete / tarred / bituminous roads etc, and as per the direction of the departmental officers.	17.0000	no

4.02	od212486/2022_2023 : Supplying and erection of best quality ISI market brand &ndash;open well submersible Three phase driven motor pump set working at 360 voltage (IS 14220) with bronze impeller and stainless steel shaft having minimum of 6000lph discharge against 90 m head with suitable ISI marked accessories such as starter(best quality ISI marked fully automatic electronic star delta ),main switch, fuse, capacitor, ELCB ,adequate length of best quality suitable size flat submersible cable, reflux valve, sluice valve, pressure gauge, earthing materials conforming to IS 3043/2000 as amended to date ,ammeter ,voltmeter, selector switch, flickering lamps dry running preventer cum no voltage wire, GI CL B(medium)/column hdpe pipes of suitable size and length , conveying and erecting the motor pumpset and giving all connections earthing etc as per the KSEB/EI rules and regulations .Trial run should be given for 7 days . Any documentation required for proper electric connection shall be arranged by the contractor at their own cost etc.. complete as per the directions of engineer in charge of the work	6.0000	HP
4.03	18.12.7 : Providing and fixing G.I. pipes complete with G.I fittings including trenching and refilling etc. External work65 mm dia nominal bore	12.0000	metre
4.04	13.1.1 : 12 mm cement plaster of mix:1:4 ( 1 cement : 4 fine sand)	18.8400	sqm
4.05	13.37.1 : White washing with lime to give an even shade:New work (three or more coats)	81.0070	sqm
4.06	13.60.1 : Wall painting with acrylic emulsion paint of approved brand and manufacture to give an even shade:Two or more coats on new work	81.0070	sqm
4.07	12.1.3 : Providing corrugate G.S. sheet roofing including vertical/ curved surface fixed with polymer coated J or L hooks, bolts and nuts 8 mm diameter with bitumen and G.I. limpet washers or with G.I. limpet washers filled with white lead, including a coat of approved steel primer and two coats of approved paint on overlapping of sheets complete ( up to any pitch in horizontal / vertical or curved surfaces), excluding the cost of purlins, rafters and trusses and including cutting to size and shape wherever required.0.63 mm thick with zinc coating not less than 275 gm/m2	19.6250	sqm
4.08	Water quality test	1.0000	no
4.09	Name board on wall	1.0000	no
<b>5</b>	<b>JYOTHIS AMBLAKUNNU WSS</b>		
5.01	100.98.229 : Supply of uPVC Pipe, IS 4985: 2000 , 10kg/cm2, 20mm.	300.0000	metre
5.02	100.98.230 : Supply of uPVC Pipe, IS 4985: 2000 , 10kg/cm2, 25mm.	1000.0000	metre
5.03	100.98.231 : Supply of uPVC Pipe, IS 4985: 2000 , 10kg/cm2, 32mm Dia.	400.0000	metre

5.04	100.98.232 : Supply of uPVC Pipe, IS 4985: 2000 , 10kg/cm2, 40mm Dia.	600.0000	metre
5.05	100.98.233 : Supply of uPVC Pipe, IS 4985: 2000 , 10kg/cm2, 50mm Dia.	300.0000	metre
5.06	100.98.234 : Supply of uPVC Pipe, IS 4985: 2000 , 10kg/cm2, 63mm Dia.	400.0000	metre
5.07	100.9.1 : Laying UPVC pipes of class 2 to class 6 and specials, lowering to the trenches already made, placing in position aligning the pipe line to the lines and levels and jointing the pipes and specials with solvent cement and testing the pipe line with water to the required test pressure (excluding cost of pipes and specials). 20 mm nominal outer dia pipes.	300.0000	metre
5.08	100.9.2 : Laying UPVC pipes of class 2 to class 6 and specials, lowering to the trenches already made, placing in position aligning the pipe line to the lines and levels and jointing the pipes and specials with solvent cement and testing the pipe line with water to the required test pressure (excluding cost of pipes and specials). 25 mm nominal outer dia pipes.	1000.0000	metre
5.09	100.9.3 : Laying UPVC pipes of class 2 to class 6 and specials, lowering to the trenches already made, placing in position aligning the pipe line to the lines and levels and jointing the pipes and specials with solvent cement and testing the pipe line with water to the required test pressure (excluding cost of pipes and specials). 32 mm nominal outer dia pipes.	400.0000	metre
5.1	100.9.4 : Laying UPVC pipes of class 2 to class 6 and specials, lowering to the trenches already made, placing in position aligning the pipe line to the lines and levels and jointing the pipes and specials with solvent cement and testing the pipe line with water to the required test pressure (excluding cost of pipes and specials). 40 mm nominal outer dia pipes.	600.0000	metre
5.11	100.9.5 : Laying UPVC pipes of class 2 to class 6 and specials, lowering to the trenches already made, placing in position aligning the pipe line to the lines and levels and jointing the pipes and specials with solvent cement and testing the pipe line with water to the required test pressure (excluding cost of pipes and specials) 50 mm nominal outer dia pipes.	300.0000	metre
5.12	100.9.6 : Laying UPVC pipes of class 2 to class 6 and specials, lowering to the trenches already made, placing in position aligning the pipe line to the lines and levels and jointing the pipes and specials with solvent cement and testing the pipe line with water to the required test pressure (excluding cost of pipes and specials). 63 mm nominal outer dia pipes.	400.0000	metre

5.13	100.1.1 : Excavating trenches of required width for pipes, cables, etc including excavation for sockets, and dressing of sides, ramming of bottoms, depth up to 1.5 m, including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20 cm in depth, including consolidating each deposited layer by ramming, watering, etc. and disposing of surplus excavated soil as directed, within a lead of 50 m : All kinds of soil (Ref. Item No. 2.10.1 of DSR)	489.0000	cum
5.14	od44907/2022_2023 : Supplying and fixing Water Meter, Indian Standard, Class B, Multijet, 15mm ( 1/2 inch ) including the Surface box in the existing house connection and making the loop for fixing the water meter - tracing, locating and exposing the service line at the required place including earth work excavation, cutting and removing the service line portion and making the connection functional including cost of all specials, labour charges etc complete	52.0000	no
5.15	100.60.10.4.1 : Providing 20mm (1/2 inch) PVC Air Valve in the water meter assembly for 15mm connection, using 20mm Indian Standard Class 6 uPVC pipes and specials including cost of materials, consumables, hire for tools and labour charges etc. complete and as per the directions of the department officers.	35.0000	no
5.16	100.60.12.3.1 : Providing 15mm PVC Tap in the water meter assembly for 15mm connection, using 20mm Indian Standard Class 6 uPVC pipes and specials including cost of materials, consumables, hire charges for tools and labour charges etc. complete and as per the direction of departmental officers.	35.0000	no
5.17	100.98.211 : Supply of uPVC Pipe, IS 4985: 2000 , 6kg/cm2, 63mm Dia..	35.0000	metre
5.18	4.1.3 : Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level:1:2:4 (cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size)	0.6570	cum
5.19	18.12.3 : Providing and fixing G.I. pipes complete with G.I fittings including trenching and refilling etc. External work25 mm dia nominal bore	12.0000	metre
5.2	18.12.6 : Providing and fixing G.I. pipes complete with G.I fittings including trenching and refilling etc. External work50 mm dia nominal bore	18.0000	metre
5.21	18.17.4 : Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end) :50 mm nominal bore	2.0000	each