



**EXECUTIVE ENGINEER (PROJECT),
HUBBALLI-DHARWAD MUNICIPAL CORPORATION- 580020**

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**TENDERS FOR THE WORK OF
*Providing Rainwater Harvesting System-HDMC area***

TENDER REFERENCE : DMA/2017-18/OW/WORK_INDENT68466

TENDER REFERENCE	:	DMA/2017-18/OW/WORK_INDENT68466
TENDER DOCUMENT AVAILABLE ON PORTAL FROM	:	18.12.2017
LAST DATE OF AVAILABLE OF TENDER DOCUMENT	:	23.01.2018
LAST DATE AND TIME FOR RECEIPT OF TENDERS	:	23.01.2018 up to 4:00 pm
TIME AND DATE OF OPENING OF COVER ONE OF TENDERS ¹	:	25.01.2018 at 11:00 am
PLACE OF OPENING OF COVER ONE OF TENDERS	:	Office of the Executive Engineer (Project), Hubballi-Dharwad Municipal Corporation
TIME AND DATE OF OPENING OF COVER TWO OF TENDERS	:	Will be intimated to the Qualified Tenderers
PLACE OF OPENING OF COVER TWO OF TENDERS	:	Will be intimated to the Qualified Tenderers
ADDRESS FOR COMMUNICATION	:	Office of the Executive Engineer (Project), Hubballi-Dharwad Municipal Corporation Hubballi



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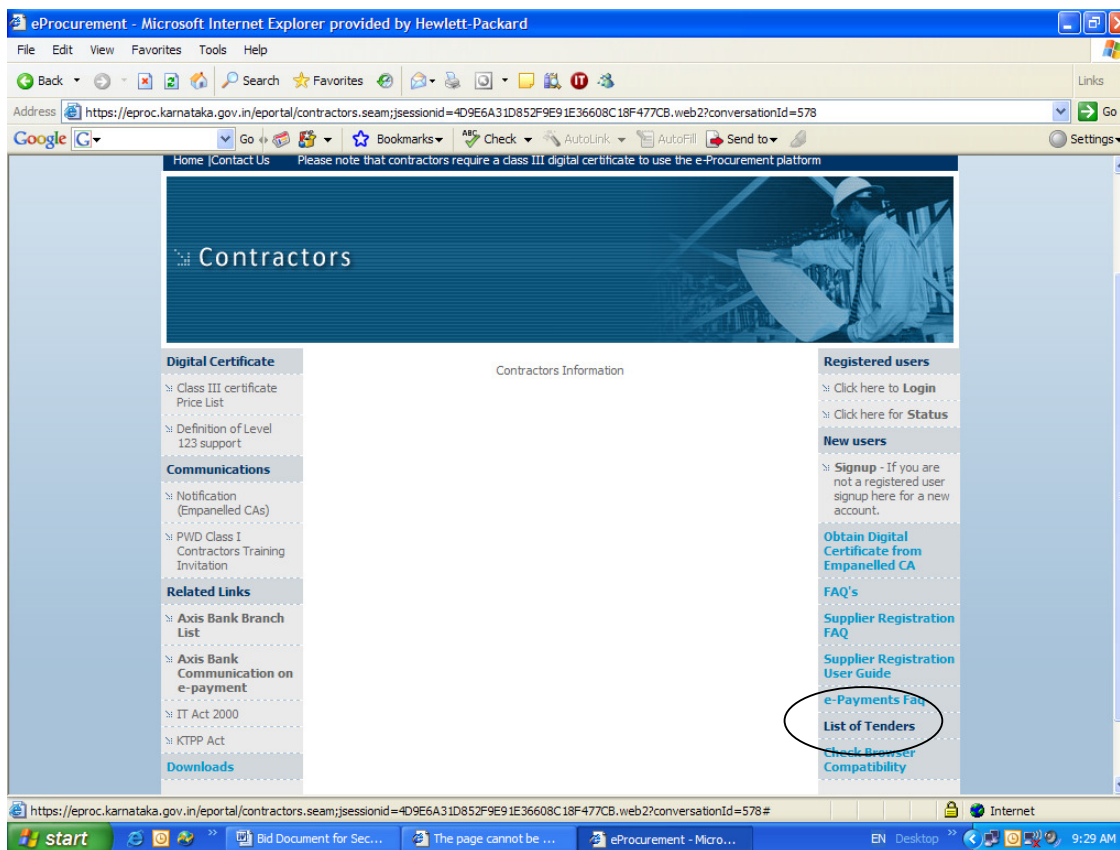
SECTION 1: INVITATION FOR TENDERS (IFT)

1. **The EXECUTIVE ENGINEER (PROJECT), HUBBALLI DHARWAD MUNICIPAL CORPORATION, HUBBALLI** invites tenders from eligible tenderers, for the construction of works detailed in the Table below. The tenderers to submit the tenders for all of the works given in the Table. ***The Tenderers are advised to note the minimum qualification criteria specified in Clause 3 of the Instructions to Tenderers to qualify for award of the contract.***

2. Tender documents may be downloaded from Government of Karnataka e-Procurement website <https://eproc.karnataka.gov.in/eportal/index.seam> under login for Contractors:



After login to Contractors, Please scroll down to the right side bottom to see List of Tenders, Please click there to find the details of NIT and download copy of the tender. The tender can be downloaded in the portal as per prescribed date and time published in the portal. Only Interested Contractors who wish to participate should remit online transaction fee for tender after registering in the portal. The transaction fee is non-refundable if you wish to participate.



3. Tenders must be accompanied by earnest money deposit which will paid online through e-Procurement portal.
4. Tenders must be electronically submitted (on-line through internet) with in the date and time published in e-procurement portal. Tenders will be opened at prescribed time and date in the eprocurement portal, in the presence of the Tenderers who wish to attend at the Office of **EXECUTIVE ENGINEER (PROJECT), HUBBALLI DHARWAD MUNICIPAL CORPORATION, HUBBALLI, HUBBALLI.**
5. Other details can be seen in the tender documents.

TABLE

Package No. / Indent No	Name of work	Approximate value of work (Rs.in Lakhs)	Earnest Money Deposit (Rs.)	Transaction fee, only in case Tenderers who wish to participate.	Period of completion
1	2	3	4	5	6
68466	Providing Rain Water Harvesting System in HDMC premises.	35.00	75,000	As per E-Procurement	03 (Three) months including Monsoon

SECTION 2: INSTRUCTIONS TO TENDERERS (ITT)

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A. General

1. Scope of Tender

- 1.1 **The EXECUTIVE ENGINEER (PROJECT), HUBBALLI DHARWAD MUNICIPAL CORPORATION, HUBBALLI** (Referred to as Employer in these documents) invites tenders, from eligible Tenderers, for the construction of works (as defined in these documents and referred to as "the works") detailed in the Table given in the Invitation for Tenders (IFT). The Tenderers may submit tenders for any or all of the works detailed in the table given in IFT.

2. Eligible Tenderers

- 2.1 Tenderers shall not be under a declaration of ineligibility for corrupt and fraudulent practices issued by the Government of Karnataka
 2.2 Tenders from Joint ventures are not acceptable.

3. Qualification of the Tenderer:

- 3.1 All tenderers shall provide the requested information accurately and in sufficient detail in Section 3: form of Tender & Qualification information.
 3.2 To qualify for award of this contract, each tenderer in his name should have in the last five years i.e. 2012-13 to 2016-17)
- (a) Achieved in at least two financial years an average annual financial turnover (in all classes of civil engineering construction works only) of Rs. **35.00 Lakhs** (*usually not less than the estimated cost under this contract*)*;
 - (b) Satisfactorily completed as a prime contractor at least one similar work to a extent of Rs. **17.50 Lakhs**
 - (c) Deleted
 - (d) Deleted
 - (e) Liquid assets and or availability of credit facilities of not less than Rs. 10,50,000/- (Credit lines/Letters of Credit / Certificates from Banks) for meeting the fund requirement etc., (Usually 30% of the amount of contract).

BANKER'S CERTIFICATE

This is to certify that M/s. is a reputed company with a good financial standing. If the contract for this work "....." is awarded to the above firm, we shall be able to provide overdraft/credit facilities to the extent of Rs. lakhs to meet the working capital requirements for executing the above contract

- 3.1 Tenderers who meet the above specified minimum qualifying criteria, will only be qualified, if their available tender capacity is more than the total tender value. The available tender capacity will be calculated as under:

$$\text{Assessed available tender capacity} = (A * N * 2.5 - B)$$

where

A = Maximum value of civil engineering works executed in any one year during the last five years (*updated to 2016-17 price level*) taking into account the completed as well as works in progress.

N = Number of years prescribed for completion of the works for which Tenders are invited.

B = Value, at *2016-17* price level, of existing commitments and on-going works to be completed during the next 3/12 year.

Note: *The statements showing the value of existing commitments and on-going works as well as the stipulated period of completion remaining for each of the works listed should be countersigned by the Employer in charge, not below the rank of an Executive Engineer or equivalent*.*

Certificate from Executive Engineer or equivalent should be furnished so for satisfactory completion as prime contractor as per clause 3.2(b)

- 3.4 Even though the Tenderers meet the above criteria, they are subject to be disqualified if they have:
- made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements; and/or
 - record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures etc.; and / or
 - participated in the previous Tender for the same work and had quoted unreasonably high tender prices and could not furnish rational justification.

B. Tender documents

4. Content of Tender documents

The Contractor should go through the Tender Document and submit the response /commercial / technical through e-procurement portal online after downloading the tender.

5. Amendment of Tender documents

- 5.1 Before the deadline for submission of tenders, the Employer may modify the tender documents by issuing addenda.
- 5.2 Any addendum thus issued shall be part of the tender documents and shall be posted online in the e-procurement portal which Contractors should download.
- 5.3 To give prospective Tenderers reasonable time in which to take an addendum into account in preparing their tenders, the Employer shall extend as necessary the deadline for submission of tenders on line through e-procurement portal, in accordance with Sub-Clause 12 below.

C. Preparation of Tenders

6. Documents comprising the Tender

- 6.1 The tender submitted by the Tenderer shall be in one covers and shall contain the documents as follows:
- (a) Earnest Money Deposit; on line payment through e-Procurement platform.
 - (b) Qualification Information as per formats given in Section 3;
 - (c) The Tender (in the format indicated in Section 4)
 - (d) Priced Bill of Quantities (Section 8); online through e-procurement portal, no hardcopy of commercials should be attached or disclosed.
- and any other materials required to be completed and submitted by Tenderers in accordance with these instructions. The documents listed under Sections 3, 4, 5 and 8 shall be filled in without exception.

7. Tender prices

- 7.1 The contract shall be for the whole works as described in Sub-Clause 1.1, based on the priced Bill of Quantities submitted by the Tenderer.
- 7.2 The Tenderer shall fill in rates and prices and line item total for all items of the Works described in the Bill of Quantities along with total tender price.
- Items for which no rate or price is entered by the Tenderer will not be paid for by the Employer when executed and shall be deemed covered by the other rates and prices in the Bill of Quantities. Corrections, if any, shall be made online only before the submission of the bid.**
- 7.3 All duties, taxes, and other levies payable by the contractor under the contract, or for any other cause, shall be included in the rates, prices and total Tender Price submitted by the Tenderer.

- 7.4 The rates and prices quoted by the Tenderer shall be subject to adjustment during the performance of the Contract in accordance with the provisions of Clause of the Conditions of Contract

8. Tender validity

- 8.1 Tenders shall remain valid for a period not less than ninety days after the deadline date for tender submission specified in Clause 12. A tender valid for a shorter period shall be rejected by the Employer as non-responsive.
- 8.2 In exceptional circumstances, prior to expiry of the original time limit, the Employer may request that the Tenderers may extend the period of validity for a specified additional period. The request and the Tenderers' responses shall be made in writing or by cable. A Tenderer may refuse the request without forfeiting his earnest money deposit. A Tenderer agreeing to the request will not be required or permitted to modify his tender, but will be required to extend the validity of his earnest money deposit for a period of the extension, and in compliance with Clause 9 in all respects.

9. Earnest money deposit

9.1 Earnest Money Deposit/ Bid security

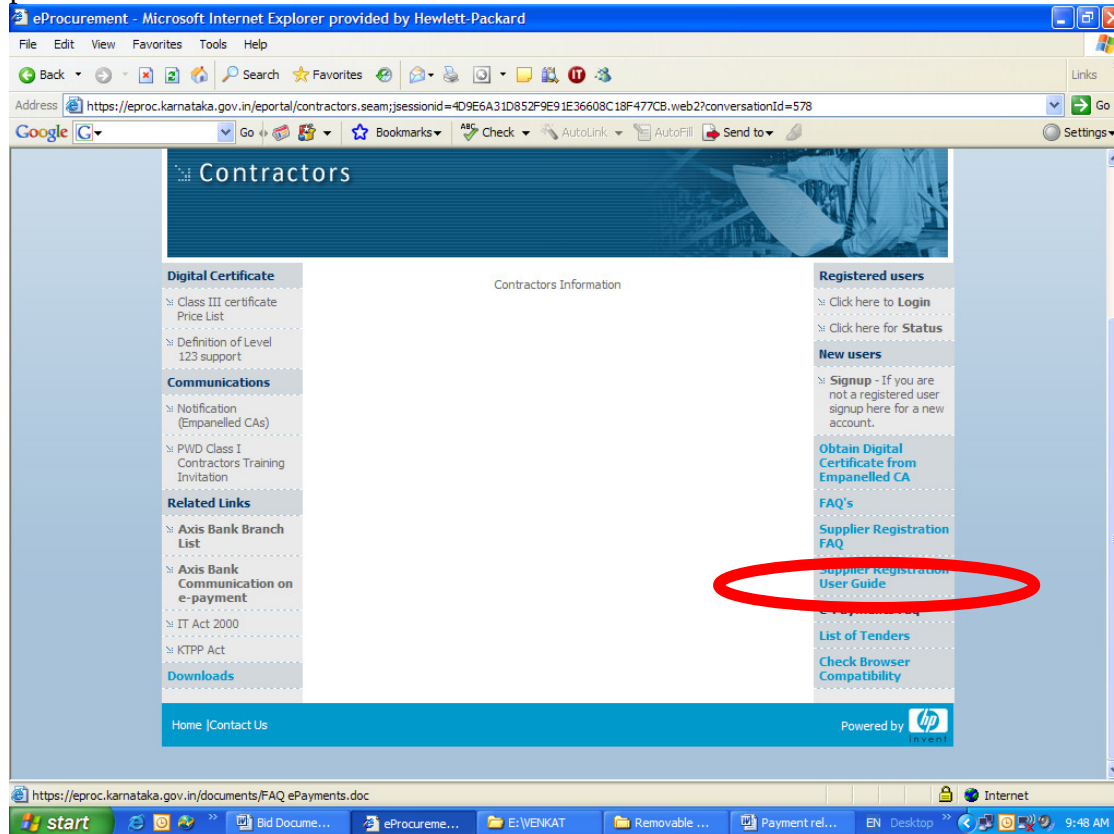
The supplier/contractor can pay the Earnest Money Deposit (EMD) in the e-Procurement portal using any of the following payment modes:

- Credit Card
- Direct Debit
- National Electronic Fund Transfer (NEFT)
- Over the Counter (OTC)

The supplier/contractor's bid will be evaluated only on confirmation of receipt of the payment (EMD) in the Government of Karnataka central pooling a/c held at Axis Bank. EMD amount will have to be submitted by the supplier/contractor taking into account the following conditions:

- a. EMD will be accepted only in the form of electronic cash (and not through Demand Draft or Bank Guarantee) and will be maintained in the Govt.'s central pooling account at Axis Bank until the contract is closed.
- b. The entire EMD amount for a particular tender has to be paid in a single transaction

For details on e-Payment services refer to e-procurement portal for more details on the process.



Refund of EMD

Based on the instructions of Tender Accepting Authority (TAA) the EMD amount of the unsuccessful bidders will be refunded to the respective Bank a/c's of the supplier/contractor registered in the e-Procurement system.

9.2 Instruments having fixed validity issued as earnest money deposit for the tender shall be valid for 45 days beyond the validity of the tender.

9.3 Any tender not accompanied by an acceptable earnest money deposit and not secured as indicated in Sub-Clauses 9.1 and 9.2 above shall be rejected by the Employer as non-responsive.

9.4 The earnest money deposit of unsuccessful Tenderers will be returned within 30 days of the end of the tender validity period specified in Sub-Clause 8.1.

9.5 The earnest money deposit of the successful Tenderer will be discharged when the Tenderer has signed the Agreement and furnished the required Performance Security.

9.6 The earnest money deposit may be forfeited:

- (a) if the Tenderer withdraws the Tender after tender opening during the period of tender validity;
- (b) if the Tenderer does not accept the correction of the Tender Price, pursuant to Clause 19; or
- (c) in the case of a successful Tenderer, if the Tenderer fails within the specified time limit to
 - (i) sign the Agreement; or
 - (ii) furnish the required Security deposit

10. Format and signing of Tender

Tenderer shall submit the Bid electronically before the submission date and time published in e-procurement portal.

D. Submission of Tenders

11. Submission of Tenders

11. Tenderer shall submit the Bid electronically before the submission date and time published.

12. Deadline for submission of the Tenders

12.1 The Employer may extend the deadline for submission of tenders by issuing an amendment in accordance with Clause 5, in which case all rights and obligations of the Employer and the Tenderers previously subject to the original deadline will then be subject to the new deadline.

13. Late Tenders

13.1 In online e-procurement system, you shall not be able to submit the bid after the bid submission time and date as the icon or the task in the eprocurement portal will not be available.

14. Modification and Withdrawal of Tenders

Tender has all the time to modify and correct or upload any relevant document in the portal till Bid submission date and time, as published in the e-procurement portal.

E- Tender opening and evaluation

15. Tender opening:

15.1 The Employer will open online Tenders received through e-procurement portal, in the presence of the Tenderers or their representatives who choose to attend at 25.01.2018 at 11:00 hours on the date and the place specified in the e-procurement portal. In the event of the specified date of Tender opening being declared a holiday for the Employer, the Tenders will be opened at the appointed time and location on the next working day.

15.2 The Tenderes names, the presence or absence of earnest money deposit (amount, format and validity), the submission of qualification information and such other information as the Employer may consider appropriate will be announced by the Employer at the opening

15.3 The Employer shall prepare minutes of the Tender opening, including the information disclosed to those present in accordance with Sub-Clause 15.2

16. Process to be confidential

16.1 Information relating to the examination, clarification, evaluation, and comparison of Tenders and recommendations for the award of a contract shall not be disclosed to Tenderers or any other persons not officially concerned with such process until the award to the successful Tenderer has been announced. Any effort by a Tenderer to influence the Employer's processing of Tenders or award decisions may result in the rejection of his Tender.

17 Clarification of Tenders

17.1 To assist in the examination, evaluation, and comparison of Tenders, the Employer may, at his discretion, ask any Tenderer for clarification of his Tender, including breakdowns of unit rates. The request for clarification and the response shall be in writing or by cable, but no change in the price or substance of the Tender shall be sought, offered, or permitted.

17.2 Subject to sub-clause 17.1, no Tenderer shall contact the Employer on any matter relating to its Tender from the time of the Tender opening to the time the contract is awarded. If

the Tenderer wishes to bring additional information to the notice of the Employer, it should do so in writing.

- 17.3 Any effort by the Tenderer to influence the Employer in the Employer's Tender evaluation, Tender comparison or contract award decisions may result in the rejection of the Tenderers' Tender.

18. Examination of Tenders and determination of responsiveness

- 18.1 Prior to the detailed evaluation of Tenders, the Employer will determine whether each Tender (a) meets the eligibility criteria defined in Clause 2; (b) has been digitally signed; (c) is accompanied by the required earnest money deposit and; (d) is substantially responsive to the requirements of the Tender documents.
- 18.2 A substantially responsive Tender is one which conforms to all the terms, conditions, and specifications of the Tender documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality, or performance of the Works; (b) which limits in any substantial way, inconsistent with the Tender documents, the Employer's rights or the Tenderer's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other Tenderers presenting substantially responsive Tenders.
- 18.3 If a Tender is not substantially responsive, it will be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the nonconforming deviation or reservation.

19 Correction of errors

The Tenderer can do Modifications before submitting their bids online only.

20. Evaluation and comparison of Tenders

- 20.1 The Employer will evaluate and compare only the Tenders determined to be substantially responsive in accordance with Clause 18.
- 20.2 The Employer reserves the right to accept or reject any variation, deviation, or alternative offer. Variations, deviations, and alternative offers and other factors which are in excess of the requirements of the Tender documents or otherwise result in unsolicited benefits for the Employer shall not be taken into account in Tender evaluation.

F. Award of Contract

21. Award criteria

- 21.1 Subject to Clause 23, the Employer will award the Contract to the Tenderer whose Tender has been determined to be substantially responsive to the Tender documents and who has offered the lowest evaluated Tender Price, provided that such Tenderer has been determined to be (a) eligible in accordance with the provisions of Clause 2, and (b) qualified in accordance with the provisions of Clause 3.

22. Employer's right to accept any Tender and to reject any or all Tenders

- 22.1 Notwithstanding Clause 21, the Employer reserves the right to accept or reject any Tender, and to cancel the Tender process and reject all Tenders, at any time prior to the award of Contract, without thereby incurring any liability to the affected Tenderer or Tenderers or any obligation to inform the affected Tenderer or Tenderers of the grounds for the Employer's action.

23. Notification of award and signing of Agreement

- 23.1 The Tenderer whose Tender has been accepted will be notified of the award by the Employer prior to expiration of the Tender validity period by, e-mail or facsimile or e-procurement portal or through letter. This letter (hereinafter and in the Conditions of Contract called the "Letter of Acceptance") will state the sum that the Employer will pay the Contractor in consideration of the execution, completion, and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Contract called the "Contract Price").

- 23.2 The notification of award will constitute the formation of the Contract, subject only to the furnishing of Security deposit in accordance with the provisions of Clause 24.
- 23.3 The Agreement will incorporate all agreements between the Employer and the successful Tenderer. It will be kept ready for signature of the successful Tenderer in the office of Employer within 30 days following the notification of award along with the Letter of Acceptance. Within 20 days of receipt, the successful Tenderer will sign the Agreement and deliver it to the Employer.
- 23.4 Upon the furnishing by the successful Tenderer of the Performance Security, the Employer will promptly notify the other Tenderers that their Tenders have been unsuccessful.

24. Security deposit

- 24.1 Within 20 days of receipt of the Letter of Acceptance, the successful Tenderer shall deliver to the Employer a Security deposit in any of the forms given below for an amount equivalent to 5% of the Contract price valid till 28 days beyond the Defect Liability Period.
- Cash or
 - Banker's cheque/Demand Draft/pay Order in favour of the **The EXECUTIVE ENGINEER (PROJECT), HUBBALLI DHARWAD MUNICIPAL CORPORATION, HUBBALLI** payable at Hubballi
- or
- Specified Small Savings Instruments pledged to the **The EXECUTIVE ENGINEER (PROJECT), HUBBALLI DHARWAD MUNICIPAL CORPORATION, HUBBALLI**
- 24.2 The security deposit if furnished in demand draft can, if requested, be converted to interest bearing securities at the cost of the contractor.
- 24.3 Failure of the successful Tender to comply with the requirements of sub-clause 24.1 shall constitute sufficient grounds for cancellation of the award and forfeiture of the Earnest money deposit.

25. Corrupt or Fraudulent practices

- 25.1 The GOK requires that the Tenderers/Suppliers/Contractors, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, GOK :
- (a) will reject a proposal for award if it determines that the Tenderer recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;
 - (b) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a GOK contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a GOK contract.
- 25.2 Furthermore, Tenderers shall be aware of the provision stated in sub-clause 43.2 of the Conditions of Contract.

26. Additional clause

- 26.1 In the case of the death of a contractor after executing the agreement / commencement of the work, his legal heir, if an eligible registered contractor willing can execute & complete the work at the accepted tender rates irrespective of the cost of the work.

SECTION 3: FORMS OF TENDER AND QUALIFICATION INFORMATION

TABLE OF FORM :

- **FORMS OF TENDER**
- **QUALIFICATION INFORMATION**
- **LETTER OF ACCEPTANCE**
- **NOTICE TO PROCEED WITH THE WORK**
- **AGREEMENT FORM**

Form of Tender

Description of the Works:

Tender

To:

**EXECUTIVE ENGINEER (PROJECT),
HUBBALLI DHARWAD MUNICIPAL CORPORATION,
HUBBALLI**

GENTLEMEN,

We offer to execute the Works described above in accordance with the Conditions of Contract accompanying this Tender for the Contract Price of (in fig)
.....(in letters)

This Tender and your written acceptance of it shall constitute a binding contract between us. We understand that you are not bound to accept the lowest or any Tender you receive. We undertake that, in competing for (and, if the award is made to us, in executing) the above contract, we will strictly observe the laws against fraud and corruption in force in India namely "Prevention of Corruption Act 1988".

We hereby confirm that this Tender complies with the Tender validity and Earnest money deposit required by the Tender documents.

We attach herewith our current income-tax clearance certificate.

Yours faithfully,

Authorized Signature:

Name & Title of Signatory: _____

Name of Tenderer _____

Address: _____

Ph No:- Land

Mobile

QUALIFICATION INFORMATION

The information to be filled in by the Tenderer hereunder will be used for purposes of computing Tender capacity as provided for in Clause 3 of the Instructions to Tenderers. This information will not be incorporated in the Contract.

1.1	Constitution or legal status of Tenderer		
	Place of Registration	(Attach copy)	
	Principal place of business:	(Attach Copy)	
1.2	Total value of works executed and payments received in the last five years (in Rs. Lakhs) Attach Certificate from Chartered Accountant		
		2012-13	
		2013-14	
		2014-15	
		2015-16	
		2016-17	

1.3 Work performed as Prime Contractor (in the same name) on works of similar nature over during the five years specified in 1.2 above.

Project Name	Name of Employer	Description of Work	Contract Number	Value of Contract in Rs. Lakh	Date of issue of work order	Specified period of completion	Actual date of completion	Remarks explaining reasons for delay in completion of work
1	2	3	4	5	6	7	8	9

1.4 Information on works for which Tenders have been submitted and works which are yet to be completed as on the date of this Tender.

(A) Existing commitments and on-going works:

Description of Work	Place & State	Contract No. & Date	Name & Date Address of Employer	Value of Contract (Rs. Lakhs)	Stipulated period of completion	Value of works remaining to be completed (Rs.Lakhs)	Anticipated date of completion
1	2	3	4	5	6	7	8

(B) Works for which Tenders already submitted:

Description of Work	Place & State	Name & Date Address of Employer	Estimated value of works (Rs. Lakhs)	Stipulated period of completion	Date when decision is expected	Remarks if any
1	2	3	4	5	6	7

- 1.5. Construction Equipment's owned by the tenderer and equipment proposed to be deployed on this contract, if awarded.
- 1.6. Reports on the financial standing of the tenderer, such a profit and loss statements and auditor's reports for the last five years.
- 1.7. Qualification and experience of the key technical and management personnel in permanent employment with the tenderer and those that are proposed to be deployed on this contract, if awarded.
- 1.8. Name, address, and telephone, telex, and fax numbers of the Tenderers' bankers who may provide references if contacted by the Employer.

Letter of Acceptance
(letterhead paper of the Employer)

_____ [date]

To:
[name and address of the Contractor]

Dear Sirs,

This is to notify you that your Tender dated _____ for execution of
.....for the Contract Price of Rupees ()
[amount in words and figures], as corrected and modified in accordance with the Instructions
to Tenderers is hereby accepted by our Agency.

You are hereby requested to furnish Security deposit in the form detailed in Clause 24.1 of ITT
for an amount of Rs. ----- within 20 days of the receipt of this letter of acceptance valid up
to 30 days from the date of expiry of Defects Liability Period i.e. up to and sign the
contract, failing which action as stated in Para 24.3 of ITT will be taken.

Yours faithfully,

Authorized Signature

Name and Title of Signatory

Name of Agency

Issue of Notice to proceed with the work
(letterhead of the Employer)

----- (date)

To
(name and address of the Contractor)

Dear Sirs:

Pursuant to your furnishing the requisite security deposit as stipulated in ITT Clause 24.1
and signing of the contract agreement for the construction of
..... at Tender Price of Rs.—
-----, you are hereby instructed to proceed with the execution of the said works in
accordance with the contract documents.

Yours faithfully,

Agreement Form

Agreement

This agreement, made the _____ day of _____, 20_____, between **The EXECUTIVE ENGINEER (PROJECT), HUBBALLI DHARWAD MUNICIPAL CORPORATION, HUBBALLI** (hereinafter called “the Employer”) of the one part and _____

_____ [name and address of contractor] (hereinafter called “the Contractor”) of the other part.

Whereas the Employer is desirous that the Contractor (hereinafter called “the Works”) and he Employer has accepted the Tender by the Contractor for the execution and completion of such Works and the remedying of any defects therein at a contract price of Rupees.....

NOW THIS AGREEMENT WITNESSETH as follows:

1. In this Agreement, words and expression shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to, and they shall be deemed to form and be read and construed as part of this Agreement.
2. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity in all aspects with the provisions of the Contract.
3. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying the defects wherein the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.
4. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz:
 - i) Letter of Acceptance;
 - ii) Notice to proceed with the works;
 - iii) Contractor’s Tender;
 - iv) Contract Data;
 - v) Conditions of contract (including Special Conditions of Contract);
 - vi) Specifications;
 - vii) Drawings;
 - viii) Bill of Quantities; and
 - ix) Any other document listed in the Contract Data as forming part of the contract.

In witness whereof, the parties thereto have caused this Agreement to be executed the day and year first before written.

The Common Seal of _____
was hereunto affixed in the presence of:
Signed, Sealed and Delivered by the said _____
in the presence of: Binding Signature of
Employer _____
Binding Signature of Contractor _____

SECTION 4: CONDITIONS OF CONTRACT

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Conditions of Contract

A. General

1. Definitions

- 1.1 Terms which are defined in the Contract Data are not also defined in the Conditions of Contract but keep their defined meanings. Bold letters are used to identify defined terms.

Bill of Quantities means the priced and completed Bill of Quantities forming part of the Tender.

Compensation events are those defined in Clause 34 hereunder.

The **Completion Date** is the date of completion of the Works as certified by the Employer in accordance with Sub Clause 38.1

The **Contract** is the contract between the Employer and the Contractor to execute, complete and maintain the Works. It consists of the documents listed in Clause 2.2 below.

The **Contract Data** defines the documents and other information which comprise the Contract.

The **Contractor** is a person or corporate body whose Tender to carry out the Works has been accepted by the Employer.

The **Contractor's Tender** is the completed Tender document submitted by the Contractor to the Employer.

The **Contract price** is the price stated in the Letter of Acceptance and thereafter as adjusted in accordance with the provisions of the Contract.

Days are calendar days; **months** are calendar months.

A **Defect** is any part of the Works not completed in accordance with the Contract.

The **Defects liability period** is the period named in the Contract Data and calculated from the Completion Date.

The **Employer** is the party who will employ the Contractor to carry out the Works.

Equipment is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works.

The **Initial Contract price** is the Contract Price listed in the Employer's Letter of Acceptance.

The **Intended Completion Date** is the date on which it is intended that the Contractor shall complete the Works. The Intended Completion Date is specified in the Contract Data. The Intended Completion Date may be revised only by the Employer by issuing an extension of time.

Materials are all supplies, including consumables, used by the contractor for incorporation in the Works.

Plant is any integral part of the Works which is to have a mechanical, electrical, electronic or chemical or biological function.

The **Site** is the area defined as such in the Contract Data.

Specification means the Specification of the Works included in the Contract and any modification or addition made or approved by the Employer.

The **Start Date** is given in the Contract Data. It is the date when the Contractor shall commence execution of the works. It does not necessarily coincide with any of the Site Possession Dates.

A **Subcontractor** is a person or corporate body who has a Contract with the Contractor to carry out a part of the work in the Contract which includes work on the Site.

A **Variation** is an instruction given by the Employer which varies the Works.

The **Works** are what the Contract requires the Contractor to construct, install, and turn over to the Employer, as defined in the Contract Data.

2. Interpretation

- 2.1 In interpreting these Conditions of Contract, singular also means plural, male also means female or neuter, and the other way around. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Employer will provide instructions clarifying queries about the Conditions of Contract.

2.2 The documents forming the Contract shall be interpreted in the following order of priority:

- (1) Agreement
- (2) Letter of Acceptance, notice to proceed with the works
- (3) Contractor's Tender
- (4) Contract Data
- (5) Conditions of Contract
- (6) Specifications
- (7) Drawings
- (8) Bill of quantities and
- (9) Any other document listed in the Contract Data as forming part of the

Contract.

3. Law governing contract

3.1 The law governing the Contract is the Laws of India supplanted by the Karnataka Local Acts.

4. Employer's decisions

4.1 Except where otherwise specifically stated, the Employer will decide contractual matters between the Employer and the Contractor.

5. Delegation

5.1 The Employer may delegate any of his duties and responsibilities to other people after notifying the Contractor and may cancel any delegation after notifying the Contractor.

6. Communications

6.1 Communications between parties which are referred to in the conditions are effective only when in writing. A notice shall be effective only when it is delivered (in terms of Indian Contract Act).

7. Subcontracting

7.1 This Clause is deleted.

8. Other Contractors

8.1 The Contractor shall cooperate and share the Site with other contractors, public authorities, utilities, and the Employer.

9. Personnel

9.1 The Contractor shall employ the technical personnel (of number and qualifications) as may be stipulated by GOK from time to time during the execution of the work. The technical staff so employed shall be available at site as may be stipulated by the Employer.

9.2 If the Employer asks the Contractor to remove a person who is a member of the Contractor's staff or his work force stating the reasons, the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the work in the Contract.

10. Employer's and Contractor's risks

10.1 The Employer carries the risks which this Contract states are Employer's risks, and the Contractor carries the risks which this Contract states are Contractor's risks.

11. Employer's risks

11.1.1 The Employer is responsible for the excepted risks which are:

- (a) rebellion, riot commotion or disorder unless solely restricted to employees of the Contractor or his Sub-Contractors arising from the conduct of the Works; or
- (b) a cause due solely to the design of the Works, other than the Contractor's design; or

12. Contractor's risks

- 12.1 All risks of loss of or damage to physical property and of personal injury and death which arise during and in consequence of the performance of the Contract other than the excepted risks are the responsibility of the Contractor.

13. Queries about the Contract Data

- 13.1 The Employer will clarify queries on the Contract Data.

14. Contractor to construct the Works

- 14.1 The Contractor shall construct the Works in accordance with the Specification and Drawings.

15. The Works to be completed by the Intended Completion Date

- 15.1 The Contractor may commence execution of the Works on the Start Date and shall carry out the Works in accordance with the program submitted by the Contractor, as updated with the approval of the Employer, and complete them by the Intended Completion Date.

16. Safety

- 16.1 The Contractor shall be responsible for the safety of all activities on the Site.

17. Discoveries

- 17.1 Anything of historical or other interest or of significant value unexpectedly discovered on the Site is the property of the Employer. The Contractor is to notify the Employer of such discoveries and carry out the Employer's instructions for dealing with them.

18. Possession of the Site

- 18.1 The Employer shall give possession of all parts of the Site to the Contractor. If possession of a part is not given by the date stated in the Contract Data the Employer is deemed to have delayed the start of the relevant activities and this will be Compensation Event.

19. Access to the Site

- 19.1 The Contractor shall allow the Employer and any person authorized by the Employer access to the Site, to any place where work in connection with the Contract is being carried out or is intended to be carried out and to any place where materials or plant are being manufactured / fabricated / assembled for the works.

20. Instructions

- 20.1 The Contractor shall carry out all instructions of the Employer which comply with the applicable laws where the Site is located.

B. Time Control

21. Program

- 21.1 Within the time stated in the Contract Data the Contractor shall submit to the Employer for approval a Program showing the general methods, arrangements, order, and timing for all the activities in the Works.
- 21.2 The Employer's approval of the Program shall not alter the Contractor's obligations. The Contractor may revise the Program and submit it to the Employer again at any time. A revised Program is to show the effect of Variations and Compensation Events.

22. Extension of the Intended Completion Date

- 22.1 The Employer shall extend the Intended Completion Date if a Compensation Event occurs or a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion Date.
- 22.2 The Employer shall decide whether and by how much to extend the Intended Completion Date within 21 days of the Contractor asking the Employer for a decision upon the effect of a Compensation Event or Variation and submitting full supporting information.

23. Delays ordered by the Employer

- 23.1 The Employer may instruct the Contractor to delay the start or progress of any activity within the Works.

24. Management meetings

- 24.1 The Employer may require the Contractor to attend a management meeting. The business of a management meeting shall be to review the progress achieved and the plans for remaining work.
- 24.2 The responsibility of the parties for actions to be taken is to be decided by the Employer either at the management meeting or after the management meeting and stated in writing to be distributed to all who attended the meeting.

C. Quality Control

25. Identifying defects

- 25.1 The Employer shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Employer may instruct the Contractor to search for a Defect and to uncover and test any work that the Employer considers may have a Defect

26. Tests

- 26.1 If the Employer instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a Defect and the test shows that it does, the Contractor shall pay for the test and any samples. If there is no Defect the test shall be a Compensation Event.

27. Correction of defects

- 27.1 The Employer shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion and is defined in the Contract Data. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.
- 27.2 Every time notice of a Defect is given, the Contractor shall correct the notified Defect within the length of time specified by the Employer's notice.

28. Uncorrected defects

- 28.1 If the Contractor has not corrected a Defect within the time specified in the Employer's notice, the Employer will assess the cost of having the Defect corrected, and the Contractor will pay this amount.

D . Cost Control

29. Bill of Quantities (BOQ)

- 29.1 The BOQ shall contain items for the construction, installation, testing and commissioning work to be done by the Contractor.
- 29.2 The BOQ is used to calculate the Contract price. The Contractor is paid for the quantity of the work done at the rate in the BOQ for each item.

30. Variations

- 30.1 The Employer shall have power to order the Contractor to do any or all of the following as considered necessary or advisable during the progress of the work by him.
- (a) Increase or decrease of any item of work included in the Bill of Quantities (BOQ);
 - (b) Omit any item of work;
 - (c) Change the Character or quality or kind of any item of work;
 - (d) Change the levels, lines, positions and dimensions of any part of the work;
 - (e) Execute additional items of work of any kind necessary for the completion of the works; and
 - (f) Change in any specified sequence, methods or timing of construction of any part of the work.

- 30.2 The Contractor shall be bound to carry out the work in accordance with any instructions in this connection, which may be given to him in writing by the Employer and such alteration shall not vitiate or invalidate the contract.
- 30.3 Variations shall not be made by the Contractor without an order in writing by the Employer, provided that no order in writing shall be required for increase or decrease in the quantity of an item appearing in the BOQ so long as the work executed conforms to the approved drawings.
- 30.4 The Contractor shall promptly request in writing to the Employer to confirm verbal orders and the officer issuing oral instructions shall confirm it in writing within 30 days, failing which the work shall be carried out as though there is no variation. In case variation is approved it shall be accompanied by BOQ failing which the contractor shall be responsible for deviation if any. Further approval of Govt has to be obtained for the variation exceeding 5 %. (as per Go No FD4 PCL 2008 Bangalore dated 14-10-2008)

31. Payments for Variations

- 31.1 Payment for increase in the quantities of an item in the BOQ up to 25% of that provided in the Bill of Quantities shall be made at the rates quoted by the Contractor.
- 31.2 For quantities in excess of 125% of the tendered quantity of an item as given in the BOQ, the Contractor shall be paid at the rate entered in or derived from in the Schedule of Rates (applicable for the area of the work and current at the time of award of contract) plus or minus the overall percentage of the original tendered rates over the current Schedule of Rates prevalent at the time of award of contract.
- 31.3 If there is no rate for the additional, substituted or altered item of the work in the BOQ, efforts would be made to derive the rates from those given in the BOQ or the Schedule of Rates (applicable for the area of the work and current at the time of award of contract) and if found feasible the payment would be made at the derived rate for the item plus or minus the overall percentage of the original tendered rates over the current Schedule of Rates prevalent at the time of award of contract
- 31.4 If the rates for additional, substituted or altered item of work cannot be determined either as at 31.1 or 31.2 or 31.3 above, the Contractor shall be requested to submit his quotation for the items supported by analysis of the rate or rates claimed, within 7 days.
- 31.5 If the Contractor's quotation is determined unreasonable, the Employer may order the Variation and make a change to the Contract Price which shall be based on Employer's own forecast of the effects of the Variation on the Contractor's costs.
- 31.6 If the Employer decides that the urgency of varying the work would prevent a quotation being given and considered without delaying the work, no quotation shall be given and the Variation shall be treated as a Compensation Event.
- 31.7 Under no circumstances the Contractor shall suspend the work on the plea of non-settlement of rates for items falling under this Clause.

32. Submission of bills for payment

- 32.1 The Contractor shall submit to the Employer monthly bills of the value of the work completed less the cumulative amount paid previously.
- 32.2 The Employer shall check the Contractor's bill and determine the value of the work executed which shall comprise of (i) value of the quantities of the items in the BOQ completed and (ii) valuation of Variations and Compensation Events.
- 32.3 The Employer may exclude any item paid in a previous bill or reduce the proportion of any item previously paid in the light of later information.

33. Payments

- 33.1 Payments shall be adjusted for deductions for advance payments, other than recoveries in terms of the contract and taxes, at source, as applicable under the law. The Employer shall pay the Contractor within 60 days of submission of bill. The contractor shall be liable to pay liquidated damages for shortfall in progress. For progress beyond the agreed programme payment is subject to availability of the grants.

33.2 Items of works for which no rates or price has been entered in will not be paid for by the Employer and shall be deemed covered by other rates and prices in the contract.

34. Compensation events

34.1 The following are Compensation events unless they are caused by the Contractor:

- (a) The Employer does not give access to a part of the Site by the Site Possession Date stated in the Contract Data.
- (b) The Employer orders a delay or does not issue drawings, specifications or instructions required for execution of works on time.
- (c) The Employer instructs the Contractor to uncover or to carry out additional tests upon work which is then found to have no Defects.
- (d) The Employer gives an instruction for dealing with an unforeseen condition, caused by the Employer, or additional work required for safety or other reasons.
- (e) The effect on the Contractor of any of the Employer's Risks.
- (f) The Employer unreasonably delays issuing a Certificate of Completion.
- (g) Other Compensation Events listed in the Contract Data or mentioned in the Contract.

34.2 If a Compensation Event would cause additional cost or would prevent the work being completed before the Intended Completion Date, the Contract Price shall be increased and/or the Intended Completion Date is extended. The Employer shall decide whether and by how much the Contract Price shall be increased and whether and by how much the Intended Completion Date shall be extended.

34.3 As soon as information demonstrating the effect of each Compensation event upon the Contractor's forecast cost has been provided by the Contractor, it is to be assessed by the Employer and the Contract Price shall be adjusted accordingly. If the Contractor's forecast is deemed unreasonable, the Employer shall adjust the Contract Price based on Employer's own forecast. The Employer will assume that the Contractor will react competently and promptly to the event.

34.4 The Contractor shall not be entitled to compensation to the extent that the Employer's interests are adversely affected by the Contractor not having given early warning or not having cooperated with the Employer.

35. Tax

35.1 The rates quoted by the Contractor shall be deemed to be inclusive of the sales tax , labour welfare cess at 1.00% and other taxes that the Contractor will have to pay for the performance of this Contract. The Employer will perform such duties in regard to the deduction of such taxes at source as per applicable law

36. Liquidated damages

36.1 The Contractor shall pay liquidated damages to the Employer at the rate per day stated in the Contract Data for each day that the Completion Date is later than the Intended Completion Date (for the whole of the works or the milestone as stated in the Contract Data). The total amount of liquidated damages shall not exceed the amount defined in the Contract Data. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages does not affect the Contractor's liabilities.

36.2 If the Intended Completion Date is extended after liquidated damages have been paid, the Employer shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment of bill.

37. Cost of Repairs:

37.1 Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Defects Correction periods shall be remedied by the Contractor at the Contractor's cost if the loss or damage arises from the Contractor's acts or omissions.

E. Finishing the Contract

38. Completion

- 38.1 The Contractor shall request the Employer to issue a Certificate of Completion of the Works and the Employer will do so upon deciding that the Work is completed.

39. Taking over

- 39.1 The Employer shall take over the Site and the Works within seven days of issuing a certificate of Completion.

40. Final account

- 40.1 The Contractor shall supply to the Employer a detailed account of the total amount that the Contractor considers payable under the Contract before the end of the Defects Liability Period. The Employer shall issue a Defect Liability Certificate and certify any final payment that is due to the Contractor within 90 days of receiving the Contractor's account if it is correct and complete. If it is not, the Employer shall issue within 90 days a schedule that states the scope of the corrections or additions that are necessary. If the Final Account is still unsatisfactory after it has been resubmitted, the Employer shall decide on the amount payable to the Contractor and make payment within 60 days of receiving the Contractor's revised account.

41. As built drawings

- 41.1 If "as built" Drawings and/or operating and maintenance manuals are required, the Contractor shall supply them by the dates stated in the Contract Data.
- 41.2 If the Contractor does not supply the Drawings by the dates stated in the Contract Data, or they do not receive the Employer's approval, the Employer shall withhold the amount stated in the Contract Data from payments due to the Contractor.

42. Termination

- 42.1 The Employer may terminate the Contract if the other party causes a fundamental breach of the Contract.
- 42.2 Fundamental breaches of Contract include, but shall not be limited to the following:
- (a) the Contractor stops work for 45 days when no stoppage of work is shown on the current Program and the stoppage has not been authorized by the Employer;
 - (b) **DELETED**
 - (c) The Contractor becomes bankrupt or goes into liquidation other than for a reconstruction or amalgamation;
 - (d) **DELETED**;
 - (e) the Employer gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Employer;
 - (f) the Contractor does not maintain a security which is required;
 - (g) the Contractor has delayed the completion of works by the number of days for which the maximum amount of liquidated damages can be paid as defined in the Contract data; and
 - (h) if the Contractor, in the judgment of the Employer has engaged in corrupt or fraudulent practices in competing for or in the executing the Contract.
For the purpose of this paragraph: "corrupt practice" means the offering, giving, receiving or soliciting of any thing of value to influence the action of a public official in the procurement process or in contract execution. "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Borrower, and includes collusive practice among Tenderers (prior to or after Tender submission) designed to establish Tender prices at artificial non-competitive levels and to deprive the Borrower of the benefits of free and open competition."

- 42.3 When either party to the Contract gives notice of a breach of contract to the Employer for a cause other than those listed under Sub Clause 42.2 above, the Employer shall decide whether the breach is fundamental or not.
- 42.4 Notwithstanding the above, the Employer may terminate the Contract for convenience.
- 42.5 If the Contract is terminated the Contractor shall stop work immediately, make the Site safe and secure and leave the Site as soon as reasonably possible.

43. Payment upon Termination

- 43.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Employer shall prepare bill for the value of the work done less advance payments received up to the date of the bill, less other recoveries due in terms of the contract, less taxes due to be deducted at source as per applicable law and less the percentage to apply to the work not completed as indicated in the Contract Data. Additional Liquidated Damages shall not apply. If the total amount due to the Employer exceeds any payment due to the Contractor the difference shall be a debt payable to the Employer.
- 43.2 If the Contract is terminated at the Employer's convenience or because of a fundamental breach of Contract by the Employer, the Employer shall prepare bill for the value of the work done, the reasonable cost of removal of Equipment, repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works and less advance payments received up to the date of the certificate, less other recoveries due in terms of the contract, and less taxes due to be deducted at source as per applicable law and make payment accordingly.

44. Property

- 44.1 All materials on the Site, Plant, Equipment, Temporary Works and Works are deemed to be the property of the Employer, if the Contract is terminated because of a Contractor's default.

45. Release from performance

- 45.1 If the contract is frustrated by any event entirely outside the control of either the Employer or the Contractor the Employer shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which commitment was made.

General Conditions:

- (a) 1% of the Tendered amount will be deducted towards "Labour Welfare Fund".
- (b) The Tenderer has to produce all the relevant Documents as indicated in the Bid Document in originals during the opening of Bid "Mandatory". This is in addition to Uploading all the relevant Documents in the e-procurement portal. If the Originals are not submitted, the Tender will be rejected.
- (c) All other documents which are required to be submitted are to be uploaded in the e-Procurement Portal in General Documents section, while electronically submitting the bid. If any of the Documents as desired are not submitted the Tender will be rejected.

F. Special Conditions of Contract

General: The special conditions are supplementary instructions to the tenders and shall form part of the contract.

- 1 Data to be furnished by the Bidder: The Bidder shall submit the following information to the Engineer-in-charge.

Proposed constructions Programme and time schedule showing sequence of operations within 15 days of receipt of notice to proceed with the work in pursuance of the conditions of contract.

- 2 Action when the progress of any crucial item of work is unsatisfactory: If the progress of a crucial item of work, which is important for timely completion of work is unsatisfactory, the Engineer-in-charge shall notwithstanding that the general progress of work is satisfactory, after giving the Bidder 15 days' notice in writing get the said work executed by employing other means including other labour / Bidder etc. and the Bidder will have no claim for compensation for any loss sustained by him owing to such action.
- 3 It is responsibility of the bidder to make arrangement for storing, stacking all the materials procured for the work at his own cost and expenses. The rate quoted shall bear all these expenses.
- 4 Inspection and Tests: Except as otherwise provided in here of all material and workmanship if not otherwise designated by the specifications shall be subject to inspection, examination and test by the Engineer-in-Charge at any and all times during manufacture and/or construction and at any/all places where such manufacture or constructions are carried on. The Engineer-in charge shall have the right to reject defective materials and workmanship or require its corrections. Rejected workmanship shall be satisfactorily replaced with the proper material without charge thereof and the Bidder shall properly segregate and remove the rejected material from the premises. If the Bidder fails to proceed at once with the replacement of the rejected material and/or the construction of defective workmanship the Engineer-in charge may replace such material and/or correct such workmanship and charge the cost thereof to the Bidder.
- 5 The Bidder shall be liable for replacement of defective work up to the time of completion of DLP in accordance with the conditions of contract of all work to be done under the contract. The DLP shall be extended till the time the defect is corrected by the Contractor and also the validity of Performance security submitted shall also be extended with respect to ITT 24.1. The Bidder shall furnish promptly without additional charge all facilities, labour and material necessary for the safe and convenient inspection and tests that may be required by the Engineer-in-Charge. All inspections and tests by the departments shall be performed in such a manner as to not unnecessarily delay the work. Special full size and performance test shall be charged with any additional cost of inspection when materials and workmanship are not kept ready by the Bidder at the time of inspection.
- 6 Removal of temporary work, Plant & Surplus materials: Prior to final acceptance of the completed work, but excepting as otherwise expressly directed or permitted in writing, the Bidder shall, at his own expenses remove from the site and dispose of all the temporary structures including buildings, all plant and surplus materials, and all rubbish and debris for which he is responsible to the satisfaction of Engineer-in-Charge.
- 7 Possession prior to completion: The Engineer-in-Charge shall have the right to take possession of or use any completed part of the work. Such possession or use shall not be deemed as an acceptance of any work not completed in accordance with the contract.
- 8 Damage to works: The works whether fully completed or incomplete, all the materials, machinery, plants, tools, temporary building and other things connected there with shall remain at the risk and in the sole charge of the Bidder until the completed work has been delivered to the Engineer-in-Charge and till completion certificate has been obtained from the Engineer in-charge. Until such delivery of the completed work, the Bidder shall at his own cost take all precautions reasonably to keep all the aforesaid works, materials, machinery, plants, temporary buildings and other things connected there with free from any loss, damages and in the event of the same or any part thereof being lost or damaged, he shall forthwith reinstate and make good such loss or damages at his own cost.

- 9 Climatic Conditions: The Engineer-in-Charge may order the Bidder to suspend any work that may be subject to damage by climatic conditions and no claims of the Bidder will be entertained by the department on this account.
- 10 As per the Ministry of Environment and Forest Guidelines 2010 and Ministry of Urban Development notifications, the Site area shall be protected from dust by fixing Green Fencing around the Construction site area.
- The Contractor is instructed to strictly adhere to the following at his own cost.
- a) Supply and Fixing Green barriers and wind breaking walls around their sites.
 - b) Cover tarpaulin on scaffolding around area of construction,
 - c) Do not store construction material, particularly sand, on any part of the street, roads in any colony,
 - d) Dust emissions from construction site are controlled.
 - e) Sprinklers should be compulsorily used at the site and Wet jets in grinding and stone cutting must be used.
- 11 Safety regulations: While carrying out this work, the Bidder will ensure compliance of all safety regulations as provided in the Safety Code (Annexure - D). The bidder will be responsible for safety of the works.
- 12 The Bidder will make his own arrangement: for supply of Water, Light & Power for his works and labour camps etc.: The Bidder will make his own arrangement for supply of water, light and power for his works and labour camps etc. The department will not entertain any claim what so ever for any failure or break down etc. in supply of electricity to the Bidder.
- 13 Interference with other Bidders: The Bidder must not interfere with other Bidders who may be employed simultaneously or otherwise by the department at the Site. He will at no time engage departmental labour or that of other Bidders without the written permission of the Engineer-in-Charge. Bidder is fully responsible for cause of damages of the adjoining works of different works at site and the same cost of rectification of damages shall be recovered from the Bidder as per Engineer In-charge instructions.
- 14 Regulations and bye laws: The Bidder shall conform to the regulations, bye-laws any other statutory rules made by any local authorities or by the Government and shall protect and indemnify HDSCL, against any claim or liability arising from or based on the violation of any such laws, safety, theft, ordinance, regulation, orders, decrees etc.
- 15 Site Order Book: A site order book shall be kept in the departmental office at the site of the work. As far as possible all orders regarding the works are to be entered in this book. All entries therein shall be signed by the departmental officers in direct charge of the work and the Bidder or his representatives. Bidders or his representative shall be bound to take note of all instructions meant for the Bidder as entered in the site order book without having to be called for separately to note them. The Engineer-in-charge shall submit periodically copies of the remarks of the site order book to the MD, HDSCL for record and to the Bidder for compliance and report.
- 16 Rights of other Bidders and persons: If, during the progress of the work covered by this contract, it is necessary for other Bidders or persons to do work in or about the site of work, the Bidder shall afford such facilities, as the Engineer-in-charge may require.
- 17 **ADVANCES TO BIDDERS:**
No Advance either Mobilization or Secured amount will be paid to the bidder.
- 18 Escalation: No escalation whatsoever shall be paid.
- 19 Scope of project : The lump sum contract shall comprise execution of work in accordance with the BoQ provision including, Testing , Commissioning, Operation and Maintenance of the works for 5 years including provision of all labour, materials, constructional plants, transport and all works of a temporary or permanent nature required for such works as indicated above in so far as is necessary for providing the same and is specified in the contract.

- 20 Open foundations: The Bidder's tender should include provision for coffer dam, diversion drain or stream and bailing out of water or dewatering foundations (if any) and shoring etc. No claims for any additional payments shall be entertained.
- 21 Ground water level variation: It is liable to vary. No claim due to variation of low water level shall be entertained.

22 Labour :

The Contractor shall, unless otherwise provided in the Contract, make his own arrangements for the engagement of all staff and labour, local or other, and for their payment, housing, feeding and transport.

The Contractor shall, if required by the Employer, deliver to the Employer a return in detail, in such form and at such intervals as the Employer may prescribe, showing the staff and the numbers of the several classes of labour from time to time employed by the Contractor on the Site and such other information as the Employer may require.

23 Compliance with labour regulations:

During continuance of the contract, the Contractor and his sub contractors shall abide at all times by all existing labour enactments and rules made there under, regulations, notifications and bye laws of the State or Central Government or local authority and any other labour law (including rules), regulations, bye laws that may be passed or notification that may be issued under any labour law in future either by the State or the Central Government or the local authority. The Contractor shall keep the Employer indemnified in case any action is taken against the Employer by the competent authority on account of contravention of any of the provisions of any Act or rules made there under, regulations or notifications including amendments. If the Employer is caused to pay or reimburse, such amounts as may be necessary to cause or observe, or for non-observance of the provisions stipulated in the notifications/bye laws/Acts/Rules/regulations including amendments, if any, on the part of the Contractor, Employer shall have the right to deduct any money due to the Contractor including his amount of security deposit. The Employer shall also have right to recover from the Contractor any sum required or estimated to be required for making good the loss or damage suffered by the Employer.

The employees of the Contractor and the Sub-Contractor in no case shall be treated as the employees of the Employer at any point of time.

24 Protection of Environment:

The contractor shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods of operation. During continuance of the contract, the contractor and his sub-contractors shall abide at all times by all existing enactments on environmental protection and rules made there under, regulations, notifications and bye-laws of the State or Central Government, or local authorities and any other law, bye-law, regulations that may be passed or notification that may be issued in this respect in future by the State or Central Government or the local authority.

25 Royalty charges shall be recovered as per the prevailing rates issued by the department of mines & geology

26 AS per GO No LD300 LET 2006 Bangalore dated 18-01-2007 Cess at the rate of 1% of cost of construction will be deducted from the Bill towards building and other construction workers welfare fund.

27 All the works are to be carried out as per the standard specifications issued from time to time by RIS & as per the relevant I.S. Code.

- 28 In the case of death of a contractor after executing / commencement of the work, his legal heir, if an eligible registered contractor and willing can execute and complete the work at the accepted tender rates irrespective of the cost of work.
- 29 The Tenderer has to produce all the relevant Documents as indicated in the Bid Document in originals during the opening of the Technical Bid " Mandatorily "
- 30 If any of the Documents as desired are not submitted the Tender will be rejected

SECTION 5: CONTRACT DATA

Items marked "N/A" do not apply in this Contract.

	Clause Reference
The following documents are also part of the Contract:	
The Employer is: THE EXECUTIVE ENGINEER (PROJECT), HUBBALLI DHARWAD MUNICIPAL CORPORATION, HUBBALLI	[1.1]
Name of authorized Representative: THE EXECUTIVE ENGINEER (PROJECT), HUBBALLI DHARWAD MUNICIPAL CORPORATION, HUBBALLI	
The name and identification number of the Contract is "Providing Rainwater Harvesting System-HDMC area"	[1.1]
Identification no. DMA/2017-18/OW/WORK_INDENT68466 The work consists of Please refer Section 6 – Scope and Specicificaiton	
The start date shall be the date of issue of notice to proceed with the work	[1.1]
The Intended Completion Date for the whole of the Works is 3 months from the date of issue of Notice to Proceed.	[15, 22]
The following documents also form part of the Contract	[2.2]
The Site Possession Date is date of issue of Notice to Proceed	[18]
The Site is located within Hubballi and identified in drawing no (Please refer e-portal for detailed drawing)	[1.1]
The Defects Liability Period is 365 days.	[27]
The liquidated damages for the whole of the works are Rs. 0.10% of contract price per day	[36]
The maximum amount of liquidated damages for the whole of the works is ten percent of final contract price.	[36]
The date by which "as-built" drawings (in scale 1:100) in 2 sets are required is within 30 days of issue of certificate of completion.	[41]
The amount to be withheld for failing to supply " as-built" drawings or supply of Operation and Maintenance Manuals by the date required is 0.5% of the Contract Price.	[41]
The following events shall also be fundamental breach of the contract:	[42.2]
1. The contractor has contravened Sub-clause 7.1 and lause 9 of CC.	
The percentage to apply to the value of the work not completed representing the Employer's additional cost for completing the works shall be 30 percent.	[43.1]

SECTION 6: SCOPE OF SPECIFICATIONS

WORK TO BE EXECUTED AS PER NATIONAL BUILDING CODE & AS PER RELEVANT MORTH, IRC, & KSRRB DETAILED SPECIFICATIONS AND RELEVANT BUREAU OF INDIAN STANDARD SPECIFICATION

BACKGROUND

As the part of the Smart City plan HDSCL invites bid from eligible bidders for “**constructing of Rainwater Harvesting system - Recharge Pits and Recharge trenches**” at different places in the HUBBALLI-DHARWAD Municipal Corporation (HDMC) main office area Commissioners office, commissioners bungalow, Corporation hospital, Solid waste cell, Electrical office, and other locations like Mini Vidhan Soudha and Lammington School in the City of Hubballi-Dharwad.

SCOPE OF WORK

About Recharge Pits and Recharge Trench

Recharge pits are small pits of any shape, rectangular, square or circular, constructed with brick or stone masonry wall with weep hole at regular interval, pit can be covered with perforated covers. Bottom of recharge pit is filled with filter media like fine aggregates, coarse aggregates and boulders. The capacity of the pit is designed on the basis of catchment area, rainfall intensity and recharge rate of soil. The dimensions of the pit may be of 1 to 2 m length, 1 to 2 m width and 1 to 3 m deep depending on the depth of pervious strata. These pits are suitable for recharging of shallow aquifers, and small catchments.

Recharge pits proposed are of dimensions of 1.25m X1.25m X1.8m. It consists of a slotted casing pipe of 15m depth with coir wrapping along with the PVC recharge bore pipe of 150mm diameter with brick walls. 500mm thick layer of sand, 500mm layer of coarse aggregate and 500mm layer of boulders is placed above the slotted pipe. Water from the individual plot is collected through the inlet in these pits and recharged into the ground.

Recharge trench is a trench excavated on the ground and refilled with porous media like coarse aggregates, and boulder or brickbats. It is usually made for harvesting the surface runoff. Many houses will not have bore wells or wells. One can utilize the open space available at any corner of the plot for the permeation of water.

A trench of 1m width, 1 m depth and 10-15m length can be prepared depending up on the availability of the space. Boulders are placed up to 400 mm at the bottom of the trench. The coarse aggregate layer of 400-500mm is placed over the boulders. The bricks have to be laid on the boundary of the trench to avoid falling of earth in the trench. All the Trenches are proposed open but only at lawn area of Commissioners office, its covered with precast concrete slab with perforations due to safety reasons.

Location of Recharge Pits and Recharge Trench;

LOCATION WISE REQUIREMENT OF RECHARGE PIT		
Sl. no	Location	No. of Recharge Pit
I	HDMC Main Office area	19
1	Commissioners Office Lawn area	2
2	Near Solid waste cell (SE office)	1
3	Adjacent Electrical office	1
4	Commissioners Bungalow	2
5	Corporation Hospital	1
6	Near ELSR	2
7	Park area adjacent to Commissioners Office	3
8	Lawn area behind Commissioners Office	3
9	Lawn area of Library	3

LOCATION WISE REQUIREMENT OF RECHARGE PIT		
Sl. no	Location	No. of Recharge Pit
10	Children library	1
II	Mini Vidhan Soudha	1
III	Lammington School	2
Total (I + II +III)		

LOCATION WISE REQUIREMENT OF RECHARGE TRENCH		
Sl. no	Location	Recharge trench (m)
1	Commissioner Office Lawn area	21.2
2	Park Adjacent to Commissioner Office	143.0
3	Lawn area Behind Commissioner Office	116.2
4	Corporation Hospital Area	167.4
5	Library	74.3
Total		522.0

TECHNICAL SPECIFICATIONS

EARTHWORK

SCOPE OF WORK

The work covered by this section of the specifications consists of furnishing all plant, labor, equipment, appliances and materials and in performing all operations in connection with earthworks of all underground supplies and services and for all structural units, stock piling, of specifications and applicable drawings, and subject to terms and conditions of the contract. The scope of this section of specifications is also covered with detailed specifications as laid down herein.

GENERAL

The Contractor shall acquaint himself with the nature of the ground, existing structures, foundations and subsoil which might be encountered during excavation of earthworks. The Employer does not guarantee or warrant in any way that the material to be found in the excavation will be similar in nature to that of any samples which may have been exhibited or indicated in the report, drawings or in any other contract documents or to material obtained from boring or trail holes. The contractor shall be deemed to have made local and independent inquiries and shall take the whole risk of the nature of the ground subsoil or material to be excavated or penetrated and the Contractor shall not be entitled to receive any extra or additional payment nor to be relieved from any of his obligations by reasons of the nature of such ground subsoil or material.

All excavations, cutting, and fills shall be constructed to the lines, levels and gradients specified with any necessary allowance for consolidation, settlement and drainage so that at the end of the period of maintenance the ground shall be at the required lines, levels and gradients.

During the course of the Contract and during the period of maintenance any damage or defects in cuttings and fills, structures and other works, caused by slips, falls or basins or any other ground movement due to the Contractor's negligence shall be made good by the Contractor at this own cost.

SITE PREPARATION

The Contractor shall construct and maintain accurate bench marks so that the lines and levels can be easily checked by the Project Engineer. The Contractor shall Construct and maintain

such ditches, in addition to those shown on the plans, as will adequately drain areas under construction.

The Contractor shall perform a joint survey with the Project Engineer's representative of the area where earthwork is required, plot the ground levels on the drawings and obtain approval from him before starting the earthwork.

The Contractor shall Construct and maintain such ditches, in addition to those shown on the plans, as will adequately drain areas under construction.

The Contractor shall perform a joint survey with the Project Engineer's representative of the area where earthwork is required, plot the ground levels on the drawings and obtain approval from him before starting the earthwork.

EXCAVATIONS

Excavation shall include the removal of all material of every name and nature. Excavations shall be carried out in accordance with excavation plans and sections shown on the Drawings and as directed by the Project Engineer.

The major portion of excavations shall be carried out by mechanical excavators and excavated materials disposed off to stock on spoil as per drawings or as directed by the Project Engineer. The excavation which cannot be done by mechanical means including leveling, trimming and finishing to the required levels and dimensions shall be done manually. The material suitable for fill and back fill shall be stock piled within the free haulage limit of the 200m of the works.

The Contractor shall give reasonable notice that he intends to commence any excavation and he shall submit to the Project Engineer full details of his proposals. The Project Engineer may require modifications to be made if he considers the Contractor's proposals to be unsatisfactory and the Contractor shall give effect to such modifications but shall not be relieved of his responsibility with respect to such work.

For major excavations, the Contractor shall submit for the prior approval of the Project Engineer full details and drawings showing the proposed method of supporting and strutting etc. The design, provisions construction, maintenance, and removal of such works shall be the responsibility of the Contractor and all cost in these respects shall be included in the unit rates for the permanent work.

The Contractor's attention is drawn particularly to his obligations under the general conditions in respect of those works which are in close proximity to existing buildings.

The Contractor shall preserve the complete excavation from damage from slips and earth movements, ingress of water from any source what so ever and deterioration by exposure to the sun and the effects of the weather.

All excavation of every description, in whatever material encountered shall be performed to the elevations and dimensions shown on the drawings in such a manner as to avoid interruption to work in other parts of the site. The Contractor shall be responsible for injury to the permanent works caused by excavation on other parts of the works.

Excavation shall extend to sufficient distance from walls and footing to allow for placing and removal of forms, installations of services and for inspection, except where the concrete for walls and footings is authorized to be deposited directly against excavated surfaces.

All excavations in foundations shall be taken to 150mm and shall be trimmed carefully to a smooth and level surface, immediately after trimming to the final elevation a layer of building concrete shall be placed to the thickness shown on the drawings. All excavations for foundations which have been trimmed and disturbed shall be compacted and covered by concrete by the end of the day. It is specifically brought to the notice of the Contractor that any excavation taken down to the trimmed elevation which is left overnight or for any length of time thereafter, uncovered by the blinding concrete, shall be required to be trimmed to such lower elevation as directed by the Project Engineer and any extra work or any consequent increase in the quantities caused thereby shall not be paid to the Contractor.

No excavation shall be refilled nor any permanent work commenced until the foundation has been inspected by the Project Engineer and his permission to proceed given. If excavation for sub-structures are carried below the required level, as shown in the drawings or as directed by the Project Engineer, the surplus depth shall be filled in with concrete of same grade as of blinding concrete at the sole cost of the Contractor.

All excavation shall be performed in the dry. The placing of blinding concrete, placing of reinforcement and casting of the permanent works in the excavation shall be carried out in the dry and the Contractor shall have sufficient equipment for this purpose. Adequate precautions shall be taken to prevent any corrosion due to undercutting from underneath the previously constructed adjoining foundations.

Existing utility lines to be retained, as well as utility lines constructed during excavation and backfilling, and if damaged, shall be required to be repaired by the Contractor at his expense. Any existing utility lines which are not known to the Contractor in sufficient time to avoid damage, if inadvertently damaged during excavation, shall be repaired by the Contractor and adjustment in payment will be made as approved by the Project Engineer. When utility lines which are to be removed, are encountered within the area of operations the Contractor shall notify the Project Engineer in ample time for necessary measures to be taken to prevent interruption of the service.

Excavated material suitable for use as filling material shall be stock piled within the free haulage limit 200m of works as directed by the Project Engineer. This stock piled material shall be transported back to places requiring fill or backfill. Surplus or material unsuitable for use as filling shall be disposed of by the Contractor at locations approved by the Project Engineer within specified free haulage limit.

The Contractor shall make independent enquiries and perform and make independent observations to ascertain the water table in the areas of excavations during the period when the construction works are in progress. The Contractor shall take whole risk of any nature for fluctuation of the water table from his own findings. The Employer is not bound in any way and shall not be responsible for any information given by him or any information, observations or values obtained from his reports, drawings and documents.

Excavation for Recharge pits, Recharge trenches shall be taken out to the levels and dimensions as the Project Engineer may direct.

Before starting the excavations, the Contractor shall ensure the correct alignment of the recharge trenches and location of recharge pits on the ground, the depth and width of excavation of the trench and pits, all in accordance with the drawings and instructions of the Project Engineer.

The Contractor at his cost shall provide to the satisfaction of the Project Engineer all timbering, approved supports and shores and bracings to the sides of the excavated trench and foundations in such a manner to secure the sides of the trench and excavations from falling or adverse movement. All responsibility connected with such shoring shall rest with the Contractor. Adequate clearance / working space on both sides of the structure/pipe line shall be provided for which no payment shall be made.

Without the written permission of the Project Engineer no more than 50.0m the trench shall be opened in advance of the completed pipe line. The bottom of all excavations shall be carefully leveled. Any pockets of soft or loose material in the bottom of the pits and trenches shall be removed and the cavities so formed filled with lean concrete at the Contractor's expense.

The Project Engineer may require the Contractor to excavate below the elevations shown on the drawings or he may order him to step above the elevations shown depending upon the suitable foundation material encountered.

If for any reasons, the levels grades or profiles of the excavations are changed adversely, the Contractor shall at his own cost be liable to bring the excavations to the required levels and profiles as shown on the drawings or as directed by the Project Engineer.

EXCAVATION TOLERANCES

Excavation shall be performed within the tolerances for excavation limits indicated on the drawings. Where no tolerance limits are indicated excavation shall be performed to tolerances established by the Project Engineer as accepted for the design and type of work involved.

MEASUREMENT

Except otherwise specified herein or elsewhere in the Contract documents, no measurement and payment will be made for the under mentioned specified works related to the relevant

items of the bill of quantities. The cost thereof shall be deemed to have been included in the quoted unit rate of the respective items of the bill of quantities.

Quantities of excavation shall be calculated / measured from the pre-work levels of natural ground taken jointly by the Contractor and the Project Engineer before Commencement of the work. The quantities set out for excavation and its subsequent disposal shall be deemed to be the bulk before excavating and no allowance shall be made for any subsequent variations in bulk or for any extra excavation unless otherwise shown on the drawings quantities of excavation shall be measured on the basis of vertical excavations required for the nominal concrete dimensions of the structural members of foundations. Lean concrete shall not be construed as structural concrete.

Quantities of excavation for service line trenches shall be measured for payment on the basis of vertical excavation faces for the specified width as shown on the drawings. Measurement for acceptably completed excavation works shall be made on the basis of number of cubic meter of material excavated for foundation and service trenches as shown on the drawings or as directed by the Consultant's Project Engineer.

PAYMENT

Payment will be made for acceptable measured quantity of excavation on the basis of unit rate per cum, quoted in the bill of quantities and shall constitute full compensation for all the works related to the item.

BACK FILLING

After completion of foundation footing, foundation, walls, and other construction below the elevation of the final grades and prior to backfilling, forms shall be removed and the excavation shall be cleaned of trash and debris.

The backfilling shall include filling around the foundations, trenches.

Filling shall be approved selected material from excavation or other predominantly granular material and free from slurry, mud, organic or other unsuitable matter and capable for compaction by ordinary means.

The excavated material if found suitable shall be stock piled within the free haulage limit of the site of the works. This material shall be used for backfilling if approved by the project engineer and shall be transported by the contractor any where required for the purpose of backfilling work in this contract.

The contractor shall provide the approved quality fill and backfilling material as required to complete the fill/backfilling work. Filling in trenches and foundation shall be placed in 200 mm layers and compacted at optimum moisture content by mechanical means or other means as approved by the project engineer.

Fill in around trenches and pits shall be carefully placed with fine material to cover the completely before the normal infilling is done.

Material for back filling shall be as approved by the project engineer and shall be placed in layers of 150 mm measured as compacted material and saturated with sufficient water and compacted to produce in-situ density not less than 95% of the maximum density at optimum moisture content, achieved in test no.15 of IS 1377:1975 or similar clause of relevant is code.

All filled areas shall be left neat, smooth and well compacted with the top surface consisting of the normal site surface soil unless otherwise directed.

Depending on the depth of fill the project engineer may instruct increased thickness of successive layer to be placed.

Fill shall not be placed against foundation walls prior to approval by the project engineer. Fill shall be brought up evenly on each side of the walls as far as practicable. Heavy equipment for spreading and compacting the fill shall not be operated closer to the wall than a distance equal to the height of the fill above the top of footing.

Depending on the depth of fill the project engineer may instruct increased thickness of successive layer to be placed.

Fill shall not be placed against foundation walls prior to approval by the project engineer. Fill shall be brought up evenly on each side of the walls as far as practicable. Heavy equipment for spreading and compacting the fill shall not be operated closer to the wall than a distance equal to the height of the fill above the top of footing.

In case the contractor is instructed to arrange for the fill material the quality of the fill material will be subject to the approval of the project engineer. The project engineer shall require the contractor to carry out various tests of the fill material. All such tests shall be made at an approved laboratory at the cost of the contractor. Once a material from a specific source has been approved, the material for the same quality and from that source only shall be used. Any fill material from borrow pits which has not been approved or the quality of which differs from the approved material shall be rejected out rightly. The project engineer reserves the right to order removal of any such materials brought to the site of works at his discretion at contractor's expense. In order to ensure satisfactory compaction, it will be necessary to carry out, depending upon the type of material, particle size distribution tests, determination of organic content tests, maximum and minimum density tests and determination of optimum moisture content for the filling material.

The method of compaction, namely type of compactor, type of roller, weight of roller and number of passes proposed by the contractor for any particular fill material shall be subject to the approval of the project engineer after completion of satisfactory field tests, subsequent to the laboratory analyses, using the materials and equipment proposed to be used for the earth work in conditions similar to those likely to be encountered during construction.

The final selection of the soil moisture content, the thickness of layers, the type of compaction equipment and the number of passes shall be decided after these tests, which shall be conducted at contractor's expense.

Having established the method of compaction to be used, no departure from this approved method shall be permitted without the prior approval of the project engineer. Adequate control of the fill and compacting operations shall be ensured by in-situ density tests and in order to obtain significant results, not less than two measurements shall be carried out per one hundred square meters of area compacted. The frequency of tests shall be determined on site and may be varied at the discretion of the project engineer. Compaction shall not be less than 95% in-situ density with respect to the maximum density, at optimum moisture content.

The exact thickness of layers and the method of placing and compacting the fill shall be determined by the field tests, as stated above, but not withstanding the results of these trails, fill shall not be placed in layers exceeding 200mm in thickness. In order to maintain control of the thickness of layers, timber profiles shall be used wherever feasible. The travelers of such profiles for each layer of fill shall be checked by the supervisory staff of the project engineer. The contractor shall provide adequate supply of water and sufficient capacity of mechanical water carriers to ensure uniform and uninterrupted operation of compaction. The project engineer may forbid the contractor to proceed with placing and/or compaction of fill and/or order removal and re-compaction of such fill when he finds that the contractor has insufficient or defective equipment or that the fill has been improperly laid and/or compacted.

If it is found necessary to alter the moisture content of the fill material in any way, then very strict control shall be exercised over the wetting and/or the drying process and frequent moisture content tests.

The fill material should be well graded non-cohesive and nearly silt-free (silt content between 5 to 10 percent) salt free and free of organic materials (less than 2%). It should also be free of stones larger than 100 mm. Maximum dimension. It should be of such nature and characteristics that it can be compacted to the specified densities in reasonable length of time. It shall be free of plastic clays, of all materials subject to decay, decomposition or dissolution and or cinder or other material which corrode piping and other metals.

TOLERANCES

The stabilization of compacted backfill/fill surfaces shall be smooth and even and shall not vary more than 100mm in 3 meters from true profile and shall not be more than 12.5mm from true elevation.

DISPOSAL OF SURPLUS MATERIAL

The rejected unsuitable material and surplus excavated material shall be disposed of within 200 m free haulage limit measured from boundary of the works to places or as directed by the Project Engineer.

The disposal of surplus excavated material shall include loading, unloading, transporting, stacking, spreading as directed by the Project Engineer.

MEASUREMENT

Measurement for acceptable completed backfill/ fill works shall be made on the basis of number of cubic meter of compacted backfill/ fill in position, or as shown on the drawings or as directed by the Project Engineer.

PAYMENT

Payment will be made for acceptable measured quantity of backfill/ fill on the basis of unit rate per cu.meter quoted in the bill of quantities and shall constitute full compensation for all the works related to the item.

PLAIN AND REINFORCED CEMENT CONCRETE

The work covered by this section of the Specifications consists of furnishing all plant, labor, equipment, appliances and materials, and in performing all operations in connection with the supply and installation of plain and reinforced concrete work, complete in strict accordance with this section of the Specifications and relevant documents, subject to the Conditions of the Contract.

GENERAL

Full co-operation shall be given to other trades to install embedded items and/or any associated services.

Embedded items shall have been inspected, and tests for concrete and other material or for mechanical operations shall have been completed and approved, before concrete is placed.

Formwork shop drawings shall be designed and prepared by the Contractor at his own cost. Approval of shop drawings as well as those of mock-ups /actual samples of finished concrete shall be obtained before Work is commenced.

Contractor shall prepare bar bending schedules, and get the same approved by the Project Engineer, prior to commencement of work.

RELATED SPECIFICATIONS

The codes and standards generally applicable to the work of this section are listed herein after.

IS 269	:	Ordinary and low heat Portland Cement
IS 8041	:	Rapid Hardening Portland Cement
IS 455	:	Portland slag cement
IS 1489	:	Portland Pozzolana Cement
IS 8112	:	High Strength Ordinary Portland Cement
IS 383	:	Coarse and fine aggregates from natural sources for concrete
IS 456	:	Code of practice for plain and reinforced concrete
IS 516	:	Method of sampling and analysis of concrete
IS 1199	:	Method of sampling and analysis of concrete
IS 1139	:	Hot rolled deformed bars
IS 23896	:	Methods of testing of aggregates for concrete (Part I to III)

- IS 2751 : Recommended Practice for welding for reinforcement bars
 IS 9103 : Admixtures for concrete
 IS 10262 : Recommended guide lines for concrete mixed design

MATERIALS

CEMENT

- a. Cement shall conform to standards listed in section 2 of IS:456, latest edition.
- b. Only one brand of each type of cement shall be used for concrete in any individual member of the structure. Cement shall be used in the sequence of receipt of shipment, unless otherwise directed.
- c. There shall be sufficient cement at site to ensure that each section of Work is completed without interruption.
- d. Cement reclaimed from cleaning of bags or from leaky containers shall not be used.
- e. Contractor shall provide and erect, at his own cost, in a suitable place, dry, well ventilated, and water proof shed of sufficient capacity to store the cement.
- f. The cement shall be used as soon as possible after delivery, and cement which the Project Engineer considers has become stale or unsuitable through absorption of moisture from the atmosphere or otherwise shall be rejected and removed immediately from the site at Contractor's expense.
- g. The mixing together of different types of cement shall not be permitted.

AGGREGATES

- a. The sources of supply of all fine and coarse aggregates shall be subject to the approval of Project Engineer.
- b. All fine and coarse aggregates shall be clean and free from clay, loam, silt, and other deleterious matter. If required, Project Engineer reserves the right to have them washed by the Contractor at no additional expenses. Coarse and fine aggregates shall be delivered and stored separately at Site. Aggregates shall not be stored on muddy ground or where they are likely to become dirty or contaminated.
- c. Fine aggregate shall be hard coarse sand, crushed stone or gravel screenings and shall conform to requirements of IS: 383 latest edition.
- d. Coarse aggregate shall be gravel or broken stone or hard, durable material free from laminated structure and conforming to IS: 383 latest edition. The aggregates shall be graded as follows for use in mass concrete as in foundations:

TOTAL PASSING	PERCENT BY WEIGHT
2" B.S. Sieve (50.00 mm)	100
1-1/2" Sieve (38.10 mm)	95-100
3/4" Sieve (19.00 mm)	35- 70
3/8" Sieve (9.50 mm)	10- 30
No. 4 Sieve (4.75 mm)	0- 5

Coarse aggregate for all cast-in-place concrete other than mass concrete as for foundations shall be graded with the following limits:-

TOTAL PASSING	PERCENT BY WEIGHT
1" Sieve (25.00 mm)	100
3/4" Sieve (19.00 mm)	90-100
3/8" Sieve (9.50 mm)	20- 55
No. 4 Sieve (4.75 mm)	0- 10

Water:

Only clean potable water from the city supply, tube well installed at the Site or from other sources approved by Project Engineer shall be used. Contractor shall supply sufficient water for all purposes, including mixing the concrete, curing and cleaning plant and tools. Where doubts exist as to the suitability of the water, it shall be tested in accordance with IS: 3025. Where water can be shown to contain any sugar or an excess of acid, alkali or salt, Project Engineer may refuse to permit use. As a guide, the following concentrations represent the maximum permissible values:

- a. To neutralize 200 ml sample it should not require more than 2 ml of 0.1 normal NaOH.
- b. To neutralize 200 ml sample it should not require more than 10 ml of 0.1 normal HCL.
- c. Percentage of solids should not exceed the following:

	PERCENT
Organic	0.02
Inorganic	0.30
Sulphates	0.05
Alkali Chlorides	0.10

In case of doubt, Project Engineer may require that concrete mixed with water proposed to be used should not have a compressive strength lower than 90 percent of the strength of concrete mixed with distilled water.

Reinforcement

- a. Reinforcement for concrete shall conform to the respective IS or other standards as specified in the drawings and Contract Documents or as may be specified by Project Engineer.
- b. Unless otherwise specified, all plain reinforcing bars shall comply with the requirements of IS: 432, and shall have a minimum yield stress of 248 N/sq mm.
- c. Unless otherwise specified, all deformed reinforcing bars shall comply with the requirements of IS: 1786 for deformed cold worked steel bars and shall have minimum characteristic stress of 415 N/sq mm.
- d. Reinforcement shall be obtained only from manufacturer's approved by Project Engineer. If and when required Contractor shall provide all necessary facilities to Project Engineer for the selection of test pieces and shall cause these to be prepared and submitted where directed for tests at Contractor's cost.
- e. If the reinforcement is to be supplied by Employer, Contractor shall inform Project Engineer of his requirements much before its use in construction.
- f. Reinforcement of all types is to be stored at Site in an approved manner so as to avoid damage.
- g. Contractor shall report immediately on receipt of any consignment, having any deviation in the standard weights of the reinforcing bars beyond those allowed in respective standards mentioned in clause (3.3.3.4.b) and (3.3.4.4.c) herein before.

CONCRETE MIX PROPORTIONS

General:

The proportions of ingredients shall be such as to produce a mixture which will work readily into the corners and angles of the forms and around reinforcement by the methods of placing and consolidation employed on the Work, but without permitting the materials to segregate or excessive free water to collect on the surface. Specific approval of the Project Engineer is required to waive limitations on mixture proportions.

The proportions of ingredients shall be selected in accordance with Section 5.7 to produce the proper placeability, durability, strength and other required properties.

Strength

The Specified compressive strength of the concrete cube, shall be 15 N/sq mm. or 20 N/sq mm.. Samples from fresh concrete shall be taken as per IS: 1199 and cubes shall be made, cured and tested at 28 days in accordance with IS: 516.

Durability

Requirements of Clause 7 of IS: 456-1978 shall be followed.

Slump

Unless otherwise permitted or specified, the concrete shall be proportioned and produced to have a slump of 100 mm or less. A tolerance of up to 25 mm above the indicated maximum shall be allowed for individual batches provided the average for all batches or the most recent 10 batches tested, whichever is fewer, does not exceed the maximum limit.

Concrete of lower than usual slump may be used provided it is properly placed and consolidated.

Note: If S.R. Cement is used, permissible water-cement ratio may be increased by 0.05.

Slump shall be determined by the "Test for slump for Portland Cement Concrete" as per relevant IS code.

Maximum Size of Coarse Aggregate:

The nominal maximum size of the aggregate shall be 20.mm for all portions of the structure except footings which may be 38 mm. These limitations may be waived if, in the judgment of the Project Engineer, workability and methods of consolidation are such that the concrete can be placed without honeycomb or voids.

Admixtures:

If required or permitted, admixtures used shall be in accordance with the manufacturer's instructions except as otherwise specified herein.

Methods of Obtaining Mix Design:

For concrete of normal weight, mix proportions to provide the desired characteristics shall be developed using the methods/procedure covered by the Recommended Practice for Selecting Proportions for Normal Weight Concrete ACI-211.1-77/ IS:456- 1978.

Trial mixtures having proportions and consistencies suitable for the Work shall be made based on above codes, using at least three different water-cement ratios which will produce a range of strengths encompassing those required for the Work. Trial mixes shall be designed to produce the specified slump. The temperature of concrete used in trial batches shall be reported.

For each water-cement ratio, compression test of cube shall be made, cured, and tested in accordance with IS:1199 and IS:516. From the results of these tests a curve shall be plotted showing the relationship between the water-cement ratio and compressive strength. From this curve, the water-cement ratio to be used in the concrete shall be selected to produce the required design strength. The cement content and mixture proportions to be used shall be

such that this water- cement ratio is not exceeded when slump is the maximum permitted. Control in the field shall be based upon maintenance of proper cement content and slump.

Ready mix concrete

GRADES AND STRENGTH REQUIREMENTS OF CONCRETE

General

Ready mix Concrete shall consist of the material described under site batched concrete sections, using separate coarse and fine aggregate in an appropriate combination determined in the course of the of mix design . The overall grading shall be such as to produce a concrete of the specified quality which will work readily in to position without segregation. The ready mix concrete shall conform to IS: 4926 and shall be delivered in agitating trucks. The RMC may contain flyash as per the acceptable norms.

Slump

The water shall be added to the cement and aggregate during mixing to produce concrete having a sufficient workability to enable it to be well consolidated, to be worked in to the corners of the shuttering and around the reinforcement to give the specified surface finish, and to have the specified strength. Water cement ratio shall be maintained as per IS456-1978 when a suitable amount of water has been determined, the resulting consistency shall be maintained throughout the corresponding parts of the work and tests shall be conducted to ensure the maintenance of this consistency. The max slump at the point of the discharge should not exceed 110mm max.

Concrete Grades

Grade of concrete used in the works shall be shown on the drawings or as directed by the Architect/Project Manager. The minimum cement used for M-20 shall be 300 Kg. Per Cum, 350 Kgs for M-25 and 400Kgs for M-30.

TRANSPORTING CONCRETE

Concrete shall be transported in agitating trucks without contamination, loss of ingredients or segregation. In no case shall a period of more than 4 hours have elapsed between the wetting of mix and discharge of the concrete at site.

CONCRETE PLACEMENT

Concrete, when deposited, shall have a temperature of not less than 50C (410F) and not more than 320C(900F).

The concrete shall be placed in the positions and sequences indicated on the drawings, in this specification and/or as directed by the Architect/Project Manager.

Contractor shall give adequate notice to the Architect/Project Manager of his intention to concrete any section of the works.

Except where otherwise directed, concrete shall not be placed unless the representative of the Architect/Project Manager is present and has previously examined and approved the positioning, fixing and condition of the reinforcement or any other items to be embedded and the cleanliness, positioning and suitability of the concreting surface.

The concrete shall be deposited as nearly as possible in its final position. It shall be placed in such a manner as to avoid segregation of the concrete and displacement of the reinforcement, other embedded items, or formwork. It shall be brought up in horizontal layers not exceeding 450 mm in compacted thickness unless otherwise authorized or directed by Architect/Project Manager. Concrete shall not be placed simultaneously on each side of large horizontal specified or approved construction joints.

Shutters for walls or thin sections of considerable height shall be provided with openings or other devices that will facilitate the cleaning of the accumulation of hardened concrete on the shutters or on the metal reinforcement above the level of the concrete and the removal of concrete in the case of segregations.

Quality Control

In order to ensure that the quality of materials and the mix proportions are suitable for the particular grade of concrete required are so maintained, sampling and testing shall be carried out regularly during the course or the works.

Workability testing shall be carried out in accordance with IS:456. The results shall lie within the range upon which the accepted mix design is based. Testing shall be carried out at such a frequency that the required workability is consistently achieved.

Samples of concrete shall be taken at random in accordance with IS: 516 at the time and place of deposition of the concrete at a frequency of sampling for each grade of concrete and from each concrete mixing plant at six cubes of 150 mm nominal size per 50 cubic meters of concrete placed in the works or twice per week.

Notwithstanding the foregoing, additional samples shall be taken by the contractor when directed by the Architect/Project Manager. The test cube procedure shall be in accordance with IS: 516 throughout.

Compliance with the specified characteristic strength shall be assumed if:

- a. Each of the six cubes in a group has a test strength not less than the characteristic strength or,
- b. Not more than one cube has a test strength less than the specified characteristic strength but not less than 85% of the specified characteristic strength and the average strength of the group of four test results is not less than the specified characteristic strength plus the standard deviation of the group.

Seven day cube tests

Acceptance of concrete is based on the 28th day results. However, the contractor shall establish a relationship between 7 days and 28 days strengths by carrying out 7 days tests at the time of performing the laboratory testing and from subsequent quality control testing. This relationship shall be used in interpreting any further test results to predict the probable value of the corresponding 28 days cube strengths. The contractor shall without delay advise the Architect/Project Manager of any sample that appears likely to fail to meet the specification and the contractor shall take any necessary action to minimize the effect of such failure.

Acceptance Criteria

The general Acceptance Criteria of any and all of the concrete work shall be as per the relevant Clauses of IS. 456. If any of the works tests are not up to the standard, the Architect/Project Manager shall have the power to stop the work until the reason is investigated and steps taken to prevent further low results. The contractor shall not be entitled to any claims on account of such delays. Any concrete carried out from the batch that is afterwards found to be faulty, will be liable for rejection and if so directed, the contractor shall at his own expenses dismantle and replace the defective work and any work built thereon or shall take such other measures as may be deemed necessary by the Architect/Project Manager. At the discretion of the Architect/Project Manager, the contractor may be allowed to prove by means of a load test to be carried out at his own expense, that the concrete is capable of safely withstanding the loads as specified in the test.

Quality of Water

- Water used for both mixing and curing shall conform to IS: 456. Potable water is generally satisfactory. Water containing any excess of acid, alkali, sugar or salt shall not be used.
- The pH value of water shall not be less than 6.
- Seawater shall not be used for concrete mixing and curing.
- The proposed admixtures shall comply with requirements of specification part 11- Water sealing materials.

STEEL REINFORCEMENT

SCOPE OF WORK

The work to be done under this section consists of furnishing, cutting, fabricating, bending, placing and tying steel reinforcement in concrete structures or elsewhere as shown on the drawings or directed by the Project Engineer. The scope of this section of this section of specifications as laid down herein.

MATERIAL AND SIZE OF BARS

Reinforcement for concrete shall conform to the respective Indian or other standards as specified in the drawings and in the contract documents or as may be specified by the Project Engineer.

Unless otherwise specified, all plain mild steel reinforcing bars shall comply with the requirements of IS: 432 (Part- I) and shall have a minimum yield stress of 250 N/mm².

Unless otherwise specified, all deformed reinforcing bars shall comply with the requirements of IS: 1786 for deformed cold twisted steel bars and shall have a minimum characteristic strength of 415 N/mm².

Reinforcement shall be obtained only from manufacturers approved by the Consultant/Project Engineer. Each consignment of reinforcement steel shall be accompanied by a manufacturer's certificate or shall refer to a previous certificate, if the consignment is from the same batch, showing that the reinforcement steel complies with the following requirement

If such certificate is not made available or if the Consultant / Project Engineer considers that the manufacturer's tests are inadequate, samples shall be taken for acceptance test from different consignments as the Project Engineer may direct and shall be tested at the Contractor's cost should the result of such that any sample does not meet with the specifications, the whole consignment shall be rejected and removed from the site at the Contractor's cost.

Reinforcement of all types is to be stored on site in approved manner so as to avoid damage. Reinforcement shall be free from all loose or flaky rust and mill scale or coating, including ice, and other substance that would reduce or destroy the bond. Reduced section steel reinforcement shall not be used.

If such certificate is not made available or if the Consultant / Project Engineer considers that the manufacturer's tests are inadequate, samples shall be taken for acceptance test from different consignments as the Project Engineer may direct and shall be tested at the Contractor's cost should the result of such that any sample does not meet with the specifications, the whole consignment shall be rejected and removed from the site at the Contractor's cost.

If such certificate is not made available or if the Consultant / Project Engineer considers that the manufacturer's tests are inadequate, samples shall be taken for acceptance test from different consignments as the Project Engineer may direct and shall be tested at the Contractor's cost should the result of such that any sample does not meet with the specifications, the whole consignment shall be rejected and removed from the site at the Contractor's cost.

Reinforcement of all types is to be stored on site in approved manner so as to avoid damage. Reinforcement shall be free from all loose or flaky rust and mill scale or coating, including ice, and other substance that would reduce or destroy the bond. Reduced section steel reinforcement shall not be used.

Steel wire mesh reinforcement shall conform to requirement of relevant Indian codes or those of ASTM: A 185-64 or BS. 4483, 1969: Standard Specifications for welded steel wire fabric for concrete reinforcement. It shall be used where shown on the drawings.

Applicable standards

Latest editions of Indian Standards as per 4.3 or other International Standards

DELIVERY & STORAGE

Delivery

Steel reinforcement bars shall be delivered in bundles firmly secured and tagged. Each bars or bundle of bars shall be identified by marks stamped on hot or cold or painted on or by any other means. The identifying marks shall contain the following information:

Name of the producer or his trade.

Standard to which the bars have been manufactured.

The clause, type and strength respectively.

The diameter.

The number of the test certificate (if available).

Storage

The method of storage shall be approved by the Project Engineer. Reinforcing bars shall be stored in racks or platforms above the surface of ground and shall be protected free from scaling, rusting, oiling, coatings, damage, contamination and structural defects prior to placement in works. Bars of different diameters and grades of steel reinforcement shall be kept separate.

BAR BENDING SCHEDULES

The Contractor shall prepare bar bending schedule of all the reinforcing steel bars and these bar bending schedules will be supplied to the Consultants/Project Engineer in duplicate on the basis of which the work shall be carried out. However, the Contractor shall be responsible to satisfy himself as to the correctness and accuracy of the bar bending schedule. Any discrepancy shall immediately be notified to the Consultant / Project Engineer before commencing work.

MEASUREMENT & PAYMENT

Except otherwise specified herein or elsewhere in the Contract documents, no measurement and payment will be made for the under mentioned specified works related to the relevant items of the Bill of Quantities. The cost thereof shall be deemed to have been included in the quoted unit rate of the respective items of the Bill of Quantities. Providing and installing chairs, supports, hooks, spacers, binding wires, and laps not shown on drawings including wastage and rolling margin.

Measurement

Measurement for acceptably completed works of reinforcement shall be made by weight according to bar bending schedules approved by the Consultant / Project Engineer.

Payment

Payment will be made for acceptable measured quantity of reinforcement on the basis of unit rate per ton or kg quoted in the bill of quantities and shall constitute full compensation for all the works related to the item.

BRICK MASONRY

GENERAL

Brick Masonry shall consist of all work required in connection with constructing brick masonry at locations shown on drawings including, but not limited to, furnishing brick, portland cement and sand for mortar and all other materials, and mixing, placing brick masonry as per bill of quantities.

MATERIALS

All portland cement for mortar shall be furnished by the Contractor and shall conform to the applicable requirements specified in the section "Plain and Reinforced Concrete". All sand for mortar shall be furnished by the Contractor and shall conform to the applicable requirements for sand specified in the section "Plain and Reinforced Concrete".

All water used in the manufacture of bricks and in the preparation of mortar shall be free from objectionable quantities of silt, organic matter, alkali, salts and other impurities, and will be tested and approved by the Project Engineer as per the guidelines of IS: 456.

MORTAR

- a. MIX: Mortar for all brick masonry, except where otherwise directed by the Project Engineer, shall consist of one part cement to six parts of damp loose mortar sand by volume for brickwork 230mm and above. For brick piers, half brick walls, honeycombed brickwork and hollow (cavity) walls, the mortar mix shall consist of one part cement and four parts of sand. Quantity of water shall be just sufficient enough to produce proper consistency for the intended use. Where directed and approved by the Project Engineer, hydrated lime putty, shall be added to the mortar for increased workability. The putty shall, however, not exceed 25% by volume of the dry cement.
- b. Methods and equipment used for mixing mortar be such as will accurately determine and control the amount of each separate ingredient entering into the mortar and shall be subject to the approval of the Project Engineer. Mortar shall be mixed only in sufficient quantities for immediate use and all mortar not used within 30 minutes after addition of the water to the mix shall be wasted. Re-tempering of mortar will not be allowed. The mixers shall be thoroughly cleaned and washed at the end of each day's work.

BRICK

- a. All bricks shall be of first class quality made from good brick earth, free from saline deposits and shall be sand moulded. They shall be thoroughly burnt without being vitrified, shall be regular, uniform in shape and size with sharp and square edges parallel faces and of deep red or copper colour. First class bricks shall be homogeneous in texture and emit a clear ringing sound when struck, and shall be free from flaws, cracks, chips, stones and nodules of lime. First class brick in an oven dried condition shall not absorb more than 1/5 of its weight of water when immersed for one hour in water at 21 to 27 degrees centigrade and shall show no signs of efflorescence on subsequent drying. The average compressive strength of five representative first class bricks shall be 15N/mm. sq. and shall no result shall fall below 10 N/mm sq. The bricks in general shall conform to the requirements of IS: 1077.
- b. All bricks shall be manufactured by the Trench Kiln method or other standard methods approved by the Project Engineer. The earth used in manufacturing bricks shall be carefully selected and shall be free from objectionable quantities of lime, gravel coarse sand, roots, or other organic matter salts shall not exceed 0.3% and calcium carbonate shall not exceed 2.0%.
- c. The moulds used in the manufacture of bricks shall be thoroughly sanded before each use and shall be sufficiently larger than the size of the bricks being manufactured to allow for shrinkage in drying and burning. The size ready for use shall be 9" by 4 3/8" by 2 3/4" (229X 112X 70mm) and shall weigh between 3.2 to 4.2 Kilograms. All bricks shall have a "Frog" 1/4" deep on one face.

PLACING

- a. The methods and equipment used for transporting the bricks and mortar shall be such as will not damage the brick nor delay the use of mixed mortar. Brick shall not be placed during rains sufficiently heavy or prolonged to wash the mortar from the brick. Mortar which becomes diluted by rain shall be removed and replaced before continuing with the work. All bricks to be used in brick masonry shall be moistened with water for three to four hours before they are used. The chosen method of wetting shall ensure that all bricks are thoroughly and uniformly wetted. All bricks shall be free from water adhering to their surface when they are placed in the brick masonry.
- b. Bricks shall be laid "Frog" upward with mortar joints and in English bond as directed by the Project Engineer. Both bed and vertical joints shall be 6mm in thickness completely filled with cement mortar as specified herein, and each brick shall be bedded by firmly tapping with the handle of the trowel. All horizontal joints shall be parallel and all vertical

joints in alternate courses shall be directly over one another. Excess mortar at the outer edges shall be removed and joints drawn straight with the edge of a trowel and a straight edge. All anchors and similar work required to be embedded in the brick masonry shall be installed as the work progresses. At the completion of the work all holes or defective mortar joints shall be cut out and repointed.

- c. The exterior faces of the walls shall be finished by striking the joints as the work proceeds. The joints shall be struck by raking the green mortar after the brick work has been laid and finishing the joint with a pointing tool. Horizontal joints shall be struck to form weathered joints and vertical joints shall be struck with a V notch. Care shall be taken that the striking tools do not develop a cutting edge as the object of striking the joint is to compress the mortar into the joints.

CURING AND REPAIR

- a. All brick masonry shall be water cured and shall be kept wet for least seven days by an approved method which will keep all surfaces continuously wet. Water used for curing shall meet the requirements of these specifications for water used in the manufacture of bricks.
- b. If, after the completion of any brick masonry work, the brick are not in alignment or level or does not conform to the lines and grades shown on the drawings, or shows a defective surface, it shall be removed and replaced by the Contractor at his expense unless the Project Engineer grants permission, in writing to patch or replace the defective area.

TOLERANCES

The brickwork shall be erected plumb and true to line at level with the maximum variation in any storey height of any length of wall being one meter. The maximum tolerance in the length, height or width of any single masonry unit shall be +/- 3mm.

MEASUREMENT AND PAYMENT

GENERAL

Except otherwise specified herein or elsewhere in the contract documents, the measurement and payment will be made for the under mentioned specified works related to the relevant items of the bill of quantities.

MEASUREMENT

Measurement of acceptable completed works of brick masonry will be made on the basis of cubic meters provided and installed in position as shown on the drawing or as directed by the Project Engineer.

PAYMENT

Payment will be made for acceptable measured quantity of brick masonry on the basis of unit rate per cum quoted in the bill of quantities and shall constitute full compensation for all the works related to the items.

FINISHING

General

All plaster work shall be of the best workmanship and in strict accordance with the dimensions of the drawings. All plastering shall be finished to true levels including plumbs, without imperfections, and square with adjoining work. It shall form proper foundations for finishing materials such as paint etc. Masonry and concrete surface to which plaster is to be applied shall be clean, free from efflorescence, sufficiently rough and keyed to ensure proper bond.

All chasing, installation of conduits, boxes, etc. shall be completed before any plastering is commenced on a surface. Chasing or cutting of plaster will not be permitted. Broken corners shall be cut back less than 150 mm on both sides and patched with plaster of Paris as directed.

All corners shall be rounded to a radius. Contractor shall get samples of each type of plaster work approved by the Architect/Project Manager.

All chasing, installation of conduits, boxes, etc. shall be completed before any plastering is commenced on a surface. Chasing or cutting of plaster will not be permitted. Broken corners shall be cut back less than 150 mm on both sides and patched with plaster of Paris as directed. All corners shall be rounded to a radius. Contractor shall get samples of each type of plaster work approved by the Architect/Project Manager.

The materials used for plastering shall be proportioned by volume by means of gauge boxes. Alternatively it may be required to proportion the materials by weight.

PLASTER WORK

The joints in the brick work, concrete blocks, shall be raked to a depth of 15 mm while the masonry is green. Concrete surfaces to receive plaster shall be suitably roughened. All walls shall be washed with water and kept damp for 10 hours before plastering.

The plaster unless specified otherwise shall be average of 12 mm thick on walls. The finished texture shall be as approved by the Architect/Project Manager. The mix for plaster unless otherwise specified, shall be one part cement and four parts sand, to walls and one part cement, 3 parts sand to ceiling.

The interior plaster shall be applied in one coat only. The surface shall be trowelled smooth to an approved surface. All plaster work shall be kept continuously wet for seven days

The external plaster shall be of two coats on an overall thickness of minimum 20 mm. Preparations of walls to receive plaster work shall be the same as in internal plaster. Backing coat shall be 12 to 15 mm thick with cement mortar 1:5 and finishing coat shall be with cement mortar 1:3.

Backing coats shall be combed on wet surface to form keys for finishing coat. All external plaster shall be waterproofed with approved water proofing powder added to cement in proportion of 1.5 Kg. to 50 Kg. of cement as per the manufacturers' instruction, for both the coats. Cost of waterproofing powder per Kg. shall be paid for separately.

For sand faced cement plaster, the finishing coat shall be in cement mortar 1:3, sand used shall be of selected color, properly graded and washed so as to give a grained texture. Finishing plaster coat shall be 8 mm thick, uniformly applied and surface finished with special rubbing by sponge pads and other tools and recommended by the Architect/Project Manager.

UPVC –SWR PIPING WORK

GENERAL

The item includes supplying of UPVC soil, waste and rainwater (SWR) and ventilation pipes with fittings of specified diameter including laying, fixing, cutting, joining, painting if required etc

Material

The pipes shall conforming to IS 13592, UPVC – SWR and fittings conforming to IS 13591 shall be able to withstand a pressure as mentioned in the schedule of work. Rubber sealing rings conforming to IS 5382 with the lubricant for sliding socket joints as mentioned in the schedule of work.

Examining

Before laying the pipe line, it shall be first examined for damages and cracks, No cracked or damaged pipe and fittings shall be used in the work and they shall be removed from the site by the contractor at his own cost and charge.

Cleaning

All the pipes and fittings shall be thoroughly cleaned with brush and washed if necessary to remove any accumulated stone, soil or dirt inside and outside surfaces.

Laying

The pipes shall be carefully laid straight to the correct alignment in gradients as indicated in the drawing. All the pipe shall be used in standard length as far as possible. Cut length may be used only where it is necessary to make up exact length.

The entire length of pipe shall be evenly supported on bed of the trench throughout. Care shall be taken to prevent any sand, earth or other materials from entering into the pipes during laying. At the end of the day's work the open end shall be suitably plugged.

Fixing

The pipe line shall be fixed in position as shown in the drawings or as directed by project engineer. The pipe shall be fixed with G.I clamps not less than 2.0mm thick of the suitable UPVC clamps/clips shall be fixed into the wall with G.I nails not less than 40 mm long and wooden gutties keeping the pipe about 15mm clear of the wall.

Making Joint

The Joints of pipes and fittings generally shall be done with the approved make cement solvent including making surface rough or rubber sealing rings with the lubricant for sliding socket joints. The pipe shall be cut to desired length. Care shall be taken that the profile or cut surfaces shall not be changed and the fibrous material shall be removed with the scraper or knife.

Painting

In case of underground piping, the pipe line shall be painted with the two coats of approved oil paint of matching colour over a coat of primer.

The Rate includes:

- a. Supplying of UPVC - SWR pipes and fittings of specified diameter.
- b. Laying and cutting the pipe wherever necessary and wastage.
- c. Fixing the pipe line with G.I clamps not less than 2mm thick and G.I/M.S nails length not less than 40mm or with UPVC clamps, screws, wooden gutties etc
- d. Making the solution joint and painting if mentioned in schedule of work the pipe line.
- e. All necessary materials, labour and use of tools.

Mode of Measurement

The measurement shall be for unit running meter length of pipe line laid or fixed. The measurement shall be taken along the center line of pipe. No measurement shall be recorded separately for fittings, making joint, painting if mentioned in schedule of work and testing.

Mode of Payment

The contract shall be for unit running meter length of pipe line laid.

GENERAL REQUIREMENTS

The work shall be executed on Item rate basis. Details and drawings given in Tender document is to be followed by the successful bidder. The bidder shall undertake confirmatory survey for accuracy and completeness of data. Scope of work mentioned is for indicative and exhaustive purpose. In addition the contractor shall be responsible for executing all items required for completing the tendered works as per direction of Engineer-in-charge.

- a. The contractor will have to construct according to the layout plan and detailed architectural drawings approved by HDMC.

- b. The structural drawing shall be approved by HDMC. If any modification in design/ drawing as per R & B guideline is needed, due to site conditions, the agency shall do/ redo itself without any extra cost. The decision of the Municipal Commissioner shall be final and binding. No claim what so ever will be entertained in this regard.
- c.
- d. Agency has to obtain labour license from Respective Department.
- e.
- f. Fire safety norms shall be followed as per Standards.
- g.
- h. Setting of testing laboratory at site, equipped with apparatus needed for testing during construction. All the required tests as instructed by Engineer-In-Charge shall be carried out.
- i.
- j. After completion of Contract period, the recharge trenches and pits will become the property of the HDSCL. The Contractor shall handover the recharge trenches and pits in Good working conditions complete to the satisfaction of Authority.
- k.
- l. HDSCL reserves the right to inspect any such recharge trenches and pits at any time during the contract period.
- m.
- n. Taking all precautionary measure to safeguard against any accident for the contractors employees, general public, supervisory staff of HDMC by providing necessary safety equipments, helmets and MS sheet barricading etc. at work site. The site has to be kept clean all the time of all debris, rubbish, dirt & surplus/waste material.

OTHER REQUIREMENTS

- a. All the successful Contractors will have to ensure meeting of the design criteria.
- b. Any deviation from the proposed design needs to be approved by the HDSCL.

TESTING AND INSPECTION

- a. Third Party inspection
- b. The charges for third party inspection, if any, would initially be borne by the Contractor.
- c. Site tests
- d. After erection at site, all components, equipment as described shall be tested to prove satisfactory performance and /or fulfillment of functional requirements without showing any sign of defect as individual equipment and as well as a system.
- e. Water Quality Monitoring - The monitoring of water quality during the implementation of artificial recharge schemes is essential to maintain the quality standards for specified groundwater standards. In case of recharge pits with shaft, the composition of native water in the aquifer and the recharged water is important to prevent clogging of well and aquifer due to excessive precipitation of salts.

DELIVERY/COMMISSIONING

- a. The commissioning of all the Recharge Pit and Trenches is 4 months (120 days) from the date of the confirmed Letter of intent or handing over of site whichever is later.
- b. In case of non-operation of Recharge Pits and trenches beyond the stipulated days as approved by HDSCL, the contract is liable for termination.

SCOPE OF HDMC

- a. HDMC will provide details pertaining to nearest Source of water, further arrangement including required plumbing works from source to Recharge Pit and trenches shall be borne by the Contractor.
- b. HDMC will charge for water required during construction for the Recharge Pit and trenches on commercial rates.

CONSTRUCTION REQUIREMENTS FOR RECHARGE PIT AND TRENCHES

General

- a. The Contractor shall design Recharge Pit and trenches in such a way that material considered for design and construction shall be as specified in this document.
 - b. Specifications and design of the Recharge Pit and trenches shall be provided by the Contractor for each and every location before start of work and only after obtaining clearance from HDSC, Recharge Pit and trenches should be constructed at respective locations.
 - c. The Contractor will maintain a safe, clean and hygienic environment in and around trenches and pit.
- a. Provided that the Contractor shall ensure that the technology chosen is
 - Appropriate to the site and ground situation
 - Has a precedent for use in a project of similar nature and size
 - Is supported by the technology/service provider for design, supply, and implementation.
 - Addresses all issues of safety, including, operational safety, and environmental safety.

SECTION 7: DRAWINGS

Enclosed separately in e-procurement Portal

SECTION 8: BILL OF QUANTITIES

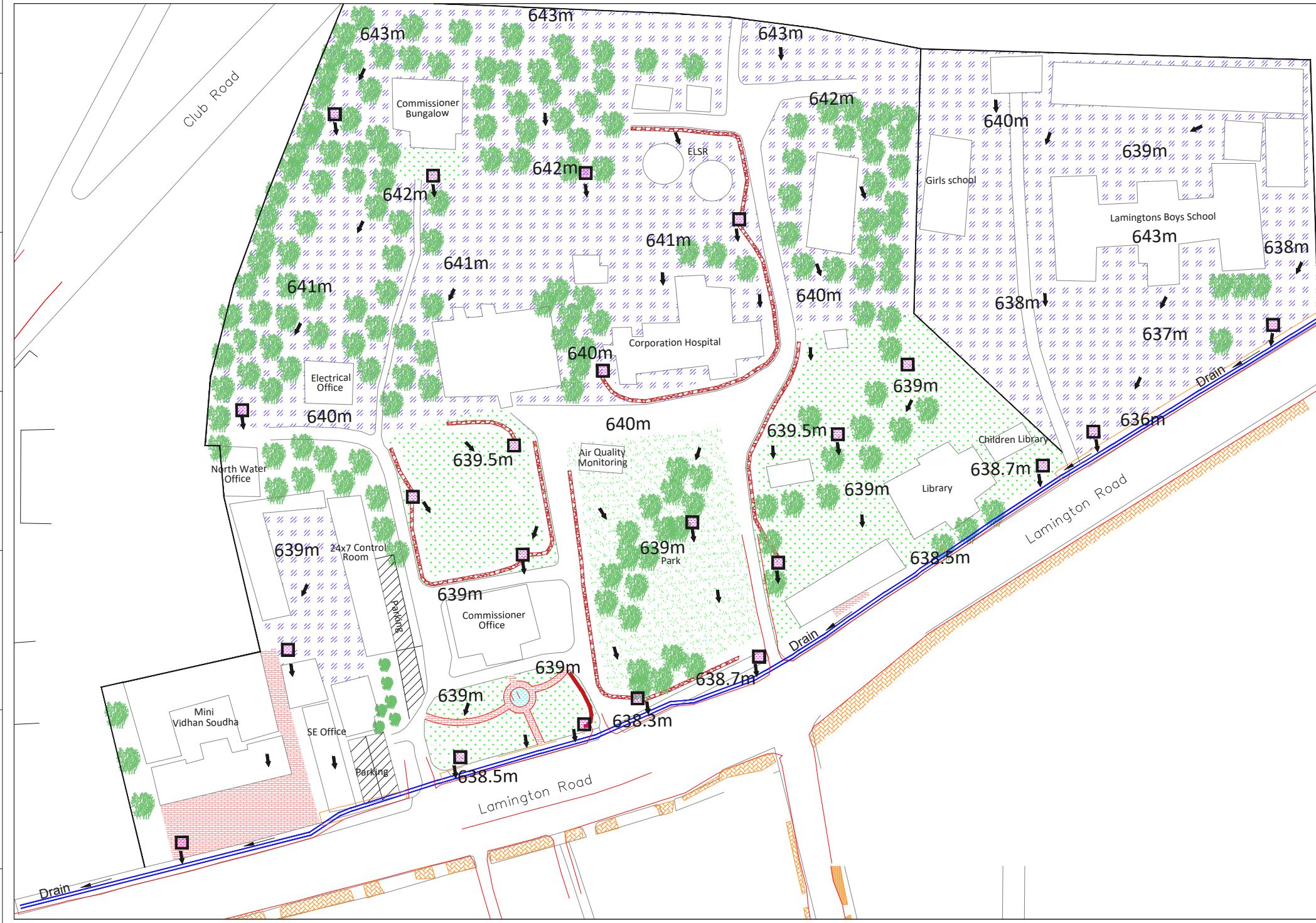
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				In figures	In words	
Please refer in E-procurement portal.						
Total Tender Price (in figures)						
(in words)						

Note:

- (1) Item for which no rate or price has been entered in will not be paid for by the Employer when executed and shall be deemed covered by the other rates and prices in the Bill of Quantities (refer: ITB Clause 7.2 and CC Clause 33.2).
- (2) Unit rates and prices shall be quoted by the Tenderer in Indian Rupees.

DWG NO

TITLE:



LEGEND

- Park
- Open Area
- Lawn Area
- Paved Surface
- Footpath
- Parking
- Open Recharge Trench
- Covered Recharge Trench
- Recharge Pit
- Existing storm water drain
- Tree

SIGN.									
INITIALS									
ISSUE	DRN	DSN	CHD	CV CLEARED	PE/PM	APPD	DATE		

DO NOT SCALE

'P' (PRELIMINARY) ISSUES ARE NOT TO BE USED FOR CONSTRUCTION / FABRICATION BUT ARE ISSUED FOR LIMITED PURPOSES ONLY AS INDICATED IN THE SMALL BLOCK ABOVE THIS BLOCK.

CONSTRUCTION / FABRICATION WORK IS PERMITTED ON 'R' (RELEASED) ISSUES ONLY.

INFORMATION CONTAINED WITHIN 'HOLD' IS NOT RELEASED FOR CONSTRUCTION / FABRICATION. FIELD MUST GET DESIGN OFFICE TO CLEAR 'HOLDS' IN TIME BEFORE PROCEEDING WITH ANY CONSTRUCTION / FABRICATION WORK RELATED TO 'HOLDS'.

Proprietary rights of the information contained herein belong to TCE. This information is intended to be used for the mentioned purpose/project only. In case of misuse of information and any claim arising thereof, cost and consequence will be on the party misusing the information.

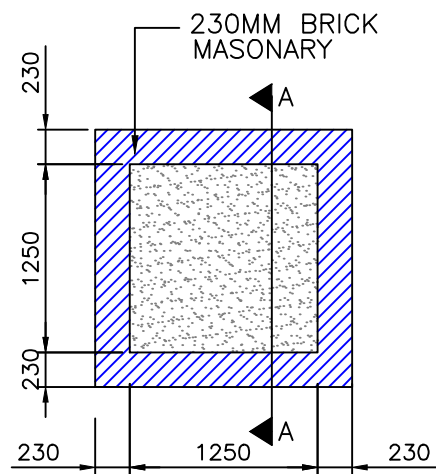
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HUBBALLI-DHARWAD SMART CITY LTD

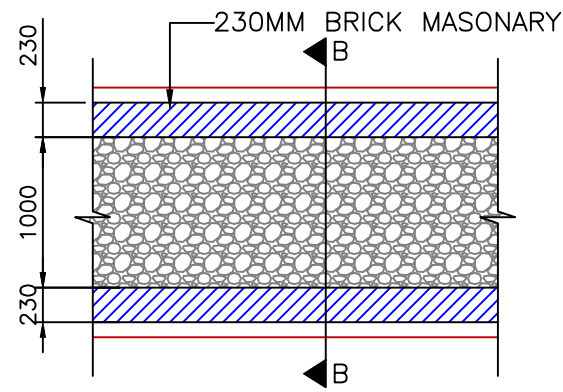
LOCATION MAP OF RAIN WATER HARVESTING SYSTEM

TATA CONSULTING ENGINEERS LIMITED
IN ASSOCIATION WITH
PRICEWATERHOUSECOOPERS PRIVATE LIMITED

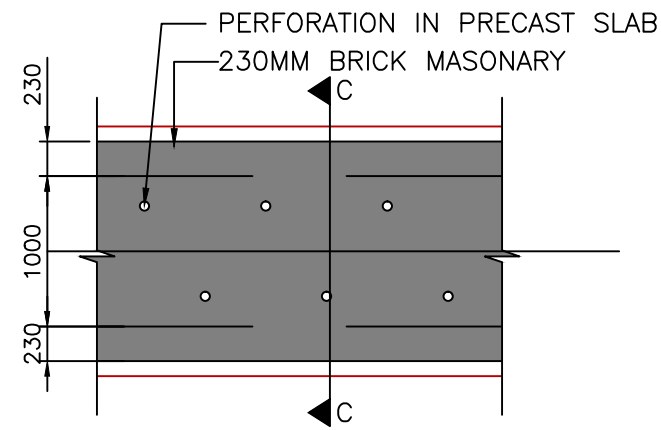
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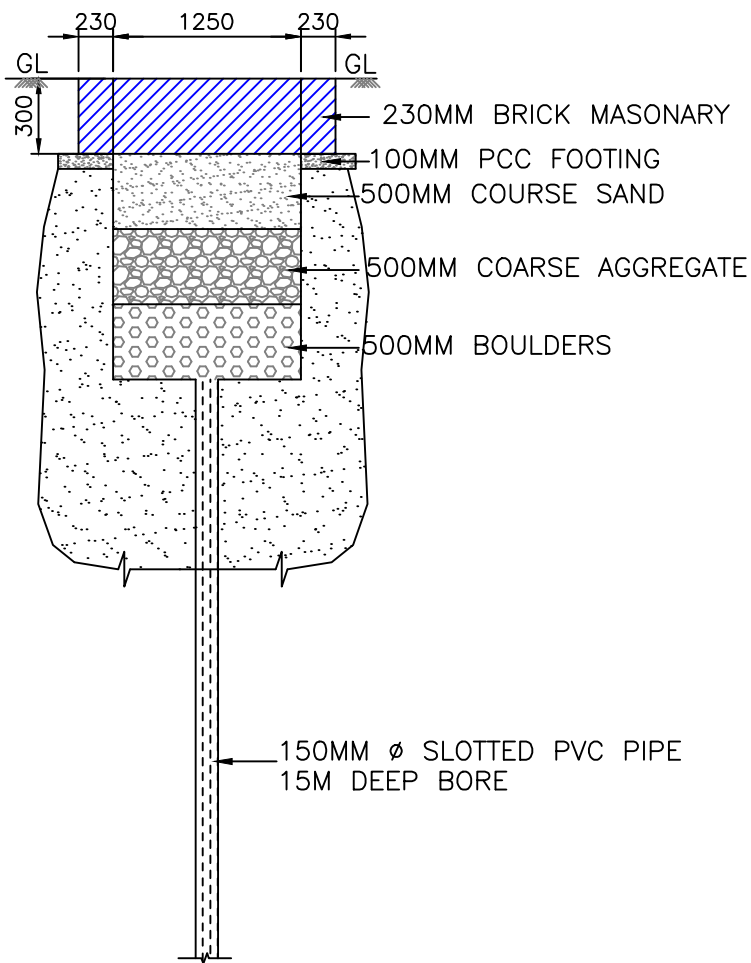
RECHARGE PIT WITH SHAFT
PLAN



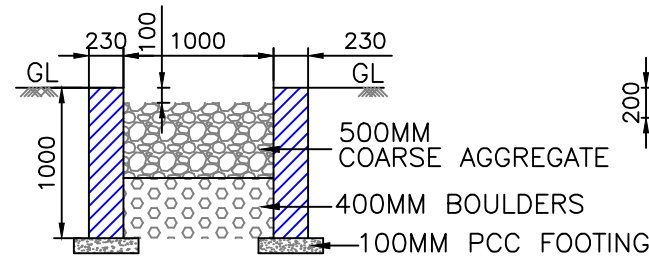
OPEN RECHARGE TRENCH
PLAN



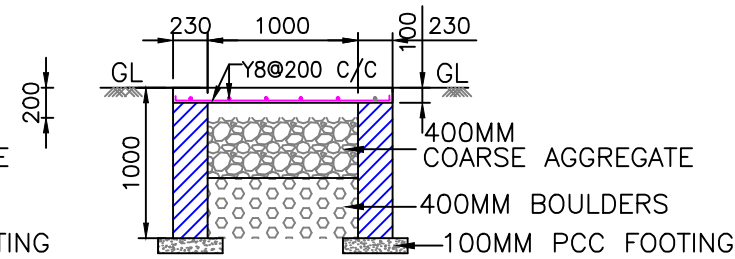
COVERED RECHARGE TRENCH
PLAN



SECTION A - A



SECTION B - B



SECTION C - C

LEGEND :

- GL - GROUND LEVEL
- MM - MILLIMETRE
- RCC - REINFORCED CEMENT CONCRETE
- PCC - PLAIN CEMENT CONCRETE
- ∅ - DIAMETER
- PVC - POLYVINYL CHLORIDE

- BRICK MASONRY
- RCC
- PCC
- COURSE SAND
- COARSE AGGREGATE
- BOULDERS

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETER
2. ALL THE SOIL MATERIAL USED AS A FILTER MEDIA SHALL BE PROPERLY GRADED BEFORE PLACING IN POSITION AS SHOWN IN SECTION 1-1.

HUBBALLI-DHARWAD SMART CITY LTD

RAIN WATER HARVESTING
TYPICAL SECTION OF RECHARGE PIT & RECHARGE TRENCH

SIGN.											
	INITIALS										
REVISIONS											
PO	SIGN.										
	INITIALS	LSD	SD	UN							16.09.17
REVISIONS											
ISSUE	DRN	DSN	CHD	CV	EL	IC	ME		PE/PM	APPD	DATE
	CLEARED										

"P" (PRELIMINARY) ISSUES ARE NOT TO BE USED FOR CONSTRUCTION / FABRICATION BUT ARE ISSUED FOR LIMITED PURPOSES ONLY AS INDICATED IN THE SMALL BLOCK ABOVE THIS BLOCK.

CONSTRUCTION / FABRICATION WORK IS PERMITTED ON "R" (RELEASED) ISSUES ONLY.

INFORMATION CONTAINED WITHIN 'HOLD' IS NOT RELEASED FOR CONSTRUCTION / FABRICATION. FIELD MUST GET DESIGN OFFICE TO CLEAR 'HOLDS' IN TIME BEFORE PROCEEDING WITH ANY CONSTRUCTION/ FABRICATION WORK RELATED TO 'HOLDS'.

FOR APPROVAL
DO NOT SCALE

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FILE NAME: TCE.10753A-CV-3018-SW-30402.dwg

TATA CONSULTING ENGINEERS LIMITED
IN ASSOCIATION WITH
PRICEWATERHOUSECOOPERS PRIVATE LIMITED

SCALE : AS SHOWN DWG NO. TCE.10753A-CV-3018-SW-30402 ISSUE PO

DC & DISC: BLR & CV