

Office of the Burdwan Municipality

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Memo No. 191/E/XII-4/AMRUT

Dated. 15/12/2020

NOTICE INVITING ELECTRONIC TENDER No. Tender Ref. No. WBMAD/BM/AMRUT/2/20-21/2nd Call

The Executive Officer, Burdwan Municipality on behalf of Administrator, Burdwan Municipality, invites sealed competitive Bid on Turnkey Basis (Two part System) from reliable and resourceful Companies / Firms / Contractors having experience and acumen in construction work as noted. The eligibility are depicted hereunder for participating in the e-Bid.

- 1) **Name of the Work:** - Surveying, Planning, Design, Drawing and Construction of MS Pipe carrying Steel structural Bridge supported on RCC column / Pier with adequate piles foundation at suitable interval at different locations (as per enclosed Annexure) complete in all respect on Turnkey basis for water supply Project within Burdwan Municipality under AMRUT.

Note :1) Necessary soil test & Hydraulic investigation and study of surface water flow characteristics of Banka Khal, DVC Canal for the purpose of design & execution should be done by the Bidder. Soil test reports should be vetted by the premier Institutions like, NITs / IITs / Jadavpur University. EIC of the Project may give due directive in this regards as and when necessary.

- 2) It is to be ascertained by the bidder during design of the Project.
- 3) Bottom of bridge truss level to be fixed as:-
 - i) 2.00 above the HFL shown in sketch drawing, or,
 - ii) Nearby existing bridge floor level.Whichever is higher or as per site condition duly approved by the Authority?

2) Location of Work:- At Banka Khal and DVC Canal (**As per Annexure**) within Burdwan Municipal area **Burdwan District, Purba Bardhaman.**

3) Eligibility to participate in the Bid:

3.1.1) Having experience and technical acumen in Surveying, Planning, Design and Execution of Construction and Completion of atleast 34.00 m bridge with pile foundation and Pier on turnkey basis at least in a single contract during last five financial years prior to the date of issue of the tender notice in any Govt. / Board / Semi Govt. / Municipal Corporation / Statutory Authority /Govt. undertaking etc. organization for Pipe carrying steel bridge above River/Canal/ Nallah with suitable structural supported on column & adequate piles foundation including Civil & Mechanical works.

OR

3.1.2) Intending tenderers should produce credentials of 2(two) similar nature of completed work as stated above(refer 3.1.1), each of atleast 19.00 m bridge during last five financial years prior to the date of issue of the tender notice;

OR

3.1.3) Intending tenderers should produce credentials of one single running work of similar nature which has been completed to the extent of 60% or more and length of which is not less than the desired value as stated above(refer 3.1.1)

AND

Having sufficient qualified technical personnel (to be employed under the firm for at least 2 consecutive years) with sound knowledge and experience in execution of similar type of works.

AND

Having annual turnover of at least Rs. 1.50 crore or above in any one year of last five financial years (submission along with 3CD form)

AND

Having valid GST registration certificate, PAN CARD, IT return of three years, ESI and P.F. registration certificate.

AND

Bank solvency Certificate not less than 50.00 Lakh (i.e. 2019-2020 / 2020-2021).

AND

Particular of ownership / partnership or board of directors pertaining to the organization / company / firm.

AND

List of machineries & equipment necessary for fields and list of technical personal employed under the organization in details with name, qualification, experience and address with contact number.

AND

Corresponding address, fax & telephone numbers, contract mobile number and email number of the organization

4) Documents to be produced in support of Credential for Bid:-

A successful performance and completion certificate supplemented with work order along with BOQ issued by the competent authority, shall have to be furnished in support of credibility in terms with eligibility criteria depicted in this Notice (**Ref: SI. No. 3 : Eligibility to participate in the Bid**). Besides this, following documents shall have to be furnished:

- a) Particulars of ownership / partnership or Board of Directors pertaining to the Organization / Company / Firm.
- b) Copies of valid GST certificate.
- c) Bank solvency Certificate not less than 50.00lakhs (i.e. 2019-2020 or 2020-21).
- d) Valid documents in support of annual Turnover.
- e) List of machines & equipment necessary for fields.
- f) List of Technical Personnel employed under the organization in details with names, qualification, experience and address with contact number.

g) Corresponding address, fax & telephone nos. Contract mobile no. & Email no. of the Organization.

All documents in original to be produced in due course of time as & when asked by the Tender Inviting Authority

5) Earnest Money:-

- a) 2% of the Quoted Bid price in two parts, vice. Rs. 2,00,000.00 (Rupees Two Lakhs only) as an initial Earnest Money with Bid Proposal and rest as mentioned below.
- b) Initial earnest money is to be deposited either online by net Banking through using ICICI Bank Payment Gateway or offline through RTGS / NEFT. Please refer Memo No 3975-F(Y) dated 28.07.2016 of the Finance Department, Govt. of West Bengal
- c) Balance Earnest Money Deposit i.e. 2% of bid amount beyond Rs. 2,00,000.00 (if any) shall have to be deposited after acceptance of Bid Proposal in the form of Bank Draft from any nationalized / scheduled Bank in favour of “Burdwan Municipality”, Payable at Burdwan.

6) Date and time schedule:-

Sl. No.	Particulars	Date & Time
1	Date of uploading of NleB. and Bid Documents (online) (Publishing Date)	16/12/2020 at 01:00 P.M
2	Date of Pre Bid Meeting with the intending bidders In the office of the Superintending Engineer, M.E.Dte., West Circle Patal Bazar, 3 rd fl. Tinkonia, Purba Burdwan, Pin- 713101, Email- sewcmed@gmail.com Any query may be conveyed through e_mail in case intending bidder unable to attend prebid meeting due to COVID-19 situation.	24/12/2020 at 03:00 P.M
3	Documents download start date (Online)	16/12/2020 at 02:00 P.M
4	Documents download end date (Online)	06/01/2021 at 03:00 P.M
5	Bid submission start date (On line)	16/12/2020 at 03:00 P.M
6	Bid Submission closing (On line)	06/01/2021 at 06:00 P.M
7	Tentative Bid opening date for Technical Proposals (Online)	09/01/2021 at 11:00 A.M
8	Date of uploading list for Technically Qualified Bidder (online)	To be notified later
9	Date for opening of Financial Proposal (Online)	To be notified later
10	Also if necessary for further negotiation through off line for final rate.	To be notified later

7) Cost price of Bid Document:-“Nil”

8) Time of completion:-

Time of completion of the Contract is 10(ten) months from the date of issue of Work Order.

9) Site inspection & general information:-

Intending Bidders are required to inspect the site of the Project with particular reference to location and infrastructure facilities. They are to make a careful study of all relevant data as per the requirement for the project and all relevant factors as might affect the rates and prices. They should make themselves acquainted with the relevant IS specifications, IS Code, CPHEEO manuals, Clauses & Sub Clauses of the Bid documents and to have fully acquainted with all details of work front, communications, underground utility services, seasonal weather and its variation including High Flood level, labour, water supply, existing & proposed site levels, position and diversion of transportation and barricading , if required, electricity and any other general information including topological condition & existing level which are needed for the work to be completed in scheduled time properly.

10) Bid documents:-

A full set of Bid documents consists of 2 Parts. These are;

a) **Part I** containing all documents in relation to the name of the firm applied credentials possessed by them, all documents as depicted in Sl. No. 4 along with this NleB and its all corrigenda's.

AND

Section A: BID NOTICE, CORRIGENDUM AND ADDENDUM (to be uploaded by bidder).

Section B: DECLARATION BY THE BIDDER.

Section C: All the works required as per CPHEEO Manual or with the relevant IS Specifications & code to complete the Project.

b) **Part II** containing following documents; Bid Price / Price Schedule (BOQ) in separate part of Civil Work.

11) Validity of Bid:-

A Bid submitted shall remain valid for a period of 120 calendar days from the date set for opening of Bids. Any extension of this validity period if required will be subject to concurrence of the Bidders.

12) Withdrawal of Bid:-

A Bid once submitted shall not be withdrawn within the validity period. If any Bidder/Bidders withdraw his / their Bid(s) within the validity period then Earnest Money as deposited by him / them will be forfeited.

13) Acceptance of Bid:-

The Competent Authority will accept the Bid. He does not bind himself to accept otherwise the lowest Bid and reserves to himself/herself the right to reject any or all of the Bids received without assigning any reason thereof.

14) Intimation:-

The successful Bidder will be notified in writing of the acceptance of his Bid. The Bidder then becomes the “Contractor” and he shall forthwith take steps to execute Formal Contract Agreement with The Chairman/ Administrator, Burdwan Municipality in 4 (four) copies after depositing requisite cost of Formal Contract Agreement Municipal Form no- K 2911(ii) and fulfil all his obligations as required by the Contract.

After the Bid is provisionally accepted, the Bidder shall submit detail Design, Drawing and working specifications phase wise based on existing site condition & proposed levels at site duly checked & vetted by Govt. technical institute like IITs/NITs/Jadavpur Engineering College or equivalent. It will be approved by the Superintending Engineer (West Circle) if it is found technically correct and acceptable with proper examination by the Superintending Engineer (West Circle), M.E. Dte. Provisional approval of the submitted drawings will be accorded phase wise for execution. Eventually, all the parts, Design, Drawings etc. of the successful Bidder shall be taken as a part of the agreement.

15) Escalation of Cost:-

There will be no escalation in cost for materials or labour and the contract price mentioned in the contract stands valid till completion of the operation and maintenance of the contract.

16) Name & address of Engineer-In-Charge (EIC) of the Work

Executive Engineer, Burdwan Division, M.E.Dte.

17) Execution of Work:-

The Contractor is liable to execute the whole work as per direction and instruction of the Executive Engineer, Burdwan Division, M.E.Dte. and upto the satisfaction of E-I-C or his/her representative.

18) Payment:-

Payment will be made to the successful Bidder by The Chairman/Administrator, Burdwan Municipality periodically only on receipt of written recommendation from the Executive Engineer, Burdwan Division, M.E.Dte.

19) Influence:-

Any attempt to exercise undue influence in the matter of acceptance of Bid is strictly prohibited and any Bidder who resorts to this will render his Bid liable to rejection.

Following clauses are to be adhering to by the concerned Bidder during the process of Bidding.

20. In case office faces sudden closure owing to reason beyond the scope and control of the Chairman/Administrator, any of last date / dates as schedule in Sl. No 6 may be extended up-to / to next and following working day without issuing further and separate notice should the Chairman/Administrator feel it to be necessary and exigent.
21. Persons having authenticated and having registered Power of Attorney may be considered lawfully becoming to be acting on and for behalf of the Bidder.
22. Sufficient care has been taken to avoid variance in between the contents of the listed documents in the Bid documents. However, if there is any variance between the contents of different documents, the provision of documents appearing earlier in the list shall prevail over the same provided in the contents coming later.
23. Imposition of any duty / tax / rule etc. owing to change / application in legislations / enactment shall be considered as a part of the contract and to be adhering to by the Bidder / contractor strictly.
24. Bid Acceptance Authority is competent Authority.
25. In case of any dispute arising from any clauses of similar nature between bid documents and Municipal tender form, the recommendation of the Superintending Engineer (West Circle) will be final and binding.
26. All usual deductions for GST, IT, and Labour welfare Cess etc. as applicable will be made from the bills from time to time which is inclusive in cl.57 of section C.
27. No conditional / incomplete Bid shall be entertained.
28. In the event of e-Filing intending bidder may download the tender document from the website <https://wbtenders.gov.in> directly by the help of Digital Signature Certificate free of cost. Technical Bid & Financial Bid both will be submitted concurrently duly digitally signed in the Website <https://wbtenders.gov.in>. Tender document may be downloaded from website & submission of Technical Bid/Financial Bid as per Tender Schedule.
29. The requisite cost of Earnest Money, as specified in this NleB shall be paid to ICICI bank by online internet bank transfer or NEFT or RTGS in favour of Burdwan Municipality (as per GO No. 3975-F(Y) dt. 28.07.2016 of Finance Department, Govt. of West Bengal). Every such Transfer shall be done on or after the date of publish of NleB. Any Bid without such Transfer of EM (Except exemption as per G.O.) shall be treated as informal and shall be automatically cancelled. Online transfer of Earnest Money receipt (Scanned copy) shall be uploaded as statutory document.
30. The Bidder, at the Bidder's own responsibility and risk is encouraged to visit and examine the site of works and its Surroundings and obtain all information that may be necessary for preparing the Bid and entering into a contract for the work as mentioned in the Notice inviting Tender, the cost of visiting the site shall be at the Bidder's own expense. Traffic management and execution shall be the responsibility of the Agency at his / her / their risk and cost.

31. The intending Bidders shall clearly understand that whatever may be the outcome of the present invitation of Bids, no cost of Bidding shall be reimbursable by the Municipality. The Chairman/Administrator Burdwan Municipality reserves the right to reject any application for purchasing Bid documents and to accept or reject any or all the offered bid / bids without assigning any reason whatsoever and is not liable for any cost that might have incurred by any Bidder at any stage of Bidding.
32. Prospective applicants are advised to note carefully the minimum qualification criteria as mentioned in 'Instructions to Bidders' before bidding.
33. During scrutiny, if it is come to the notice to tender inviting authority that the credential or any other papers found incorrect / manufactured / fabricated, that Bidder will not be allowed to participate in the tender and that application will be out rightly rejected without any prejudice. Needful action will be taken as per prevalent Government order.
34. Before issuance of the work order, the tender inviting authority may verify the credential & other documents with the original of the lowest bidder if found necessary. After verification, if it is found that such documents submitted by the lowest bidder is either manufactured or false, in that case, L.O.A. / work order will not be issued in favour of the bidder under any circumstances.
35. If any discrepancy arises between two similar clauses on different notifications, the clause as stated in later notification will supersede former one in following sequence:
 - i) Formal Contract Agreement i.e. 2911(ii)
 - ii) NleB
 - iii) Special terms & Condition
 - iv) Technical bid
 - v) Financial bid
36. Contractor shall have to comply with the provisions of (a) the contract labour (Regulation Abolition) Act. 1970 (b) Apprentice Act. 1961 and (c) minimum wages Act. 1948 of the notification thereof or any other laws relating thereto and the rules made and order issued there under from time to time.
37. Where an individual person holds a digital certificate in his own name duly issued to him against the company or the firm of which he happens to be a director or partner, such individual person shall, while uploading any tender for and on behalf of such company or firm, invariably upload a copy of registered power of attorney showing clear authorization in his favour, by the rest of the directors of such company or the partners of such firm, to upload such tender. The power of attorney shall have to be registered in accordance with the provisions of the Registration Act, 1908.
38. Any legal matter will be settled within the jurisdiction of Hon'ble District Judges Court at Burdwan, Dist:- Purba Bardhaman, West Bengal.
39. Bidder would be at liberty to point out any ambiguities, contradictions, omissions etc. seeking clarifications thereof or interpretation of any of the conditions of the Bid documents before the Bid Inviting Authority in writing 48 hours prior to Pre Bid Meeting, beyond such period no representation in that behalf will be entertained by the Bid Inviting Authority.
40. The successful Bidder will remain liable for following with West Bengal Contract Labour (Regulation & Abolition) Act 1970 and necessary certificates from appropriate authority to be submitted within 07 (seven) days from the date of issue of work order, otherwise the work order may be cancelled.

Security Deposit @ 8% (eight percent) will be deducted from each and every running bill. The Security Deposit will be refunded as per PWD order No. 5784-PW/L&A/2M-175/2017 Dated: 12.09.2017, wherein, Construction of new building / new bridge / new culvert, the Defect Liability Period of the work shall be five years from the actual date of completion of the work;

41. For work with five years Defect Liability Period:

- i) No security deposit shall be refunded to the contractor for 1st 3 years from the actual date of completion of the work;
- ii) 30% of the security deposit shall be refunded to the contractor on expiry of four years from the actual date of completion of the work;
- iii) The balance 70% of the security deposit shall be refunded to the contractor on expiry of five years from the actual date of completion of the work.

42. The successful bidder has to provide detailed estimate along with rate analysis (if any) for all civil and mechanical works including planning, designing and drawings with all necessary break up elaborately within one month after acceptance of bid which will be treated as part of the bid document.

43. Payment Schedule has been prepared on the basis of major items of the work so that contractor may get payment after completion of major items in a phased manner . If any item the contractor feels as major item but not reflected in the clause will be pointed out during pre-bid meeting. All other items (if any) not shown in the payment schedule or in bid document but required for successful completion and commissioning of the project will be in the scope of Bid.

44. Drawing:

- All investigation report, drawings, designs work should be vetted by the premier Institutions like, NITs/IITs/Jadavpur University and
- Supertending Engineer, M.E.Dte (West Circle) shall finally vet the drawing to commence the work.
- Any vetting done by the Institution/the SE(WC) shall be treated as provisional & all responsibility lies with the agency. Even after vetting, if any dispute arise during execution should invariably be done/rectified as per directive of the SE(WC).

SECTION – A **INSTRUCTION TO BIDDERS**

1. General guidance for e-Bidding

Instructions/ Guidelines for bidders for electronic submission of the Bids have been annexed for assisting them to participate in e-Bidding.

2. Registration of Bidder

Any Bidder willing to take part in the process of e-Bidding will have to be enrolled and registered with the Government e-procurement system, through logging on to <https://wbtenders.gov.in> The Bidder is to click on the link for e-Bidding site as given on the web portal.

3. Digital Signature certificate (DSC)

Each Bidder is required to obtain a class-II or Class-III Digital Signature Certificate (DSC) for submission of Bids, from the service provider of the National Information's Centre (NIC) or any other bonafide service provider on payment of requisite amount. Details are available at the Web Site stated in Clause 2 of Guideline to Bidder. DSC is given as a USB e-Token.

4. The contractor can search and download NleB and Bid Documents

Electronically from computer once he logs on to the website mentioned in Clause 2 using the Digital Signature Certificate. This is the only mode of collection of Bid Documents.

5. Submission of Bids.

General process of submission, Bids are to be submitted through online to the website stated in Cl. 2 in two folders at a time for each work, one in Technical Proposal and the other is Financial Proposal before the prescribed date and time using the Digital Signature Certificate (DSC) the documents are to be uploaded virus scanned copy duly Digitally Signed. The documents will get encrypted (transformed into non-readable formats).

A. Technical proposal

The Technical proposal should contain scanned copies of the following further two covers (folders).

A-1. Statutory Cover Containing

1. Prequalification Document

- i. As per Sl. No. 4
- ii. Prequalification Application (Sec-B, Form – I)

iii. Scanned Copy of online bank challan towards earnest money (EMD) as prescribed in the NleB against each of the serial of work.

2. NleB(download and upload the same Digitally Signed)

3. Technical Document (*To be filled, scanned & digitally signed*)

i. Financial Statement (Section – B, Form – II).

ii. Affidavits (Ref:-Declaration of theBidder)

iii. Bank Solvency Certificate.

iv. Form III & IV Of Section B.

v. Declaration by the Bidder.

(The autocad drawing may be obtained from concerned divisional office after publishing of the bid document for showing locations of different items if required and sluice valve chambers and to be uploaded.)

A-2. Non statutory Cover Containing/My Documents

i. Registration Certificate under Company Act. (if any).

ii. Registered Deed of partnership Firm/ Article of Association and Memorandum

iii. Power of Attorney (For Partnership Firm/ Private Limited Company, if any)

iv. Tax Audit Report along with Balance Sheet and Profit and Loss A/c for the lastfiveyears(year just preceding the current Financial Year will be considered as year – I)

v. Clearance Certificate for the Current Year issued by the Assistant Registrar ofCo-Op(S) (ARCS) bye laws are to be submitted by the Registered labour Co-Op(S) Engineers' Co.-Opt.(S)

vi. List of machineries possessed by own/arranged through lease deed along with authenticated documents of lease / sub-lease / hire basis etc.

vii. List of laboratory Instrument.

viii. List of technical staff along with structure and organization (Section – B, Form – III).

Note: - Failure of submission of any of the above mentioned documents (as stated in A1 and A2) will render the Bid liable to be summarily rejected for both statutory andnon-statutory cover.

Intending Bidders should upload Non-Statutory documents as per following folders in My

Document:

E-Bidding system of Government of West Bengal			
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Bidder Document Sub Category			
Master			
Sl. No.	Category Name	Sub Category Name	Sub Category Description
A	CERTIFICATES		
		A1. CERTIFICATES	<p>1. GST Registration / ST Registration/ P.F/PAN / P. Tax Clearance Certificate</p> <p>2. Income Tax Acknowledgement Receipt (Latest) 3.E.S.I & P.F. Registration Certificate.</p>
B	COMPANY DETAILS		
		B1. COMPANY DETAILS 1	<p>1. Proprietorship Firm (Trade License).</p> <p>2. Registered Deed of partnership Firm</p> <p>3. Registration Certificate under Company Act. (if any). Ltd.</p>

			Company (Incorporation Certificate , Trade License) 4. Power of Attorney (For Partnership Firm/ Private Limited Company, if any) 5. Society (Society Registration copy, Trade License)
C	CREDENTIAL		
		C1. CREDENTIAL1	Similar nature Work & Completion Certificates along with work order and payment certificate issued by competent authority (as per SI No. 4 of NleB)
D	EQUIPMENT		
		D1.LABOURTARY	1. List of Machineries and equipment necessary for field as well as laboratory test of all materials as per NleB
		D2. CIVIL MACHINERIES	
		D2. ELECTRICAL MACHINERIES	
		D2. MECHNANICAL MACHINERIES	
		D2. MISCELLENEOUS MACHINERIES	
E	FINANCIAL INFO		
		E1. P/L & BALANCE	P/L & BALANCE

		SHEET 2011-2012	SHEET (As per NleB)
		E2. PAYMENT CERTIFICATE 1	Payment Certificate in support of valid credential only to be submitted(as per NleB)
		E3 PAYMENT CERTIFICATE 2	
F	MANPOWER		
		F1. TECHNICAL PERSONNEL	1. List of sufficiently qualified technical person (as per SI No 4 of NleB)
		F2. TECHNICAL PERSONNEL ON CONTRACT	1. List of technical personnel employed under the organization (or on contact basis) in details with name, qualification, experience and, address with contact number.
G	DECLARATION	DECLARATION 1	1. Bank Solvency Certificate (As per NleB)
		DECLARATION 2	2. Valid Document in support of annual (As per NleB)
		DECLARATION 3	3. Corrigendum and additional document (if any).

Note:- Failure of submission of any of the above mentioned documents (as stated in 5.A-1 & 5.A-2) will render the Bid liable to summarily rejected for both statutory & non statutory cover. All Corrigendum & Addendum Notices, if any, have to be digitally signed & uploaded by the contractor in the Declaration Folder of My Documents.

B. Bid Evaluation

i. Opening and evaluation of Bid :- If any Bidder is exempted from payment of EMD, copy of relevant Government order needs to be furnished (applicable in case of Registered Labour Co-Operative Society).

ii. Opening of Technical proposal: - Technical proposals will be opened by the Bid Inviting Authority electronically from the website using his/ her Digital Signature Certificate.

iii. Cover (folder) of statutory documents (vide Cl. No. 5.A-1) should be opened first and if found in order, cover (Folder) for non-statutory documents (vide Cl. No. – 5.A-2) will be opened. If there is any deficiency in the statutory documents the Bid will summarily be rejected.

iv. Decrypted (transformed in to readable formats) documents of the non-statutorycover will be downloaded and handed over to the Bid Evolution Committee. Scrutiny of technical proposal and recommendation thereafter and processing of comparative statement for acceptance etc. will be made by the Municipal Engineering Directorate, under the Deptt. of Municipal Affairs, Govt. of West Bengal. Comparative Statement may be forwarded to appropriate authority depending on the value of the work as applicable as per existing norms and guidelines under AMRUT programme.

v. Uploading of summary list of technically qualified bidders.

vi. Pursuant to scrutiny and decision of the screening committee the summary list of eligible Bidder and for which their proposal will be considered and uploaded in the web portals.

vii. While evaluation, the committee may summon the bidders and seek clarification / information or additional documents or original hard copy of any of the documents already submitted and if these are not produced within the stipulated time frame, their proposals will be liable for rejection.

6. Financial capacity of a Bidder will be judged on the basis of working capital and available bid capacity as mentioned in the NleB to be derived from the information furnished in **FORM-I and II** (Section-B) i.e., Application (for Pre-qualification) and Financial Statement. If an applicant feels that his/their Working Capital beyond own resource may be insufficient, he/they may include with the application a letter of guarantee issued by a first class Bank to supplement the applicant. This letter of guarantee should be addressed to the Bid Inviting/ Accepting Authority and should guarantee duly specifying the name of the project that in case of contract is awarded to the Bidder, the Bidder will be provided with a revolving line of credit Such revolving line of credit should be maintained until the works are taken over by the Authority.

The audited Balance sheet for the last five years, net worth bid capacity etc. are to be submitted which must demonstrate the soundness of Bidder financial position, showing long term profitability including an estimated financial projection of the next two years.

7. Penalty for suppression / distortion of facts

Submission of false document by Bidder is strictly prohibited and in case of such act by the Bidder the same may be referred to the appropriate authority for prosecution as per relevant IT Act with forfeiture of earnest money forthwith.

8. REJECTION OF BID

The Employer (Bid accepting authority) reserves the right to accept or reject any Bid and to cancel the Bidding processes and reject all Bids at any time prior to the award of Contract without thereby incurring

any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the ground for Employer's (Bid accepting authority) action.

The Bidder whose Bid has been accepted will be notified by the Bid Inviting and Accepting Authority through acceptance letter/ Letter of Acceptance. The Letter of Acceptance will constitute the formation of the Contract.

The Agreement in Printed Bid Form will incorporate all necessary documents e.g. NleB., all addenda-corrigendum, different filled-up forms (Section –B), Price Schedule and the same will be executed between the Bid Accepting Authority and the successful Bidder.

**The Executive Officer
Burdwan Municipality**

**SECTION – B
DECLARATION BY THE BIDDER**

FORM –I

PRE-QUALIFICATION APPLICATION

**To
The Executive Officer,
Burdwan Municipality,
Dist: -PurbaBurdwan,
West Bengal,**

Ref: - Bid for _____

_____ (Name of work)

_____ **NleB No.:**

Dear Sir,

Having examined the Statutory, Non statutory and NleB documents, I /we hereby submit all the necessary information and relevant documents for evaluation. The application is made by me / us on behalf of _____ In the capacity _____ duly authorized to submit the order.

The necessary evidence admissible by law in respect of authority assigned to us on behalf of the group of firms for Application and for completion of the contract documents is attached herewith.

We are interested in bidding for the work(s) given in Enclosure to this letter.

We understand that:

- (a) Bid Inviting and Accepting Authority can amend the scope and value of the contract bid under this project.
- (b) Bid Inviting and Accepting Authority reserves the right to reject any application without assigning any reason.

Enclo:- e-Filling:-

- 1. Statutory Documents
- 2. Non Statutory Documents

Date: -

Signature of applicant including title and capacity in which application is made.

SECTION – B

Form - II

FINANCIAL STATEMENT

B.1 Name of Applicant:

B.2 Summary of assets and liabilities on the basis of the audited financial statement of the last five financial years. (Attach copies of the audited financial statement of the last five financial years)

	1st Year (Rs. In lakh)	2nd Year (Rs. In lakh)	3rd Year (Rs. In lakh)	4th Year (Rs. In lakh)	5th Year (Rs. In lakh)
a) Current Assets : (It should not include investment in any other firm)					
b) Current liabilities : (It should include bank over draft)					
c) Working capital : (a) – (b)					
d) Net worth : (Proprietors Capital or Partners Capital or Paid up Capital + Reserve & surplus)					
e) Bank loan/ Guarantee : (As per clause G.2. with all sub clauses)					

B.3 Annual value of construction works undertaken :

Work in hand i.e. Work order issued	As on 31.03.2020	As on 31.03.2019	As on 31.03.2018	As on 31.03.2017	As on 31.3.2016	As on 31.03.2015

Signed by an authorized officer of the firm

Title of the officer

Name of the Firm with Seal

Date _____

Declaration of the Bidder

(Affidavit to be affirmed on a Non Judicial Stamp Paper of Rs. 10/- and enclosed with the Bid documents which is required to be submitted in time duly)

I,, son of, aged about ye ars by occupation do hereby solemnly affirm and confirm as follow:

1. That, I am the Of have duly authorized by and compete nt to affirm this affidavit on behalf of the said Bidder.

2. That, I have inspected the site of work covered under NleB (NleB No) circulated through Office memo bearing No dated and have made myself fully acquainted with the site conditions existing level/proposed level and local conditions in and around the site of work. I have also carefully and meticulously gone through the Bid documents. Bid of the above named Bidder is offered and submitted upon due consideration of all factors and if the same is accepted, I on and for behalf of the aforesaid Bidder, being lawfully and duly authorized, promise to abide by all the covenants, conditions and stipulations of the Contractual documents and to carry out, complete the works to the satisfaction of the Bid accepting Authority of the Work and abide by all instructions as may given by the Engineer in Charge of the work time to time. I also hereby undertake to abide by the provisions of Law including the provisions of Contract Labour (Regulation & Abolition) Act, Apprentice Act 1961, West Bengal Sales Tax Act, VAT Act, Income Tax Act as would be applicable to the Contractor upon entering into formal Contract / agreement with the Bid Inviting/Accepting authority.

3. That I declare that, no relevant information as required to be furnished by the Bidder has been suppressed in the Bid documents.

4. That the statement above made by me is true to my knowledge.

Deponent

Solemnly affirmed by the said

Before me.....(1st class Judicial

Magistrate / Notary Public)

SECTION - B
FORM- III
STRUCTURE AND ORGANISATION

A.1 Name of applicant :

A.2 Office Address :

Telephone No. and Cell Phone No. :

Fax No. :

E mail :

A.3 Attach an organization chart showing the structure of the company with names of
Key personnel and technical staff with Bio-data. :

Note: Application covers Proprietary Firm, Partnership, Limited Company or Corporation,

**Signature of applicant including title
and capacity in which application is made**

SECTION - B

FORM – IV

C. DEPLOYMENT OF MACHINERIES (in favour of owner / lessee): -

(Original document of own possession arranged through lease deed to be annexed)

(If engaged before Certificate from E.I.C. to be annexed in respect of anticipated dated of release of Machineries.)

Name of Machine / Instrument	Make	Type	Capacity	Motor Engine No.	Machine No.	Possession Status		Date of release If Engaged
						Idle	Engaged	

For each item of equipment the application should attach copies of

- (i) Document showing proof of full payment, (ii) Receipt of Delivery,
- (iii) Road Challan from Factory to delivery spot, is to be furnished.

Signature of applicant including title and capacity in which application is made.

Memo No.

Dated:

Copy Forwarded for information and for favour of wide circulation to:

1. The Director SUDA, SUDA BHAWAN, HC Block, Sector-III, Salt Lake, Kol-106.
2. The Mission Director, AMRUT, IlgusBhavan, Kol-700106, Sec-IV
3. The Secretary, M.E.Dte., BikashBhawan, Salt Lake, Kol-91
4. The Chief Engineer, M.E.Dte., BikashBhawan, Salt Lake, Kol-91.
5. The Chief Engineer KMDA (E/M), Salt Lake Kolkata,
6. The Additional Chief Engineer(S), M.E.Dte., BikashBhawan, Salt Lake, Kol-91.
7. The Superintendent Engineer, (Western Circle), M.E.Dte., PurbaBardhaman.
8. The Administrator & SDO SADAR(N)
9. The Superintendent Engineer KMDA (E/M), Salt lake Kolkata
10. The Executive Engineer, M.E.Dte. Burdwan Division.
11. The Executive Engineer, KMDA (E/M), Salt lake Kolkata
12. The Finance officer, Burdwan Municipality.
13. The O.S. for wide circulation in a day by National & local News Paper in Bengali, English and Hindi News Paper.
14. The Office Notice Board, Burdwan Municipality for wide circulation.
15. The Guard File.

**The Executive Officer
Burdwan Municipality**

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SECTION – 1 **SCOPE OF WORK**

1.0 GENERAL

Surveying, Planning, Design, Drawing and Construction of MS Pipe carrying Steel structural Bridge supported on RCC column / Pier with adequate piles foundation at suitable interval at different locations (as per enclosed Annexure) complete in all respect on Trunkey basis for water supply Project within Burdwan Municipality under AMRUT.

Tender Inviting Authority however, reserves the right to accept or delete any item of Scope of works in full or part thereof.

2.0 MAJOR ITEMS OF THE SCOPE OF WORK

1) Survey and Investigation:

a) Soil test, Level survey, Hydraulic survey at the Pier & abutment location for M.S Access Bridge at different location of Banka Khal, DVC Canal area should be done by agency separately.

The agency should ensure all the test & survey prior to construction & during construction as deem fit.

2) Planning, Design & Drawing:

a) Planning, Architectural and Structural Design & detail Drawing of 1.20 m, 1.50m, 3.00m & 3.50 m wide M.S Access Bridges with necessary abutments, piers, columns supported on RCC/Pile foundation, G.I. grating walkway and railing etc. for carrying different diameter of rising main & distribution line with M.S Pipe line and submission of 6(three) copies of design report and drawings both is hard and editable soft copies as well as pdf format.

NOTE:

a) Vetting of design, drawing and relevant documents of all civil & Mechanical structures should be done by any Govt. recognized Engineering Institute. However, M. E.Dte may also get such design/ drawing checked departmentally or through any other agency/organization/personnel decided by the Directorate, the cost of which is to be borne by the contractor.

b) Design of all civil & Mechanical structures in all parts shall be based on surveys, soil test report and hydraulic study etc. conducted separately by the successful bidder.

3) Execution and Construction:

a) Construction & Erection of M.S Access & Pipe carrying Bridge of 2.00m above HFL or Nearby existing brige floor level with joist , angle frame etc. at different location with necessary RCC abutments, piers on RCC Pile foundation with suitable spacing as directed by EIC, with M.S saddle support for MS Pipe line, 30 mm thick G.I. grating for walkway and pipe hand railing etc. with all ancillary allied and related works and as per instruction of EIC on trunkey basis.

b) Spplying, fitting & laying of different diameter (100 mm to 500 mm) 10 mm thick MS with ISI mark Pipe line for carrying water of rising main & distribution line with necessary welding as per IS code & specification and upto 3 m length of each side of Bridge end or as per site condition with slope of MS pipe may vary from 30degree to 45 degree with necessary thrust block, air valve, sluice valves arrangement & valve chambers along with ancillary allied and related works and as per instruction of EIC.

c) Planning, supplying, placing, and setting in position laterite/ stone boulders of good quality emmeshed in 10 gauge GI wire as per IS Code including gravel packing Bank Protection work by Boulder Sausage Work on both Upstream and Downstream side atleast 10 m or as per site condition of both bank at Banka Khal, DVC Canal and others Nalah including all ancillary, allied and related works on trunkey basis as per instruction of EIC.

ANNEXURE

Pipe carrying Bridge at different location over Banka, DVC canal under water supply Project AMRUT at Burdwan Municipality

Sl. No.	Description	width of the bridge in m.	Dia. of Pipe & details	Length(m) of the Bridge
<u>Banka Crossing</u>				
1.	Alamganj Bridge	3.00	C.W.R.M. 500mm dia.(supply & laying of 500mm dia MS pipe not in scope of bid, only provision for design calculation, drawing & saddle support at bridge), Distribution 100 mm dia Zone-VII, Distribution 350 mm dia Zone-IX	45
2.	Lakurdi Near Jalkal	1.50	Distribution 500 mm dia Zone-X	30
<u>DVC Crossing</u>				
3.	Near kanchannagar Bridge, ITI Col.	1.20	Distribution 400 mm dia Zone-X	45
<u>DVC Banka Link Canal</u>				
4.	Near kanchan Nagar ITI College	3.50	Distribution 500 mm dia Zone-X, CWRM 500 mm & 450 mm dia. (supply & laying of 500mm & 450mm dia MS pipe not in scope of bid, only provision for design calculation, drawing & saddle support at bridge).	25
Total=				125

NOTE: 1) All data given above in the scope of works are tentative in nature, bidder is responsible to take necessary survey, test and all consideration before submission of tender. The scope of Work, supply and service of plants and equipments may not be limited to the aforesaid items. The items though not specifically mentioned but needed to make the system complete in all respect and reliable for safe and smooth operation and guaranteed performance shall be included with related items in the price schedule.

4. BROAD SCOPE OF WORK:

Broad Scope of Works under this Tender is as under and also as detailed under various Sections of the Tender Document.

A) SURVEY & INVESTIGATION, SOIL TEST AND HYDRAULIC INVESTIGATION

(i) Level Survey for M.S Access & Pipe carrying Bridge at different location of Banka Khal, DVC Canal & others nalah with necessary abutments, piers, columns supported on RCC/pile foundation shall be conducted by the successful bidder. Hindrance, if any, which are absolutely unavoidable, shall be shifted with proper permission of respective authorities. The design of various units is to be taken up on the basis of this survey work.

(ii) Soil exploration and soil investigation work for the Pier & abutment location of M.S Access Bridge shall be carried out by the Successful Bidder, in order to determine the soil Properties, Soil Bearing Capacity (SBC), load carrying capacity of pile, etc. The required depth of soil exploration & no. of bores for utility sites for construction of major structures shall be decided & carried out by the Contractor and shall be approved by EIC before starting the work. The sub-soil water level shall be taken at finished Ground Level for the purpose of evaluating the uplift pressure..

(iii) Any other test/investigation required for design purpose.

iv) Soil test should be done separately at all requisite components and should be vetted by the premier Institutions like, NITs / IITs / Jadavpur University.

B) PLANNING & DESIGN

Planning and design of different components are to be done by the successful bidder based on the basic information obtained from survey, soil test, and other investigations conducted by the successful bidder. In doing such planning and design work the latest IS codes and design practices by using approved and accepted design software are to be used by the successful bidders.

Vetting of design, drawing and relevant documents of all civil structures should be done by any Govt. recognized Engineering Institute. However MED Dte. may also get such design/ drawing checked departmentally or through any other agency/organization/personnel decided by the Directorate, the cost of which is to be borne by the contractor.

C) EXECUTION & CONSTRUCTION

Execution /construction of different item of works as described above are to be done following the procedure and specifications indicated else where in this Tender document and following the best any other allied and related works to complete.

- 1) **Construction of M.S Access & Pipe carrying Bridge with joist , angle frame etc. at different location of Banka Khal, DVC Canal & others nalah with necessary abutments, piers, columns supported on RCC Pile foundation with suitable spacing as directed by EIC, with M.S saddle support, 30 mm thick G.I. grating walkway and pipe hand railing etc. with all ancillary allied and related works and as per instruction of EIC on trunkway basis.**
 - a) 3 m wide Bridge at Alamganj over Banka River
 - b) 1.2 m wide Bridge at near Kanchan Nagar ITI College over DVC Canal
 - c) 3.5 m wide Bridge at near Kanchan Nagar ITI College over DVC & Banka link canal
 - d) 1.5 m wide Bridge at near Lakurdi Jalkal Building over Banka River

This work should be executed in all respect with supply of all labors, materials, and hire charges of Machineries, equipments, tools & plants as per design, drawing, specification, scope of works, different sections of Tender Document and direction of EIC. Major items of works involved are given below:

–Cleaning site including cutting and removing jungles, bushes and shrubs with any kind of uprooting and layout of the work as per approved drawing in relation to the other works or structures as per direction of the EIC.

–Providing and constructing Temporary Service Road of width not less than 3.75 m over river for movement of men, equipment and construction machineries from river bank to collector well location considering necessary stability and safety aspects by providing and driving suitable piles, providing fitting, fixing suitable R.S. Joist, Channels, angles and wooden sleeper as per design requirement including dismantling and taking out the entire service road after construction.

–Construction of Temporary Island and or temporary diversion of river course by construction of outerannular layer with two rows of bullahs, suitable spaced, of dia. not less than 150 mm, driven at least half of the total length, properly tied, braced and supported and filling the annular space with sand / soilfilled bags, protected by drum sheet walling on both side and filling the core portion with locallyavailable materials including the dismantling, removing and cleaning the site. Temporary Island should be maintained up to the completion of works for piers and abutment.

–Earth work in excavation of foundation trenches or drains up-to design depth, in all sorts of soil including mixed soil, laterite or sandstone and hard rock including controlled blasting and / or pavement breakers or any other equipment as approved by the Engineer-in-charge including removing, spreading or stacking the spoils within a lead of 75m. as directed. The item includes necessary trimming the sides of trenches, levelling, dressing and ramming the bottom, bailing out water as required complete. –Bailing / pumping out of any type water from foundation trenches and / or any other sources.

–Hire and labor charges for shoring work including necessary close plank walling, framing, Eucalyptus/ Jhou bulla piling, strutting etc. or sheet piling with necessary support and bracing where necessary, all complete as per direction of the Engineer-in-charge for foundation excavation.

–Preparation of bed of foundation trenches by ramming etc. as per direction of EIC.

–Filling in foundation or plinth by silver sand in layers not exceeding 150 mm as directed and consolidating the same by thorough saturation with water, ramming complete including the cost of supply of sand.

–Single Brick Flat Soling of picked jhama bricks including ramming and dressing bed to proper level and filling joints with local sand.

–M20 Grade Cement concrete with graded stone chips (20 mm nominal size) excluding

shuttering and reinforcement, if any as per relevant IS codes including compacting and curing.

–Drilling holes up to 15 cm dia. and up to 1.50 m depth through rock including bailing out / pumping out water and fitting / fixing anchor bolts 20 mm to 40 mm dia. with necessary fittings with cement concrete 1:1.5:3 using anti shrinkage admixture.

–Providing RCC cast in situ bored piles of required dia. in position in all kinds of soil except rock of any hardness including cost of boring by any method but using drilling mud to stabilize the bore and flushing the bore of excess mud with freshly prepared drilling fluid by using pumps prior to placing concrete by tremie method in one continuous operation and including the cost of all materials and labor for placing of concrete and also including the cost of hire charges of all equipments i.e. pile rigs and concrete thereof, welding of reinforcement cage as necessary and lowering reinforcement cage complete but excluding the cost of reinforcement and labor for bending, binding etc. work to be executed as per IS: 2011 (Part I / Sec.2). using Pakur/Rampurhat/Panchal variety or its equivalent stone chips, ultimate crushing strength of cement concrete should not be less than 350 kg/cm² on 15 cm cube at 28 days with water cement ratio of 0.4 and slump 150-200 mm with minimum cement content of 500kg/m³ including 1.0 m minimum dummy length of pile concrete.

–Providing and laying M30 grade Controlled Cement concrete in all parts of the Access Bridge in pile cap, column, pier, abutment, wing wall etc. with well Graded stone chips (20mm size) excluding shuttering and reinforcement, with complete design of concrete as per IS:456 & relevant special publications submission of job mix formula after preliminary mix design after testing of concrete cubes including necessary vibrating, curing and cost for quality control, sampling, testing etc. as per direction of EIC. Consumption of cement will not be less than 500 Kg of cement with super plasticizer per cubic meter of controlled concrete but actual consumption will be determined on the basis of preliminary test and job mix formula [using concrete mixture].

–Hire and labor charges for shuttering with centering and necessary staging up-to 4 m using approved stout props and thick hard wood planks of approved thickness with required bracing for concrete slabs, beams and columns, lintels curved or straight including fitting, fixing and striking out after completion of works.

ii) Steel shuttering or 9 to 12 mm thick approved quality ply board shuttering in any concrete work.

–Staging beyond 4M with stout bamboo / M.S or G.I tubular staging with necessary support and braces with necessary coir rope, nail, nut & bolts etc.

–Reinforcement for reinforced concrete work in all sorts of structure including distribution bar, stirrups binders etc. including supply of rod, initial straightening and removal of loose rust (if necessary) cutting to requisite length hooking and bending to correct shape placing in proper position and binding with 16mm. gauge black annealed wire at every inter section complete as per drawing & direction of the EIC.

(i) HYSD Tor Steel/T.M.T bars Fe-500 grade (SAIL/ TATA/RINL) & Cement to be of Premium grade (Ambuja/Ultratech/ACC/Lafarge/JSW or equivalent)

–Supplying, fabricating at shop suitable M.S Truss segments with necessary welding, pipe saddle support, transporting from shop to site and hoisting in position after necessary splicing at site with bolts and nuts M.S. Latticed Girders made of R.S Joist, angles, Channels, flats etc. conforming to IS: 226, IS: 808 and SP – 6 including hire charges of all lifting tackles, provision for walk way and hand railing.

–Supplying, fitting and fixing in position true to line and levels approved Electrometric (Neoprene) Bearing as per IRC Code 83-Part I, including making of mortar / epoxy bed over sub – structure including its installation and testing.

–Providing and laying in position on bridge deck 30 mm thick GI grating as per IS code and all other materials and as per drawing design & instruction of EIC.

–Providing GI railing integrated with GI post placed @ 750mm C/C and stiffened top and centrally with GI pipe, all made of 32mm dia. GI pipe (Medium quality of TATA make) on both sides of walk way including cost of GI pipe, Tee and cross where necessary cutting pipes, welding at every junction and intersection of pipes, welding the post with the M.S girder, all complete as per drawing and finished with two coats of synthetic enamel painting to all exposed surface of GI pipes as per direction and satisfaction of EIC. –Priming one coat on steel or metal surface with synthetic oil bound primer of approved quality including smoothing surfaces by sand papering etc.

–Painting two coats with best quality synthetic enamel paint of approved quality, make, brand, approved colour and shade including smoothing surface by sand papering etc. including using of approved putty etc. on the surface, if necessary on steel or other metal surface with super gloss (hi-gloss).

–Back filling of foundation trenches or filling the plinth or filling behind abutment / wing wall with good earth obtained from excavation, carried earth and or silver sand in layers not exceeding 150 mm including watering and ramming etc. layer by layer all complete.

–

–Making necessary barricading, fixing of caution boards, flags, fluorescent strips, lighting arrangement for works in night, traffic diversion where necessary.

Removal of surplus excavated earth/spoils and cleaning the site in all respect.

Any other allied and related works to complete construction of M.S Access Bridge in all respect.

2. Supplying, fitting & laying of different diameter (100 mm to 500 mm) 10 mm thick M S Pipe line for carrying water of rising main & distribution line with necessary welding as per IS code & specification and upto 3 m length of each side of Bridge end or as per site condition with slope of MS pipe may vary from 30degree to 45 degree with necessary thrust block, air valve, sluice valves arrangement & valve chambers along with ancillary allied and related works and as per instruction of EIC.

Water Rising Main & distribution pipe line will be laid on Pipe carrying Bridges over Banka Khal, DVC Canal. Supply, fitting & welding jointing of 10 mm thick different diameter (100 mm to 500 mm) MS Pipe line of required length as mentioned in Annexure will be laid under this Tender. The work should be executed with supply of all labours, materials, M S pipes, welding jointing as per IS code specification etc, hire charges of machineries, equipments, tools & plants as per design, drawing, specification and direction of EIC including cutting and chamfering pipes . Major items of works involved are given below:

Supply and delivery at site any kind of M S specials and fittings such as Bends, Tees, Hydrant Tees, Tapers, Flanged Spigot Tail Pieces, Flanged Sockets Tail Pieces, M.J Collars etc. as per IS 9523: 2000 (Push on joints, Mechanical joints or Flange joints) of approved make and quality including loading, carriage, unloading and stacking and aligning, laying and jointing of the same with supply of all jointing materials.

Supply and delivery at site any kind of C.I.D.F valves such as sluice valves (IS:14846-2000), non-return valves (IS 5312: 2004), air valves (IS 14845: 2000) etc. of approved make and quality, including loading, carriage, unloading and stacking and aligning, laying and jointing of the same with supply of all jointing materials.

Supplying, fitting and fixing of M.S supports/benching arrangement for laying of MS Pipe line On carrying Bridge. Supply and delivery of M.S. pipes of different dia. of 10 mm thick of Fe 410 grade as per I.S 3589 –2001 including loading, carriage, unloading and stacking for interconnection of the Water Rising Main & distribution line.

Supply, fabrication and jointing any type M.S specials of different dia. made of M.S.E.R pipes of 10mm thick of Fe 410 grade conforming to I.S 3589 – 2001 for interconnection of the Water Rising Main. Construction of masonry sluice/ washout/ reflux/ non-return/ air valve chamber with supply of approved type of RCC cover including earth work in excavation, bailing out water, single layer B.F.S and cement concrete (1:2:4) with stone chips in foundation, brick work in cement mortar (1:6) with 1st class brick with provision of weep holes at bottom, 100mm thick precast RCC slab (1:1.5:3) with necessary shuttering & reinforcement work (Fe-500 grade steel) and other materials, fitting, fixing, overhauling the valves if necessary to work in proper order, all complete including cost of all labours, materials, carriage etc. (valves & tail pieces only will be supplied departmentally free of cost).

The work should be done as per Drawing. Design and Construction of R.C.C thrust blocks and anchor blocks including earth work in excavation in any kind of soil, sand filling, single layer B.F.S, 100 mm thick P.C.C. (1:2:4), ordinary cement concrete (1:1.5:3), necessary reinforcement (Fe-500 grade steel), shuttering including vibrating, curing and back filling of the trench all complete.

Providing steel/ply board shuttering, scaffolding, staging etc. with necessary support and bracings. Making necessary barricading, fixing of caution boards, flags, fluorescent strips, lighting arrangement for works in night, traffic diversion where necessary.

Testing hydraulically, all classes, all types of completed pipelines for a specified head of water in sections including supply of necessary equipments, gauge and other testing tools, required water and labours etc. all complete as per specification and direction of the EIC. Washing cleaning & disinfecting of all completed pipe lines with chlorinated water with at least chlorinated doses of 5mg/litre of water as per specification & direction of the EIC

Priming one coat on steel or metal surface with synthetic oil bound primer of approved quality including smoothing surfaces by sand papering etc.

Painting two coats with best quality synthetic enamel paint of approved make and brand, color and shade including smoothing surface by sand papering etc. including using of approved putty etc. on the surface, if necessary on steel or other metal surface with super gloss (hi-gloss). Removal of surplus excavated earth/spoils and cleaning the site in all respect.

3) Construction of Providing, placing, and setting in position laterite/ stone boulders of good quality boulder emmeshed in 10 gauge GI wire as per IS Code including gravel packing Bank Protection work by Boulder Sausage Work on both Upstream and Downstream side atleast 10 m or as per site condition of both bank at Banka Khal, DVC Canal and others Nalah including all ancillary, allied and related works on trunk basis as per instruction of EIC.

This works should be executed in all respect with supply of all labors, materials and hire charges of machineries, equipments, tools & plants as per design, drawing, specification and direction of EIC. Major items of works involved are given below:

- Cleaning site including cutting and removing jungles, bushes and shrubs with any kind of uprooting.
 - Hire and labor charges for shoring work including necessary close plank walling, framing, Eucalyptus/Jhou bulla piling, strutting etc. or sheet piling with necessary support and bracing where necessary, all complete as per direction of the Engineer-in-charge for foundation excavation.
 - Preparation of bed of foundation trenches by ramming etc. as per direction of the EIC.
 - Earth work in excavation of foundation trenches or drains, in all sorts of soil including removing, spreading or stacking the spoils within a lead of 75m. as directed including necessary trimming the sides of trenches, leveling, dressing and ramming the bottom, bailing out water as required complete. -Earth work in filling in foundation trenches or plinth with good earth, in layers not exceeding 150 mm. including watering and ramming etc. layer by layer complete with earth obtained from excavation of foundation or carried earth.
 - Filling in foundation or plinth by silver sand in layers not exceeding 150 mm as directed and consolidating the same by thorough saturation with water, ramming complete including supply of sand.
 - Dewatering of foundation of allied structure by well point method, swamp pump, deep well pumps Or any other approved method supplied by the contractor including installation, preparation etc. of pump pipe line & equipments, energy charge including supply and carriage of all accessories complete.
 - Supplying of continuous filament, needle punched, 100% poly-propylene UV stabilized non-woven Geo-textile used as a filter in Anti-erosion works as per specification given below including carriage of materials to work site complete.
- Boulder sausage work of 1.0 m thickness by providing, placing, and setting in position laterite/ stone boulders of size 400 mm and above and of approved quality including G.I wire netting around the Piers, abutments and wing walls with 5.0 m radius around the Piers, abutments and wing walls for preventing scouring in the immediate vicinity of these structures/ components during flood.

Specification:

1. Physical Properties:

- i) Mass per unit Area (ASTMD 5261) - 280 Gms/m²
- ii) Thickness (ASTMD 5199) - 2.50 mm.

- i) Tensile strength (Wide width) (ASTMD 4595) - 19 KN/m.
- ii) Grab tensile strength (ASTMD 4632) - 1090 KN
- iii) Trapezoidal tear resistance (ASTMD 4533) - 445 N.
- iv) Rod Puncture Strength (ASTMD 4833) - 550 N.

- i) Permeability (ASTMD 4491) - 0.03 mm./Sec.
- ii) Apparent opening size (ASTMD 4751) - 0.09 mm.

-Labor charges for placing, spreading and laying Geo-jute/ Geo-textile/ Geo-synthetic filter (manufacturer's specification to be followed) on slope of embankment including preparation of subgrade by excavating necessary trenches, filling earth on slope up-to 7.50 cm. depth, cutting Geo-jute/Geo-synthetic sheet in proper shape and sizes etc. dressing, watering, ramming where necessary complete as per direction of the engineer-in-charge.

-Making sausage rectangular in section for any length made with trap stone boulders (min. 25 Kg. size) rolled inside with 10 SWG (150mm X 100mm mesh) galvanized wire net caging with proper lapping of minimum 250 mm over splitted bamboo stiffeners at 50cm centre to centre (both ways) tying and sewing with 12 SWG galvanized wire including cost all materials to site, carriage, pitching and laying the sausage including launching under water after preparing the bed to proper slope as per direction of the Engineer-in-charge (Loading, unloading and carriage cost of boulder to be paid separately)

a) Where boats are not necessary

- (i) (1.20 X 0.90) Metre

-Labour charges for dry boulder pitching including preparing sub-grade with necessary earthwork including hand packing, filling up the interstices of boulder with smaller pieces and sand, rough dressing boulders excluding supply and carriage of boulders from quarry to site. (Measurement will be on the finished works).

Hard stone boulder weighing 25 Kg. to 40Kg. Panchami or similar variety.

a) Over Geo-fabric filter.

- Supply of hard stone boulder of Panchami or similar variety at quarry site (25Kg to 40 Kg.) as per specification delivered at work site including stacking as per direction of EIC.

Making necessary barricading, fixing of caution boards, flags, fluorescent strips, lighting arrangement for works in night, traffic diversion where necessary.

–Removal of surplus earth or spoils and cleaning the site in all respect.

–Any other allied and related works to complete construction of Bank Protection Work in all respect.

Note:

1. The components / items involved in the work will consist of, but not limited to broadly the above and shall be carried out by the contractor as per scope of works, specification, drawing, conditions of contract, additional conditions of contract, other documents and direction of EIC.

2. Integration of works wherever required shall be made by the contractor as per standard civil Engineering practices for best use of the systems as contemplated as per direction of EIC.

3. No material will be supplied departmentally; contractor has to procure all materials from the approved Vendors of the department.

4. Haulage path / temporary approach road for carriage of materials / spoils to/from site shall be arranged by the contractor at his own cost for uninterrupted / smooth progress of work.

**The Executive Officer
Burdwan Municipality**

SECTION - 2

PROCESS DESCRIPTION AND DESIGN PARAMETERS

1.0 PROCESS DESCRIPTION AND DESIGN PARAMETERS

Surveying, Soil Investigation, Planning, Design, Drawing and Construction of MS Pipe carrying Steel structural Bridge with supported on RCC column / Pier with adequate piles foundation at suitable interval at different locations (as per enclosed Annexure) complete in all respect on Trunk basis for water supply Project within Burdwan Municipality under AMRUT.

MATERIAL AND SERVICES

The materials and services for the civil/structural work shall include but not be limited to the following:

- a. Earthwork in excavation and backfilling for foundations, underground structures etc. and removal of surplus earth shall be done as per direction of the Employer.
- b. Dewatering of ground water/subsoil water and disposal of rain water shall be done properly.
- c. Compacted sand filling below foundations to achieve the required safe bearing capacity of soil shall be done if required and as per direction of EIC.
- d. Soling and sub-grading work shall be done for all foundations and flooring.
- e. RCC bored cast-in-situ piles shall be provided for foundation work for any structure where required.
- f. Reinforced concrete works shall be done in foundations, columns, beams, floors, slabs, on ground, overhead and underground tanks Super structures and other water retaining structures etc.
- g. Steel work shall be done in superstructure including Bridge, platforms, walkways, stairs, ladders, handrails, pipe supports, pipe bridges etc.
- h. All MS inserts, curb angles, channels, rails, MS and GI pipes, pipe sleeves, pipe inserts with puddle flanges, MS rungs etc. for embedding in permanent concrete or masonry work.
- i. All masonry work in sub-structures and super-structures except water retaining structure.
- j. All gates, rolling shutters, ventilators shall be of MS. Steel shutter should be perforated with latest design as per specification of INDO- GERMAN PRODUCT LTD, CHENNAI or similar make.
- k. All collector pipes and down comers shall be done for adequate roof drainage.
- l. All exposed concrete surfaces shall be provided with rendering and painting.
- m. All finishing work for floor, wall and roof to give proper smooth surface.
- n. All finishing and painting work shall be carried out to masonry and concrete structures, etc.
- o. All painting shall be done in steelwork and woodwork.
- p. All buildings/structures shall be provided with apron and peripheral drains.
- q. Adequate water storage tank for drinking, sanitary and plumbing arrangement shall be provided with proper water supply, sanitary and plumbing fixers etc.
- r. All water supply, soil, waste and ventilation pipes, fittings etc. shall be done as per specifications and direction of EIC.
- s. All electrical appliances and gazettes shall be provided for all rooms and outside yard if covered under scope of work.
- t. Test for water tightness for water retaining structures shall be conducted as per norms.
- u. The items of works and their details which are not covered by this specification shall be carried out as per the relevant sections of specification of P.W. Dept. /MED Dept, Government of West Bengal, & relevant IS Code.

2.0 Load Conditions

2.1 For the design of buildings and structures, dead, imposed and wind load condition shall be according to the latest edition of IS:875. Seismic load shall be considered according to the latest edition of IS:1893.

2.2 While designing structures and foundations either the effect of seismic forces or wind load, whichever produce the worst effect, shall be considered along with the usual load combinations. In the

design, due allowance for impact, vibration, inertia loading etc. as secondary effect or live loads vibration, inertial loading etc. as secondary effect or live loads shall be taken into account. In addition, due allowance in load calculation of any equipment as per the equipment manufacturer's data and recommendation shall be considered.

3.0 Basic Considerations for Structural Design

3.1 Codes of Practices Design and construction of all structures, buildings and foundations shall conform to the latest edition of the following codes (Latest Edition) :

- a) Loading Standards IS:875
- b) Earthquake Design IS:1893 & 4326
- c) Reinforced and Plain Concrete... IS:456
- d) Pre-stressed Concrete IS:1343
- e) Structural Steel IS:800
- f) Tubular Structures IS:806 & IS:1161
- g) Reinforcement Mild Steel... IS:456 & 432
Ribbed TOR steel. IS:1786 & 1139
- h) Foundations IS:1080 & IS:2950
- i) Pile Foundation & Machine Foundation..... IS:2911 & 2974
- j) Water Retaining Structures IS:3370
- k) National Building Code of India SP:7

4 Design of Structures and Foundations

4.1 All designs shall be made as per the latest version of the relevant Indian Standards.

4.2 The design of reinforced concrete in technical buildings/structures and foundations other than water retaining structures shall be made according to the provisions of IS:456 adopting "Limit State" or "Working Stress" method. But design shall be consistent throughout.

4.3 The design of water retaining structures shall be made accordingly to the provision of IS:456 and IS:3370 adopting "working stress" method.

4.4 Reinforced concrete shall be of minimum grade M25 (Design mix) for all types of important structures and foundations (including equipment foundations) and M20 for other structures except water retaining structure.

4.5 The design of water retaining structures shall be made according to the provisions of IS:3370.

4.6 All underground/above ground (fully or partly) water retaining tanks or structures shall be of RCC construction of design mix properly adopted to impart proper strength, density, workability, water tightness and durability. Concrete shall be of minimum grade M30 (design mix) with minimum cement content of 500 kg/cu m. in the tank proper and M25 (design mix) with minimum cement content of 500 kg/cu m in rest of the part. In addition to this 25 mm thick plaster (1:3) admixture with approved quality waterproofing compound shall be provided on water retaining faces. 10 mm thick plaster (1:4) admixture with approved quality water proofing compound to be provided below roof slabs of water retaining structure.

Water retaining structure shall be a designed as uncracked section as per IS:3370. These will be designed considering liquid up-to full height of wall irrespective of provision of any overflow arrangement. Wind loads on overhead tanks/ tall structures shall be designed as per provision of IS: 875. For design purpose, ground water level shall be considered at finished ground level.

4.7 The pipes and fittings which are to be built into the underground walls and floors of structures shall be built in as the work proceeds and plugged. Great care shall be taken to ensure that the joint is watertight. All pipe inserts required for tanks and other underground structures shall be provided with puddle flanges.

4.8 The design of structural steelwork shall be as per IS:800.

4.9 For all other items like brickwork, sheeting, flooring, doors, windows, roof drainage, painting, waterproofing etc. with all other miscellaneous items shall be as per the relevant Indian Standards.

4.10 Foundations for structures and equipment shall be proportioned to resist the worst conditions of loading and shall be generally designed as per the provisions of the latest revision of IS:1904.

4.11 The depth of foundation shall be determined based on loading on foundation, safe bearing capacity at the founding level, constructional and technological requirements. the design may be based on same.

5.0 Piling

5.1 General Piles shall generally be bored, cast-in-situ, reinforced concrete type and shall conform to the latest revision of Indian Standard Code of Practice for Design and Construction of Pile Foundations, IS:2911 (Part I/Sec 2). Other relevant codes, standards, manuals etc. published by the Bureau of Indian Standards, Central Public Works Department, Public Works Department/PWD(Roads) of Government of West Bengal, Public Health Engineering Directorate of Government of West Bengal etc. and direction of the Engineer-in-Charge shall govern different aspects of piling including design and workmanship.

5.2 Loading standards Pile foundations shall generally be adopted where due to high concentration of loads, spread footings may not be possible or economic and/or due to technological reasons differential settlements are restricted etc. Depending on the intensity of loading on the foundation, generally, piles with safe vertical capacity ranging from 60 – 80 t may be used. However, for foundations of minor structures, with light loads, piles of short length with safe vertical capacities of about 30 – 40 t may also be used. For piles in fresh fills, allowance shall be made for additional loads that will be passed on to them due to negative skin friction. For pile groups, the block stability vis-à-vis group settlement and group efficiency shall be checked. Lateral loads on foundations shall be generally taken care of by means of batter or raker piles. However, where the magnitude of lateral load on piles is comparatively small, the vertical piles may be designed to cater for the lateral loads. The permissible lateral load on a vertical pile shall be guided by the provisions of IS:2911(relevant parts).

5.3 Materials and stresses Cement used shall 53 grade conform to the requirements of IS:269, IS:455, IS:8041, IS:1489 and IS:6909 (latest revisions) as the case may be PPC, OPC & PSC variety of cement may be used. Quality (OPC, PPC, PSC) will be determined by the EIC depending on use. Reinforcing steel shall conform to IS:432 (Part I) or IS:1139 or IS:1786 IS:226 (latest revisions). The stresses allowed in steel shall conform to the requirements of IS:456 (latest revision).

Stresses in concrete shall not exceed those laid down in IS:456 (latest revision). Minimum grade of concrete to be used for all piling work shall be M25(design Mix) with a minimum cement content of 450 Kg/m³. Where concrete of higher strength is required, richer concrete mix with greater cement content may be designed. Concrete used for piling shall generally have a slump of 150 mm (minimum).

However, when concrete is to be placed under water or drilling mud, higher slump of up-to 180 mm may have to be achieved.

Approved plasticizer shall be used for piling concrete at 0.2 % by weight of cement or as specified by the manufacturer.

The water used for preparing concrete shall be clean and free from acids and other impurities.

5.4 Reinforcement and anchorage

The longitudinal reinforcement of the piles may be suitably curtailed beyond the point of virtual embedment after ensuring adequate anchorage. Beyond the depth of curtailment, the minimum longitudinal reinforcement

as indicated below shall be provided. Minimum clear cover to all main reinforcement in pile shaft shall not be less than 40 mm.

Minimum longitudinal reinforcement shall not be less than 0.4% of the gross cross-sectional area of the pile. Adequate lateral binders and spacers shall also be provided. Longitudinal reinforcement in excess of 8% of the gross cross-sectional area of the pile shall not be permitted for any load carrying capacity.

Piles subjected to tensile force shall be positively anchored to their caps. Anchorage shall be extended to the top of the pile cap. Vertical pedestal dowels shall be extended upto the bottom reinforcement of the pile cap.

5.5 Termination levels

In general, piles shall terminate into dense sand stratum with adequate penetration. For determining the termination level of the piles within dense sand, a minimum 'N' value (as recorded from Standard Penetration Tests) of 50 shall be ensured.

Shorter piles of lower capacity may terminate on an intermediate stratum of suitable strength to obtain the design capacity.

5.5 Load tests

Load test shall be conducted on working pile as per IS :2911. No. of test shall be guided by the code provision. Minimum of one (1 no.) vertical, lateral and pull-out test are to be conducted on each type of working pile in each area. The testing procedures and determination of safe loads shall follow provisions of the latest revision of IS:2911 (Part 4). If the test results are not satisfactory, the number of tests shall be increased at the discretion of the Engineer.

5.6 Pile Cap

Pile Caps shall be of reinforced concrete. A minimum offset of 150 mm shall be provided beyond the outer faces of the outer most piles in the group if the pile cap is in contact with earth at the bottom, a leveling course of minimum 100 mm. thick of M 15 nominal mix concrete shall be provided.

The attachment of the pile head to cap shall be adequate for the transmission of loads and forces. A portion of pile top may be stripped off from concrete and the reinforcement anchored into the cap. Manual chipping may be permitted after three days of pile casting, while pneumatic tools for chipping shall not be used before seven days after pile casting. The top of pile after stripping shall project at least 150 mm into the pile cap. A layer of surface reinforcement may be provided with a cover of 25 mm to retain the integrity of concrete below the main cap reinforcement which is to be laid 25mm. above the pile top.

Concreting of the pile cap shall be carried out in dry conditions. The bottom of the pile cap shall be laid preferably as low as possible taken account of the water level prevalent at the time of casting. The top of concrete in a pile shall be brought above cut-off level to permit removal of all laitance and weak concrete before pile cap is laid. This will ensure good concrete at the cut-off level.

5.7 IMPORTANT CONSIDERATIONS, INSPECTION/ PRECAUTIONS:

While concreting uncased pile, voids in concrete shall be avoided and sufficient head of concrete is to be maintained to prevent inflow of soil or water into the concrete. It is also necessary to take precaution during concreting to minimize the softening of the soil by excess water. Uncased cast-in-situ piles shall not be allowed where mudflow conditions exist.

The drilling mud such as bentonite suspension shall be maintained at a level sufficiently above the surrounding ground water level to ensure the stability of the strata which is being penetrated throughout the boring process until the pile has been concreted.

Where bentonite suspension is used to maintain the stability of the bore-hole, it is essential that the properties of the material be carefully controlled at stages of mixing, supply to the bore-hole and immediately before concrete is placed. It is usual to limit:

The density of bentonite suspension to 1.05 gm/cc The marsh cone viscosity between 30 and 40

The pH value between 12 and 12

The silt content less than 1 % (one per cent)

The liquid limit of bentonite not less than 500 per cent

These aspects shall act as controlling factors for preventing contamination of bentonite slurry from clay and silt.

The bores shall be washed by bentonite flushing to ensure clean bottom at two stages viz. after completion of boring and prior to concreting after placing of reinforcement cage. Flushing of bentonite shall be done continuously with fresh bentonite slurry till the consistency of inflowing and out-flowing slurry is similar. Tremie of 150 mm. to 200 mm. diameter shall be used. For concreting the tremie should have uniform and smooth cross-section inside, and shall be withdrawn slowly ensuring adequate height of concrete outside the tremie pipe at all stages of withdrawal. Other recommendations for tremie concreting are;

The sides of the bore-hole have to be stable throughout.

The tremie shall be water-tight throughout its length and have a hopper attached at its head by a water tight connection.

The tremie pipe shall be large enough in relation to the size of aggregate. For 20 mm. aggregate the tremie pipe shall be of diameter not less than 150 mm. and for larger size aggregate tremie pipe of larger diameter is required.

The tremie pipe shall be lowered to the bottom of the bore-hole, allowing water or drilling mud to rise inside it before pouring concrete

The tremie pipe shall always to keep full of concrete and shall penetrate well into the concrete in the borehole with adequate margin of safety against accidental withdrawal if the pipe is surged to discharge the concrete.

For very long or large diameter piles use of retarding plasticizer in concrete is desirable.

For large diameter pile it may be essential to conduct non-destructive pile integrity tests to evaluate integrity of the pile.

Where possible, it may be desirable to grout the base of pile with cement slurry under suitable pressure after concrete in the pile attains the desired strength. For this purpose, conduit pipes with easily removable plugs at the bottom end should be placed in the bore along with reinforcement cage before concreting.

5.8 Permissible Tolerances for Bore Pile:

Variation in cross-sectional dimensions : 50mm – 10mm.

Variation from vertical or specified rake : 1 in 50

Variation in the final position of the head in plan : 50mm.

Variation of level of top of piles. : ± 25 mm.

Important guidelines for civil work

All walk way shall have 30 mm thick G.I Grating and railing height of 900mm or as per drawing.

After completion of the job at each site, all temporary structures are to be dismantled, the total site should be cleared of all debris and dismantled items etc. and the vacant area shall be converted to garden/lawns etc.

All steel structure shall have synthetic enamel paint. All finish colour to be decided by the EIC.

NOTE:

If the size and shape of any item(s) of the work have not been specified in the specification/drawing, then the shape or size of that item shall be finalized on the basis of technical ground mutually and any item or specification, if not clearly mentioned in the documents, will be finalized by the concerned EIC. The decision of the concerned EIC is final and binding and for which no extra claim will be entertained.

**The Executive Officer
Burdwan Municipality**

SECTION - 3

SPECIFICATION OF WORK (CIVIL)

GENERAL SPECIFICATION

1.0 REQUIREMENTS

1.1 Application of specification and item of work:

This specification forms part of the contract and shall be read in conjunction with other documents forming the contract, viz. Notice inviting electronic Tender (NleT.), conditions and requirements of tendering, Scope of work and technical information, General conditions of contract, General and Technical Specification, drawings, Bill of quantities and schedule of probable items of works.

The offered rates must cover the cost of all materials all taxes & duties in vogue, labour, tools, machinery, plant, explosives, scaffolding, staging, shoring, props, bamboos, ropes templates, pegs, and all appliances and operations whatever necessary for efficient execution and completion of the work.

All works are to be executed in accordance with descriptions in the schedule of item of works along with the specifications, terms, conditions provided elsewhere in the tender documents.

Item of works and their details which are not covered by this specification shall be carried out by the bidder as per instruction of EIC.

Manner of works not included above, should be carried out as per relevant provisions of Manual on Water Supply and Treatment by CMEDEO, relevant I.S. specifications and code of practice and as per manufacturer's specification (where ever necessary).

The overall outline of works to be done by the contractor and the details have been mentioned in the item of works in the schedule and in the specification, drawing and elsewhere in the tender documents. Each scheduled item has to be carried out and completed by the contractor at the accepted rate covering the full extent outlined in the schedule and specification and not withstanding any omission in mentioning of supply and execution of such component of works except in special case specifically mentioned. Items indicated in the schedule are exhaustive. Yet if there by any short fall felt by the tenderer he may include the same while quoting his rate so as to make the item complete in all respect for successful completion of the work.

The contractor's works shall be guided by the total requirement briefly outlined and shall include additional works other than those component of works mentioned in the item to complete the work. The tenderer or the contractor has to completely execute the full requirements ensuring performance guarantee of each component of the works, equipment and machinery so that all the individual components are brought up to the optimum condition for sustained and satisfactory operation individually and collectively.

1.2 Site Condition:

The contractor is to visit the site and ascertain local conditions, traffic restrictions, and obstructions in the area before submission of tender paper to satisfy himself.

1.3 Soil characteristic:

The contractor shall obtain all soil characteristics through soil test to find out the exact nature of the soil.

1.4 Setting out and leveling:

The contractor is to set out and level all the works in accordance with the approved drawings and will be responsible for the accuracy of the same. They have to provide all instruments, setting out equipments and proper qualified staff required for the setting works. If any error will be found during checking by the department, re-setting out will have to be carried out by the contractor without any extra payment. If any works found faulty due to erroneous setting out works, the contractor shall have to rectify the same without any extra cost.

1.5 Safety Code:

The contractor shall take adequate precaution to provide complete safety for prevention of accidents on the site.

1.6 Keeping works free from water:

The contractor shall provide and maintain at his own cost, electrically or other power-driven pumps and other plant and equipment to keep the site and foundation pits and trenches free from water and continue to do so till the site is handed over to the complete satisfaction of E.I.C.

1.7 Clear Site:

The site during the execution of works should have sober and tidy appearance with everything necessary for the work neatly and systematically arranged.

The contractor at his own cost shall clear the site of all trees, roots and obstructions. Where excavation is required, that should be done strictly up-to the required level. Any surplus earth should be spread over the low lands or used in earth filling works for development of site. After the completion of the work, the entire site shall be cleared satisfactorily with (a) all pits, diggings and trenches properly filled up (b) all surfaces adequately dressed (c) all surplus materials, sheds, tents and all other ancillaries removed from the site at his own cost.

1.8 Bench Marks and Ground Water Gauges:

The contractor shall establish and protect surveyor's benchmarks and base line marks from damage or movement during work at his cost.

1.9 Inspection:

The contractor shall inspect the site of work and ascertain site conditions and the nature of soil to be excavated.

1.10 Contractor's Staff:

The contractor must provide at all times efficient staff of trustworthy, skillful and experienced assistants capable of carrying out the work in accordance with the drawings and specifications and to correct levels in accordance with the provisions made in the relevant clause of the PQ Bid document.

1.11 Measurement of Work:

The CONTRACTOR or his authorized site engineer shall be available at site at all reasonable times to take joint measurement of work done for the purpose of payment and shall also provide without any extra charges, the necessary measuring instruments and men.

1.12 List of I.S. Code of Practices & others Publications:

A list of few important Indian Standards (latest edition) is given which does not cover all the relevant sides of practices. Wherever reference towards the Indian standards mentioned below or otherwise appears in the specification, it shall be taken as reference to the latest version of the standard.

SL.NO.	IS NO.	DESCRIPTION
1.	IS-1200 (Part-I to 28)	Measurement of Building Works, method materials & details of construction.
2.	SP :7 - 1983	National Building code of India. (first revision)
3.	IS-4082: 1996	Stacking of storage of constructional materials at site recommendation.
4.	IS-3764	Safety Code for Excavation Work.
5.	IS-3696	Safety Code for Scaffolds and Ladders.
6.	IS-15875	Loading standards.
7.	IS-1893 & 4326	Earth Quake deign.
8.	IS-1080 & 2950	Foundations.
9.	IS-1199: 1959	Sampling & Analyzing of concrete.
10.	IS-8142: 1976	Tests for setting time of concrete.
11.	IS-516 : 1959	Tests for strength of concrete.
12.	IS-9013 : 1978	Tests for compressive strength.
13.	IS-4031	Tests for cement.
14.	IS-2911 : 1985 (Part -4)	Load test on piles.
15.	IS-3495	Methods of Testing Burnt Clay Bldg. Bricks.
16.	IS-3114 : 1965 (art-6)	Method of hydraulic test of water supply pipe line.
17.	IS-3597 : 1985	Method of testing of concrete pipes.
18.	IS-12969 : 1990	Method of test for quality characteristics of valves.
19.	IS-11606	Methods for sampling of C.I. Pipes & Fittings.
20.	IS-822 : 1970	Procedure for inspection of welds.
21.	IS-73-07 (Part - I)	Approved tests for welding procedures (fusion welding of steel)
22.	IS-7310 (Part - I)	Approved tests for welders working to approved welding procedure (Part I : fusion welding of steel).
23.	IS-2595 : 1978	Code of practice for radiographic testing.
24.	IS-4853 : 1968	Recommended practice for radiographic examination of

		fusion welded circumferential joints Steel Pipes.
25.	IS-1182 : 1967	Recommended practice for radiographic examination of fusion welded butt joints.
26.	IS-269: 1989	Ordinary, Rapid hardening & low heat Portland Cement – 33 Grade
27.	IS-8112 : 1989	Ordinary, Rapid hardening & low heat Portland Cement – 43 Grade
28.	IS-12269 : 1987	Ordinary, Rapid hardening & low heat Portland Cement – 53 Grade
29.	IS:455-1989	Portland slag cement.
30.	IS:6452-1989	High Alumina cement for structural use
31.	IS:8041-1990	Rapid hardening Portland cement.
32.	IS-1489(Part-I & 2) : 1991	Portland Pozzlon Cement.
33.	IS-1726	Admixture of concrete.

34.	IS-2645	Internal cement water proofing compounds.
35.	Sand IS-1542	Sand for plaster
36.	IS:2116-1980	Sand for masonry mortars
37.	Aggregates IS:383-1970	Aggregates coarse and fine from natural sources for concrete.
38.	Aggregates IS:515-1959	Aggregates for use in Mass Concrete Natural and manufactured.
39.	Bricks IS: 1077-1992	Common Burnt clay-building bricks.
40.	Soil IS:1489-1970	Classification & Identification of Soil for General Engineering purpose.
41.	Steel : Iron Work IS-1786 : 1985	High yield strength deformed bar (Grade Fe 415).
42.	IS-2062 : 1992	Structural steel.
43.	IS-814 : 1991	Electrodes for manual metal arc welding.
44.	IS-2062 (Grade-A)	Low Carbon structural steel.
45.	IS-808 : 1989	Rolled Steel Beams, Channels and angles.
46.	IS-1038 : 1983	Steel doors, windows & Ventilators.
47.	IS-1052 : 1983	Specification for Collapsible Gate.
48.	IS-7452 : 1990	Hot rolled steel section for doors, windows and ventilators.
49.	IS-1361	Steel Windows for Industrial Buildings.
50.	IS-412	Expanded Metal Steel Sheets for General Purpose.
51.	IS-1948	Aluminum Doors, Windows and Ventilators.
52.	IS-1949	Aluminum Windows Industrial Buildings.
53.	IS-4021 : 1995	Timber door window and ventilator frames.
54.	IS-1003 : 1991	Timber paneled and glazed door shutters.
55.	IS-2202 : 1991	Wooden flush door shutters. (Solid core type).
56.	IS-287	Recommendations for Maximum Permissible Moisture Content of Timber used for Different Purpose.
57.	IS-6198	Ledges, Braced and Battened Timber Door Shutters.
58.	IS-204	Tower bolts.

59.	IS-205	Non-ferrous metal butt hinges.
60.	IS-208	Door Handles.
61.	IS-281	Mild Steel Sliding Door Bolts for use with Padlocks.
62.	IS-2681	Non-ferrous Metal Sliding Door Bolts for use with Padlocks.
63.	IS-451	Technical Supply Conditions for Wood Screws.
64.	IS-1823	Floor Door Stopper.
65.	IS-2209	Mortice Lock (vertical type).
66.	IS-6607	Rebated Mortice Locks (vertical type).
67.	IS-3564	Door Closers (hydraulically regulated).
68.	IS-3847	Door Handles for Mortice Locks (vertical type).
69.	IS-363	Hasps and Staples.
70.	IS-419	Putty for use on Window Frames.
71.	IS-1237 : 1980	Flooring Tiles of Cement concrete.

72.	IS-777 : 1988	Glazed E.W. wall tiles.
73.	IS-4457 : 1982	Ceramic unglazed vitreous acid resisting tiles.
74.	IS-458 : 1988	Precast concrete pipe.
75.	IS-1230 : 1979	CI Rain Water Pipes & Fittings.
76.	IS:651	Salt-glazed-stoneware sanitary appliances
77.	IS:771	Glazed earthenware sanitary appliances
78.	IS:2556	Vitreous sanitary appliances (vitreous China)
79.	IS:774	Flushing cisterns for water closets and urinals, valueless symphonic type
80.	IS:775	Brackets and supports for wash basins and sinks
81.	IS:781	Sand-cast brass screw down bin taps and stop taps for water Services
82.	IS:1795	Pillar taps
83.	IS:2326	Automatic flushing cisterns for urinals
84.	IS:2548	Plastic water-closet seats and covers
85.	IS:2963	Copper alloy waste fittings for wash basins and sinks
86.	IS: 4004	Plug cocks for water supply purpose

87.	IS:3311	Waste plug and its accessories for sinks and wash basins
88.	IS:4346	Washers for water taps for cold water services
89.	IS:778	Copper alloy gate, globe and check valve for water works Purpose
90.	IS-780 : 1984	Sluice valves for water works purposes. (Small dia-50 mm to 400 mm size).
91.	IS-2906 : 1984	- do - (Higher dia-350 mm to 1200 mm size).
92.	IS-13095 : 1991	Butterfly valves for general purposes.
93.	IS-12992 : 1993	Spring loaded safety relief valves.
94.	IS-5312 : 1984	Swing check type reflux valves.
95.	IS-3042 : 1965	Single faced sluice gate (200 mm – 1200 mm).
96.	IS-5312 (Part-I) : 1984	Swing check type reflux (non-return) (single door) valves.
97.	IS-5312 (Part-II) : 1986	-do- (Multi door pattern)
98.	IS-12820 : 1989	Dimensional requirements for rubber gasket for mechanical joints & push on joints.
99.	IS-1726	Cast iron manhole covers and frames intended for use in drainage works.
100.	IS-1322 : 1993	Bitumen felt for water proofing and damp proofing.
101.	SP-23	Hand book of concrete Mix Design.
102.	Concrete IS-456 : 2000	Code of Practice for plain & reinforced concrete (1st revision).
103.	IS-4926 : 1973	Specification for ready mixed concrete. (first revision)
104.	IS:3370 - Part-I/1965	Code of Practice for concrete structures for the storage of Liquids-General requirements.
105.	IS-3370 - Part-II/1965	- do - - do – reinforced concrete structures.
106.	IS-1786 : 1985	Tor steel reinforcement.
107.	IS-2751 : 1966	Welding of reinforcement.
108.	IS-2502 : 1963	Bending & fixing of bars for concrete reinforcement.
109.	SP-34	Hand book of concrete Reinforcement and detailing.
110.	IS-9077 : 1979	Corrosion protection of steel reinforcement in R.C.C. structure.
111.	Is-2911 : 1979 (Part-I Section –2)	Design & construction of bored cast in situ concrete piles.

112.	IS-800 : 1984	Use of structural steel in general building construction.
113.	IS-816 : 1991	Use of metal in welding for general construction in mild steel.
114.	IS-823	Procedures for manual arc welding of mild steel.
115.	IS-4353	Submerged Arc Welding of Mild Steel and Low Alloy Steels.
116.	IS-6494 : 1988	Water proofing of under-ground water reservoir and swimming pools.

117.	IS-3067 : 1988	General design details and preparatory work for damp proofing and water proofing of building.
118.	IS-2750	Steel Scaffoldings.
119.	IS-4014	Code of Practice for Steel Tubular Scaffolding
120.	IRC-SP-63	Guideline for use of interlocking concrete block pavement.
121.	IS-2114 : 1984	Laying in situ terrazzo floor finish.
122.	IS-1443 : 1972	Cement concrete flooring tiles, laying and finishing off.
123.	IS-2571 : 1970	Laying in situ cement concrete flooring.
124.	IS-1081	Code of Practice for Fixing and Glazing of Metal Doors, Windows and Ventilators.
125.	IS-6248 : 1979	Specification for metal Rolling Shutter and Rolling Grill.
126.	IS-1868 : 1983	Code of practice for Fabrication of Aluminum Door & Window
127.	IS-1661 : 1972	Cement & Cement lime plaster finishes.
128.	IS-6278	Code of Practice for white washing and colour washing.
129.	IS-102	Ready mixed paint, brushing, red lead, non-setting, priming.
130.	IS-1477	Code of Practice for painting of ferrous metals in buildings.
131.	IS-2074	Ready mixed paint, red oxide zinc chrome priming.
132.	IS-2339	Aluminum paint for general purposes.
133.	IS-12288 : 1998	Specification for use and laying of Ductile Iron Pipes.
134.	IS-3114 : 1994	Laying of C.I. Pipes.
135.	IS-783 : 1985	Laying of concrete pipe.
136.	IS:7634	Laying and P.V.C. Pipes
137.	IS-5822 : 1994	Laying of Electrically Welded Steel Pipes for water supply.
138.	IS-782 :1978	Caulking Lead.
139.	IS-3950 : 1979	Surface boxes for sluice valves.
140.	IS-10221 : 1982	Coating & wrapping of underground mild steel pipe lines.
141.	SP-35(S&P)	Hand book on Water Supply & Sanitary works.
142.	IS-2685 : 1971	Specification for selection, installation and maintenance of Sluice Valves.
143.	IS-2800	Code of practice for construction & testing of Tube-well.
144.	IS:1742	Code of practice for building drainage
175.	IS:2065	Code of practice for water supply in buildings
146.	IS 4353	Code of practice for welding
147.	IS7307, & IS 7310	Code of practice for Qualification standard for welding procedures, welding and welding operations
148.	IS 5878	Code of practice for Welding defects
149.	IS 2595	Code of practice for Radiographic testing
150.	IS 4853	Code of practice for Radiographic Examination of Fusion Welded circumferential joints
151.	IS 1182	Code of practice for Radiographic Examination of Fusion Welded Butt joints
152.	IS 2598	Safety code for Industrial Radiographic practice.

N.B. :For rest of the I.S. Codes the Contractor should consult classified list of Indian standard,Civil Engineering Dept (CED) of latest version.

2.0 APPROVAL OF MATERIALS

Sample of materials in sufficiently large quantity with descriptive data thereof shall be furnished by the contractor to the Engineer-in-charge well before the collection of such materials and equipments so as to permit inspection, testing and approval. The sample shall be properly marked to show the name of the materials, name of manufacturer, place of origin and item for which it is to be used. After approval, the sample shall be available for inspection at all time.

All brought out/manufactured items such as valves, gate valves, penstock, HOT crane etc. to be supplied by the contractor shall conform to the requisite I.S. specification properly tested and duly certified. Those are to be approved by the Engineer-in-charge before use.

3.0 MATERIALS

3.1 Stone Chips:

These should be obtainable by the contractor from Pakur/Panchami, well graded conforming to the standard specifications of P.W.D. and approved by the Engineer-in-charge.

3.2 Sand :

Sand for construction purpose shall have to be collected either from Simlagar or river bed of Damodar / Damodar / Kangsabati or Ajoy and should be coarse, cleaned, screened and washed & of quality conforming to the standard specification of P.W.D/ this Directorate and also to be approved by the Engineer-in-charge.

3.3 Brick :

Bricks shall be of first class quality, well burnt in kiln, sound hard , true to shape and of the standard dimensions, and to be got approved by the Engineer-in-charge before use.

3.4 Plasticiser :

Super-Plasticiser of SIKA / CICO make conforming to IS: 2645-1975 & IS: 9103-1974 must be used.

3.5 Bolts & Nuts:

Make : GKW / TATA or Equivalent

Bolts and nuts conforming to the requirements of turned grade bolts of symbol 4D, 5D and 53 specifications - IS: 1363 (latest edition) – Technical supply conditions for threaded fastener.

The screw thread shall conform to coarse series – medium class referred in IS: 1367 (latest edition).

4.0 MAT CONCRETE OR FOUNDATION CONCRETE

100 mm thick concrete of proportion 1:2:4 with 20 mm downgraded stone chips (Chandil /Panchami/ Pakur variety) shall be provided below all the foundations and structures over a layer of Brick Flat soling as approved by Engineer-in-charge.

5.0 EXCAVATIONS AND FILLING

5.1 The earthwork in excavation up-to required depth from E.G.L requires proper adequate /protection of surrounding soil/structure against collapse .This protection may be in form of MSsheet piling / salballah piling / construction of diaphragm wall or any other suitable method approved by EIC .Ground water table may be lowered below working level by well point or any other method suitable for easement in construction. The design of excavation work sideprotection measures should match with requirement at site and space available. The whole methodology for excavation work, protection measures, ground water lowering should be adequately design using relevant soil parameter and approved by EIC before execution. Any collapse /failure of the surrounding should be rectified / reconstructed if required immediately in consultation with EIC without any extra cost whatsoever.

5.2 Excavations necessary for the works may require digging and penetration through any soil strata, removal of stems and roots of trees, breaking and removal of old structures, salballah, dewatering from all sources e.g. rain, seepage, leakage, subsoil water etc. protecting the trench and well pit and adjoining structures and service lines, by timbering, shoring, propping, sheetpiling etc. Excavation shall be done only up-to the required level and all extra depth of excavation, if made, has to be filled in with materials and manners approved by the Engineering-charge.

5.3 All excavated materials must be carefully deposited in spoil bank allowing the access to workers and plant machinery. The toe of the spoil bank shall be set at sufficient distance and should not be less than 3 to 4 times the depth of excavation. If so ordered by the Engineer-in-charge, the excavated materials have to be carried away and placed within a lead of 75 meter. Such quantity of extra materials as may be required shall be brought back to back-fill the trench with proper consolidation in layers of 150 mm thickness, properly rammed. Flooding of trench pit during back filling may be resorted to if so directed by the Engineer-in-charge.

Contractor must make good at his own cost, all damages or settlements sustained by any structure founded on the trench or adjacent to the trench.

All excavated materials will remain the property of the Government and the contractor shall be responsible for their custody till the completion of the works or taking over by

The Department. Fill below the pipe trenches, inside building below the floor etc. shall have to be done with sand free from any foreign material.

In case of over-excavation below the stipulated depth the space between the foundation bottom and over-excavated area shall be filled up with silver sand consolidated by watering and vibrating. Where such consolidation is not achievable, the depth of excavation shall be filled

with plain cement concrete of mix 1:4:8. The cost in both the cases shall have to be borne by the Contractor.

All materials obtained from any excavation required to be carried out under this contract will be utilized by the contractor for spreading over the land uniformly at his cost.

6.0 PROTECTION WORKS: -

6.1 Damp proofing work:

Unless otherwise specified, damp proof course shall be 25 mm thick cement concrete with stone chips (Prop. 1:2:4) with 3% "CICO" or specified percentage of "Rola / Sica" or similar approved water proofing compound by weight of cement. The proportioning, mixing, laying etc. shall be done in conformity with relevant I.S. specification. The damp proof course shall be used for all brick walls of the buildings. No damp-proof course shall be laid under doors.

6.2 Anti-termite Treatment: -

Anti-termite treatment as per relevant IS recommendation shall be carried out for all the building structure like pumping station, Substation, Staff Quarters, Office Building etc. prior to construction and post construction.

7.0 BRICK MASONRY

Brick work shall be laid in English bond with mortar in proportion 4:1 unless otherwise specified. Brick work shall always be carried out regularly in plumb and true to plan and lines, in level along the entire length. No brickwork shall be carried out more than one scaffolding height of 1.5 meter in the stage. Bricks are to be well soaked with water before use and brickwork shall be kept clean and joints raked out for subsequent pointing or plastering. Brick work in foundation and superstructure not in contact with water shall be provided with 20 mm and 15 mm thick plaster to rough and fair faces respectively with cement sand mortar in 1:6 proportions. Brick work in contact with water shall be in cement sand mortar in 1:4 proportion 20 mm thick plaster with water proofing compound as per specification including 1.5 mm thick cement punning in the water contact face. 15 mm thick plastering in 1:6 cement sand mortar in the outer face shall be provided. "Cement Brick" will mean brick work in cement sand mortar in proportion as mentioned above.

8.0 R.C.C. WORKS

The R.C.C. works are generally to be conducted by R.M.C/Design Mix concrete and shall be as per specification of I.S. codes, and stated elsewhere in the specification and schedule of Tender Document. In a few cases as mentioned in relevant Schedule of Work R.C.C. works with nominal mix M-20 Concrete shall be used as per specification of relevant I.S. Code. For major R.C.C. works (Where concrete is specified by strength) the mix proportion should not be leaner than 1:1.5:3 so as to give ultimate crushing strength not less than 20 N/mm² at 28 days cured under field condition. The mix for the concrete is to be so adopted and the slump is to be so allowed as to give specified strength and proper workability at the existing site conditions. Contractor shall remain fully responsible for producing concrete of specified strength in the actual job and therefore cast at his own cost test specimens of 15 cm. cubes as already specified during work and cure the same in similar way as for laid concrete for being tested for strength.

Each set of test specimen shall be taken to cover the quantity of concrete laid on the job during the period from the time of taking the previous set of specimens and the quantity will be estimated by the Engineer-in-charge from records maintained by him.

The interior surface of the mould and base plate shall be lightly oiled before the concrete is placed in the mould. When the job concrete is compacted by ordinary methods, the test specimen shall be molded by placing the fresh concrete in the mould in three layers, each approximately one-third of the volume of the mould. In placing each scoopful of concrete, the scoop shall be moved around the top edge of the mould as the concrete there slides from it in order to ensure a uniform distribution of concrete within the mould. Each layer shall be rodded, 25 times with a 16-mm rod, 60 cm in length bullet pointed at the lower end. The strokes shall be distributed in a uniform manner over the cross-section of the mould and shall penetrate into the underlying layer. The bottom layer shall be rodded, throughout its depth. After the top layer has been rodded, the surface of the concrete shall be struck off with a trowel and covered with a glass plate at least 6.5 mm. thick or a machined metal plate. The whole process of molding shall be carried out in such a manner as to preclude the alteration of the water-cement ratio of the concrete, by loss of water either by leakage from the bottom or overflow from the top of the mould. When the job concrete is placed by vibration and consistency of the concrete is such that the test specimens cannot be properly molded by hand rodding as described above, the specimens shall be vibrated to give a compaction corresponding to that of the job concrete. The fresh concrete shall be placed in the mould in two layers each approximately half the volume of the mould. In placing each scoop full of concrete the scoop shall be moved around the top edge of the mould as the concrete there slides from it in order to ensure a symmetrical distribution of concrete within the mould. Either internal or

external vibrator may be used. The vibration of each layer shall not be continued longer than is necessary to secure the required density. Internal vibrators shall be of appropriate size and shall penetrate only the layer to be compacted. In compacting the first layer, the vibrators shall not be allowed to rest on the bottom of the mould. In placing the concrete for the top layer, the mould shall be filled to the extent that there will be no mortar loss during vibration. After vibrating the second layer, enough concrete shall be added to bring the level above the top of the mould. The surface of the concrete shall then be struck off with a trowel and covered with a glass or steel plate as specified above. The whole process of moulding shall be carried out in such a manner as to preclude the alternation of water-cement ratio of the concrete by loss of water either by leakage from the bottom or overflow from the top of the mould.

After curing, the specimen properly wrapped shall be handed over to the Engineer-in-charge or his representative who will arrange to have them tested at 28 days from the date of casting.

If there be any delay for any reason whatsoever the result of the test shall nevertheless be valid and will be applicable as per rules in case for all test specimens whatsoever. The contractor shall be responsible for proper packing of the specimens at his own cost, for safe and convenient transport of the same from the site to the testing laboratory. The cost of testing the test moulds and other charges including cost of carriage of the test moulds from the work site to the particular laboratory (both ways) and other incidental charges in this connection will have to be borne by the contractor.

In case of concrete showing, on the result of the cube tests, strength less than that as specified above in the "Acceptance Criteria" but has a strength greater than that mentioned in the said "Acceptance Criteria" concrete may, at the discretion of the Engineer-in-charge, be accepted as being structurally adequate without further testing.

If the concrete is deemed not to comply the "Acceptance Criteria", the structural adequacy of the parts affected may be investigated as per provision of Clause 17.4 and/or clause 17.6 of I.S.456-2000 as the case may be before rejection on the application of the Contractor with the undertaking to bear the cost of such tests.

If the strength of the concrete is such that it satisfies provisions made in sub clause 17.4.3 and /or sub-clause 17.6.3. of IS: 456-2000, concrete in that member represented by such tests shall be considered acceptable but the Engineer-in-Charge shall have the full power to fix the rate of deduction @ 500/- per cubic meter.

In case the test results do not satisfy the relevant requirement of the preceding paragraph, the Volume of concrete so deficient shall be deemed to be unacceptable and shall be removed from the structure and replaced by fresh concrete of specified strength and the contractor shall in that case have to carry out the instruction of the Engineer-in-Charge irrespective of the amount of loss, inconvenience and difficulties involved.

The contractor shall remain liable to act / to carry out instruction under the provision of this clause notwithstanding issuing by the Engineer-in-Charge of any certificates or the passing of any bills or accounts.

8.1 Mixing and Laying:

All concrete shall be mixed in Mechanical mixer and all concrete work in foundation; superstructure etc. shall be properly vibrated with the help of mechanical vibrator as per direction of Engineer-in-charge. Concrete Mixer Machine, Vibrator and all other tools and plants as required shall have to be arranged by the contractor at his own cost.

8.2 Mortars and Concrete:

Contractors are particularly warned against the use of inferior materials (to that specified or approved) at site or use of incorrect proportion of different materials in the makeup of concrete or mortar. Detection of any such practice will lead to rejection of all such works and imposition of penalty. Engineer-in-charge has the right to reject any mortar or concrete, which does not conform to the specification. Cube tests for concrete are to be done as per I.S. code at the cost of the contractor. The water cement ratio is to be determined by proper slump test or as per provision of relevant

I.S. In case of slump test the slump cones 30 cm. high 20 cm. dia. at bottom and 10 cm. at top are to be kept at site at the cost of the contractor.

8.30 Finishing:

If the surface of the concrete is found uneven or spongy in the appearance, the contractor will have to rectify or reconstruct at his own cost.

All R.C.C. work in wall, column, beam, roof, foundation etc., not forming part of water retaining structure shall be done in M25 grade concrete as per I.S.: 456 with cement content not less than 500 Kg/cu.m. of concrete. Plasticizer @ 0.2% by weight of cement shall be used. The water cement ratio should not exceed 0.45.

All R.C.C. work forming part of water retaining structure shall be done in M30 grade of concrete as per IS: 456; with cement content not less than 425 Kg/cu.m. of concrete. Plasticizer

@ 0.2% by weight of cement shall be used. The water cement ratio should not exceed 0.45. The concrete shall be cured as per I.S.: 456

8.4 Cement and Aggregate:

8.4.1 Cement: The cement shall be OPC, Slag or Pozolana conform to relevant I.S. Code, gradenotless 43. Selection of type and grade of cement shall be approved by the EIC. Cement tests shall have to be carried out at contractor’s expenses as and when directed. The contractor shall make arrangement with necessary equipment to carry out crushing strength of 150 cm. Cube concrete block for 7 day’s & 28 day’s of proper curing. Testing procedure, sample size shall be in accordance with relevant I.S.

8.4.2 Aggregate:

The fine and course aggregates shall conform to relevant I.S. Stone chips and sand for construction work shall have to be supplied as per clause 2.5 of this specification.

Concrete shall be sampled, analyzed tested in accordance with I.S. as furnished in the list.

8.5 Joints in Concrete Structure:

Type of joints, spacing of joints, use of all jointing materials and other features pertaining to the provision of movement joints in liquid-retaining structures shall be as per relevant I.S. Codes.

8.6 Reinforcement of R.C.C. Works:

The M.S. work should include cutting to sizes, bending, hooking and fabricating including the supply of B.W.G. wire, and all other works according to specification, drawing or otherwise. The M.S. reinforcement rods if to be procured by the tenderer shall be HYSD bars (Fe-500) as per IS 1786-2008. The contractor shall intimate the department regarding the quantity of steel to be procured by him in the works and the same may be supplied at the agreed rate specified in General terms and conditions.

8.7 Clear Cover:

The clear cover to reinforcement shall be maintained as per IS-456-2000 based on the actual exposure conditions which shall not be less than the followings unless otherwise specified in drawing.

- a) Water retaining face 30 mm
- b) Other than water retaining face 25 mm for beam and 15 mm for roof and floor
- c) Column, Pedestal Foundation and Pile 50 mm

8.8 Lap Length:

The Lap length of reinforcement shall be provided as given below; unless otherwise specified in drawing.

Compression members like column, struts @ 40 times the dia of bar.

Tension members like beam, slab, wall etc @ 50 times the dia of bar.

Following Development length/Anchorage length shall be provided :

Concrete Grade	M 15	M 20	M 25	M 30
Development Length	68 D	51 D	46 D	36 D
Anchorage	As per I.S. – 456-2000			

The reinforcement work will include cutting to sizes, bending, hooking binding with 14 to 18 S.W.G. soft pliable wires etc. as per P.W.D. schedule. The work shall also be inclusive of stirrups, distributors, binders etc.

8.9 Bar Bending Schedule:

The contractor shall prepare his “Bar Bending Schedule” for the entire construction work in phases before starting the work and shall submit it to the EIC for his approval.

Cutting of M.S. rods in an unplanned way will not be allowed and for that if any material is found to be wasted or have to be used in excess due to the fault of the contractor, no payment shall be made on this score and the cost of such excess material shall be realized from the contractor’s bill at penal rate as specified elsewhere of this tender document.

The item of M.S work should include the cost of reinforcement, cutting to sizes, bending and fabricating including the supply of R.W.G wire, bolts and nuts etc. and all other work according to specifications, drawing or otherwise. Cut pieces of steel materials less than 1.0 mtr cannot be used as a main bar.

8.10 Form Work

The form work shall conform to relevant I.S. Code of practice. Shuttering in form work shall be either made of steel or ply board. Surface of shuttering in contact with concrete shall be made smooth & at joints rendered smooth. In every case the joints of the shuttering are to be such as to prevent the loss of liquid from the concrete. All shuttering form work must be adequately stayed and braced to the satisfaction of the Engineer-in-charge for properly supporting the concrete during the period of hardening. All form works shall be removed without shock or vibration. Before the form work is

stripped, concrete surface shall be exposed when necessary in order to ascertain that the concrete has set and hardened sufficiently.

8.11 Staging & scaffolding:

Whenever necessary, staging and scaffolding must be provided. All shuttering and framing must adequately be stayed and braced to the satisfaction of the Engineer-in-charge for properly supporting the concrete during the period of hardening. It shall be so constructed that it may withstand the jerk and shock of vibration of concrete.

Scaffolding must be strong and rigidly stiffened with necessary cross bracings and proper deck at every stage where casting work is in progress to prevent any injuries to persons and to facilitate inspection, supervision and taking measurement at any time.

The hire and labour charges for staging, scaffolding, platform etc. as provided in the schedule of works is for the entire construction work including shell wall of reservoir etc till completion of work and removing the same as per direction and instruction of EIC.

8.12 Curing and Finishing:

The joint shall be cleaned off the gray cement slurry with wire/coir brush or trowel to a depth

of 2 mm to 3 mm and all dust and loose mortar removed. Joints shall then be flush pointed with white cement. The floor shall then be kept wet for 7 days. After curing the surface shall be washed and finished clean. The finished floor and wall shall not sound hollow when tapped with a wooden mallet.

8.13 Verticality of structure:

The vertical members should be perfectly vertical and no deviation in x – axis and /or y- axis is admissible. The Contractor should take adequate precautionary measures to ensure that the structure is constructed true to plumb. Similarly all horizontal members of the structures should be truly horizontal.

9.0 TESTING OF CONCRETE :

9.1 Frequency of sampling:

9.1.1 Sampling Procedure – A random sampling procedure shall be adopted to ensure that each concrete batch shall have a reasonable chance of being tested i.e. the sampling should be spread over the entire period of concreting and cover all mixing units.

9.1.2 Frequency – The minimum frequency of sampling of concrete of each grade shall be in accordance with the following;

Quantity of Concrete in the Work, m3	Number of Samples
1-5	1
6-15	2
16-30	3
31-50	4
51 and above	4 plus one additional sample for each additional 50 m3 or part thereof

9.1.3 Test Specimen- Three test specimens shall be made from each sample for testing at 28 days. Additional cubes may be required for various purposes such as to determine the strength of concrete at 7 days or at the time of striking the form work or to determine the duration of curing, or to check the testing error. Additional cubes may also be required for testing cubes cured by accelerated methods as described in IS: 9013-1978. The specimen shall be tested as described in IS: 516-1959.

9.2 Test Strength of Sample:

The test strength of the sample shall be the average of the strength of three specimens. The individual variation should not be more than ±15 percent of the average.

Concrete shall be handled from the place of mixing to the place of final deposit as rapidly as practicable by methods which will prevent the segregation or loss of the ingredients. It shall be deposited as nearly as practicable in the final position to avoid re-handling of flowing.

Unless specially permitted by the Engineer-In-Charge, concrete shall not be dropped freely from a height of more than 2 meters.

Before placing the concrete, the moulds shall be cleaned of shavings, pieces of wood or other rubbish. When placing the concrete, the finer materials must be carefully worked against the moulds so that the faces of concrete shall be left perfectly smooth and free from honeycombing upon withdrawal of the moulds. Any defect in this respect must be dealt with by the contractor as directed by the Engineer-in-charge without any extra charges therefore.

Depositing concrete under water shall not be allowed without specific permission from the Engineer-in-charge. The method of concreting to be adopted in such cases shall have to be previously approved by him.

During placing and also immediately after deposition, the concrete shall be thoroughly compacted by ramming, spearing etc. until it has been made to penetrate and fill all the spaces between and around the steel rods, around embedded fixtures, and into the corners of formwork in such a manner as to ensure a solid mass entirely free from voids. If so directed by the Engineer-in-charge, in addition to usual ramming, spearing etc. sufficient number and suitable type of vibrators may have to be used on important jobs to enable working with a comparatively low water-cement ratio and ensure the

maximum possible degree of compaction and homogeneity. It is imperative that the work should be done quickly as well as efficiently and adequate number of hands must therefore be employed to ensure this.

Concrete shall be placed and compacted in its final position before setting has commenced and shall not subsequently be disturbed.

Concreting shall be carried out continuously up to construction joints the position and arrangement of which shall be predetermined by the Engineer-in-charge or his representative.

Any rest, pauses, such as for meal, shall also be subject to his approval. All concreting work should be so programmed as not to necessitate work at night. If for any reasons this becomes imperative, the contractor shall obtain previous permission of the Engineer-in-charge or his representative and make proper lighting arrangements to his satisfaction.

9.3 Protections and Curing

The contractor shall adequately protect freshly laid concrete, about 1 to 2 hours after its laying from too rapid drying due to sunshine, drying winds etc. and also from rains or surface water and shocks about 24 hours after laying of concrete, the surface shall be cured by flooding with water of minimum 25 mm. depth or by covering with wet absorbent materials viz. layer of sacks, canvas, Hessian or similar materials and shall be kept constant wet for a period of not less than 10 (ten) days from the date of placing the concrete. The curing shall be done for a minimum period of 10 days. Over the foundation concrete the masonry work may be started after 48 hours of its laying, but the curing of cement concrete shall be continued along with the masonry work for a minimum period of 10 days.

In case of cement concrete used as sub-grade for flooring, the flooring may be commenced within 48 hours of the laying of sub-grade. In case it is not possible to do so due to exigencies of work, the sub-grade shall be roughened with a steel wire brush without disturbing the concrete, wetted and neat cement slurry at the rate of 1.75 Kg of cement per square meter applied to the base before laying floor and full rate of APS/mosaic flooring will be paid with the specific orders of the Engineer-in-charge. The curing is to be continued along with the top layer of flooring for a minimum period of 10 days.

10.0 CONSTRUCTION JOINTS

All joints in slabs and other horizontal members are to be formed by inserting vertical boards against which the concrete deposited can be properly rammed. The Engineer-in-Charge or his representative will indicate the positions where such joints may be made.

In the case of horizontal joints any excess mortar or laitance shall be removed from the surface after the concrete is deposited and before it has set.

When the work has to be commenced on a surface which has hardened, such surface shall be well roughened and all laitance removed; the surface shall then be swept clean, thoroughly wetted and covered with a thin layer of mortar composed of equal volumes of cement and such works shall be deemed to be covered by the rates for concrete.

**The Executive Officer
Burdwan Municipality**

SECTION- 4
DETAILED TECHNICAL SPECIFICATION

1. Grade of concrete for different works: -

The grade of concrete for the supporting pile, piers, abutments, pier caps, pile caps, beams etc. relating to the approach bridge will be as per relevant IRC / IS Code of practice. Execution of work shall have to be carried out according to the stated grade / mix on the approved design as per the relevant code of practice and specifications enclosed.

2. Cofferdam / Island:

In case of necessity, the cofferdam or Island may be constructed with an enclosure built around the location of the collector well or foundation well of each pier of gangway with timber/ ballah/ sheet piling whichever is found suitable to provide adequate space for carrying out the foundation work. The space inside the piling work may be filled with earth and raised above the water level over the bed to a height required for construction of the foundation work. The contractor shall quote his rate keeping in the view of this provision.

The provision should include the cost of bailing out and pumping out water from the cofferdam during laying of the foundation wells of collector well, piers and abutment etc. as required during the entire actual excavation or foundation work. The bailing out of water includes completed dewatering by any convenient methods by employing pumping sets of required capacity in working condition with all accessories to run the sets as required from commencement to completion of the work and until the foundation structure is completed all the trenches for foundation shall be kept free from water till the concrete in foundation reaches initial setting.

The contractor on receipt of work order shall submit the drawings showing the details of his proposed method of construction of cofferdam or islanding and other design details for approval of the Engineer — in — Charge or the Departmental Design wing whenever necessary.

The cost should include the cost of construction and maintenance of any cofferdam, bunds, dams, canals or other devices necessary for diverting the flow of water on any such item of any sort whatsoever required to prevent water disturbing the work. No extra cost will be paid for any sand / earth / stuff of any sort which might find access by blowing or for any other reasons whatsoever from the sides or bottom of foundation or from elsewhere when dewatering operations are in progress. The contractor shall arrange for all necessary plants, pumps, engines and machineries tools and plants as required in this connection. The coffer dams constructed have to be maintained for more than one working season in the event the

foundation and substructure work being not completed in a single working season. He should keep provision in his quoted amount for reconstruction of cofferdam as per requirements for any subsequent working seasons, if necessary. No extra payment will be made for increase of work due to any additional requirements.

3. M-30 or M-25 Grade Design Mix Cement Concrete:

The work shall be done as per clause no 301 to 322 of IRC code of practice and standard specification for road bridges, section No. — III for concrete work of this grade of concrete. Cement, coarse, fine aggregates and water provided by the contractor shall conform to the specification of clause No. 301 to 322 of IRC code — III. The maximum size of coarse aggregate shall not be more than 15mm.

All materials shall comply with the standards laid down in IS: 456-2000 (Revised) with latest amendment if any, and IRC code of practice and standard specification for road bridge section — III. For the purpose of proportioning by volume 1 cum of cement shall be considered as to weigh 1440Kgs. (90 lbs / cft). The strength of concrete in work shall be determined from the result of tests on standard 150mm work test cubes as per I.S:456-2000 (Revised) with latest amendment if any.

The test specimen taken directly from batch concrete in actual use shall be compacted and cured under similar conditions.

The contractor shall furnish necessary concrete and the steel moulds for making the test specimen, materials and equipments and labour necessary for transportation, curing and storage and necessary testing at Govt. recognized laboratory at his own cost. The minimum cube strength of the test cube taken from the work concrete shall as per specification at 28 days and 7 days respectively. In case the overall strength of concrete is less than 70 percent of the desired strength, the corresponding work already done shall be liable to summary rejection and the contractor shall have to replace the rejected work at his own risk and cost to the satisfaction of the Engineer — in — Charge.

In case the overall strength lie between 70% to 100% suitable reduction in cost may be done by the Department as decided by the Engineer-in-Charge.

All concrete shall be thoroughly mixed in mechanically operated batch mixer of approved type and capacity. Hand mixing of concrete shall not be permitted.

Concrete shall be deposited in condition horizontal layers in thickness not more than 400mm. Not more than one hour shall lapse between placing of next layer of concrete. Concrete shall be placed in its final position compacted and finished within 30 minutes of mixing the water and before setting commence. The construction joints when required shall be made where location on plan are shown unless otherwise approved by EIC. Before commencing subsequent concreting, all loose particles shall be removed and the surface shall be covered by thick cement mortar/ slurry. Before placing of concrete on hardened surface, it must be cleaned, roughened without dislodging coarse aggregate, thoroughly wetted and covered with 6 mm thick mortar layer composed of cement and sand in same proportion as in the concrete for securing good bond.

During and immediately after placing the concrete, it shall be thoroughly compacted by using mechanical vibrators of adequate number to achieve compaction at the same rate of placing. The frequency of the vibrators shall not be less than 4500 cycles per minute, when operating under load. Ordinary method such as on ramming, tamping, rodding and slicing etc. with suitable tools shall be used as supplementary to mechanical vibrators only but not replace it.

Concrete shall not be placed during rain, high wind, dust storm and excessive heat. Concreting when continued beyond day light hours, the site should be sufficiently lighted.

4. Curing:

Curing shall be done by sweet portable water. Exposed surface of concrete shall be protected by covering with canvas, straw etc. and kept moist by flushing or sprinkling water and shall continue not less than 14 days after concreting.

5. Form work and shuttering:

It should be so designed as to prevent leakage of cement slurry from concrete and to maintain accurate alignment and surface as per relevant IS code of practice. Form work shall not be removed unless permitted by EIC and may be removed with adequate care when the EIC permits to avoid damage to the concrete.

The design of the forms of steining wall shall be such as to build the steining in the convenient numbers of lifts not exceeding 1.5m in height. The height of each course of concreting shall be uniform so that height of steining at all points is same and thereby a level construction joint is assured. The steining of well to be built up shall be checked carefully with the help of straight edge, so as to ensure all the faces of the wall to be parallel to the vertical axis of the well. The contractor shall maintain adequate sets of form work to maintain adequate rate of progress.

6. Gauges:

Three gauges shall be provided at equal interval along the periphery on each well to show the height of the steining. Each gauge shall consist of 75 mm wide painted with enamel paint on outside face of the steining parallel to the vertical axis of the well. The zero of the gauge shall start from the bottom of the cutting edge. The gauge shall be marked very carefully at every meter height with sub-divisions of ten centimeter using a steel tape all along under the supervision of the EIC.

Permanent pillars or pegs along the two-perpendicular axis on all four sides of each well shall be maintained well outside the zone of disturbance or sand blowing for facility of checking tilt or shift of

the well with progress of sinking of the well. One of the two axis must coincide with the centreline of the approach bridge from the collector well to the bank abutment. The lifts of the steining and that of the piers shall be so arranged as to attain same design datum height for each wells and piers.

7. Casting of piers over pile foundation.

The piers of each well foundation caps are to be constructed with required reinforcements and grade of concrete as per IRC / IS code of practice and approved designed drawings. Cost of all materials, tools and plants, labour and equipments and reinforcements, scaffolding, centering, shuttering, vibrating curbing etc shall be included in his quoted rate / amount. Measurement to be taken in cubic meters.

8. Pier caps

Pier caps over each pier shall have to be constructed as per approved detailed design and drawings as per relevant IRC / IS code.

9. Abutment wall and wall cap: -

Abutment walls and wall cap shall have to be constructed as per detailed drawing using grades of concrete as provided for different components including providing seepage holes and placing filter media behind each hole for easy passage of seepage water including foundation excavation shuttering

shoring bailing out of water etc. all complete within the rate quoted by the contractor as per IRC / IS code including labour & materials.

10. Steel / Tor steel reinforcement.

The relevant clause of the standard specification of steel for concrete reinforcement of IS: 432 — 1960 and 456 — 2000, i.e. SAIL, TATA TISCON or RINL shall be applicable as per detailed drawings of each RCC work to be done for each component of the collector well, pile foundation, piers, abutment, superstructure of approach bridge, etc. including transporting, placing, assembling, tying with wires, cutting to sizes, hooking bending & embedding in concrete including cost of labour, materials and tools and plants.

Fixing and binding of rods with 16-gauge wire shall be strong enough to keep in position during lying and vibrating. Adequate cover shall be maintained by using precast mortar blocks of appropriate size and mix. Measurement shall be taken on the basis of weight derived from length of MS bars actually placed with nos. of laps and hooks as per design and drawing approved by EI. Weight of binding wire shall not be counted for measurement for payment.

11. Earth filling behind abutment.

Earth filling shall be done with good earth available from borrow pits. Filling shall be done in layers not exceeding 30 cm and it will be watered adequately, all rammed and consolidated. No lumps, clods or rubbish are to be used. The cost of transportation of excavated earth, filling in layers, flooding with water, levelling, compacting etc. shall be included in his quoted rate amount.

12. Filter Media behind weep Holes of abutment:

The backside of the weep holes of abutments shall be filled with black, hard stone of 40 mm size as per drawing for easy draining of seepage water from the back fill. The cost shall be included in his quoted rate / amount.

13.0 Bearings of steel Bridge and steel super structure of approach Bridge.

The superstructure of the approach bridge shall be of simply supported steel trusses or R.S. Joists as required and shall rest over the piers on bearings as per standard method, approved detailed drawing and relevant IRC / IS code of practice. Hoisting, fixing, holding the truss / beams is to be done carefully with approved type of hoisting machine, and tools and plants for safe hoisting and fixing. Once the truss is hoisted, it has to be fixed with holding down bolts and restrained by fixing with horizontal member of beams and bracings top and bottom to prevent any lateral movement thereafter. Any accident if caused due to negligence in proper hoisting arrangement and fixing in position, the contractor is liable to compensate the damage of structure or life of working men at site at his risk and cost. The execution of the steel superstructure has to be done as per approved detailed drawings and relevant IRC / IS code of practice.

The deck slab may be precast R.C.C. slab or cast in situ R.C.C. of adequate thickness and duly reinforced to carry the loads it has to sustain during transportation of pumps and other machineries and also day today dead and live load and other types of loads that may act upon it.

The quoted rate / amount should include all the cost of materials, labours and tools and plants needed for the execution of the work.

14. Fabrication, fixing, welding M.S. sections:

Materials: Structural steel.

All structural steel shall comply with the requirements of **IS. 226-1961 and I.S. 1915 —1962** specification with latest amendment if any for structural steel appropriate for bridge work

Steel for pins and rollers.

Rolled steel pins and rollers shall comply with requirements of the I.S. —specification appropriate for the work: Steel casting for cast steel pins shall conform to grade 1 or 3 I.S. 1030 — 1956 specification with latest amendment if any for steel casting (for general engine ring purposes as appropriate).

Bolts and nuts:

Mild steel for bolts and nuts when tested shall comply with I.S. 1608 — 1960 with latest amendment if any and shall have tensile strength of not less than 44 Kg per sq. cm. Plain washer shall be made from steel.

Welding Electrodes:

Mild steel electrodes shall comply with requirements of IS. 814 — 1157 specification with latest amendment if any for covered electrodes for metal arc welding of mild steel.

Workmen ship.

All work shall be in accordance with the drawings and satisfy I.S. specification No. 1915 -1961 with latest amendment if any. Care shall be taken to ensure that all parts in assembly fit accurately together. Notes or certification on the drawings submitted by the designers and approved by the department shall be capable of superseding or cancelling any clause of this specification with which they conflict. On all drawings dimension shown in figure shall be acted in preference to measurement by scale.

Straightening. All structural steel members and parts shall have straight edges. All straightening, shaping and levelling etc. shall be done by pressure only and not by hammering. All joggles and knees shall be formed by pressure and where practicable in making these, the metal shall not be cut and welded.

Cutting:

All structural steel parts where required shall be sheared, roped, sawn or flame cut and ground accurately to the required dimension and shape.

Bolt Hole:

The diameter of bolt holes shall be 1.5 to 2 mm. larger dimensional diameter of bolts. All holes or bolt shall be drilled unless permitted by engineer in Charge (EIC) for punching the holes. Care shall be taken that surrounding materials is not deformed or damaged in case punching the hole is allowed.

Welding:

Welding of steel structure conforming to relevant I.S specification shall be in accordance with general requirements of metal and welding. Welding of pipe line joint should be done by the bidder conforming to relevant I.S specification. In addition to general requirements, the following care should be taken.

- a) The welding shall be positioned for down wards whenever practicable.
- b) The welding current shall conform with respect of voltage and amperage to the recommendation of the manufacturer of electrodes being used. The length arc voltage and amperage shall be situated to the thickness of materials, the type of grooves and other circumstances required for the works.
- c) The surface to be welded and the surrounding materials for a distance of at least 155 mm. shall be free from scale, dirt, grease, paints, heavy rust or other surface deposit.
- d) Members to be welded shall be held in correct position by holes, clamps, wedges, jigs or other suitable devices or by tack welding until welding has been completed. Such fastening may be used shall be adequate to ensure safety. Suitable allowance shall be made for warpage and shrinkage.
- e) Tack welds located where the final welds will later be made shall be subjected to same quality requirement as final welds, defective and broken tacks weld shall be removed before final welding.
- f) Fusion faces shall be cut by shearing, chipping or machining or by gas cutting.
- g) Exposed faces of weld shall be made reasonably smooth and regular so as to conform as closely as practicable to design requirement and shall not be of less than required cross section.
- h) Welds showing slag or lack of proper penetration shall be cut out or rewelded.
- i) Finished welds and adjacent parts shall be protected with clean boiled linseed oil after all slag has been removed.

Safety precaution:

- a) Operators of welding and cutting equipments shall be protected from the rays of arc flame by gloves and by helmets, and hand shields or goggles equipped with suitable filter lenses.
- b) Closed space shall be ventilated properly while welding or cutting is being done therein.

c) Welders should be provided with such stages as will enable them to perform the welding operation. For site welding shelter to be provided to protect the welders and the parts to be welded from weathers. The contractor shall employ a competent welding supervisor to ensure that the standard of workmanship and the quality of materials comply with requirements laid in this specification.

The contractor shall provide free access to the representative of EIC / consulting engineers to the work being carried out at all reasonable times and facilities shall be provided so that during the courses of welding he may be able to inspect any layer or weld to metals. He shall be at liberty to reject any materials that does not conform to the terms of the specifications and to require any defective welds to be cut out and rewelded. The representative of the EIC / consulting Engineer shall be notified in advance of any welding operation. Inspection and testing of welds shall be done as laid down in IS 822 and IS 1024. No welder shall be employed in any position except those who are fully qualified to weld. Qualification for welders shall be as laid down in I.S. 817.

Joints:

All steel work intended to be bolted together must be in contact over the whole surface. Joints which have to compressive stresses and the ends of all stiffeners shall meet truly over the whole of the huffing surface and bear tightly top & bottom.

Assembling:

All members shall be so arranged that they can be accurately assembled without being unduly packed strained or forced into position and when built, shall be true to line and free from twist, kinks, bulks, or open joints between component piers. Work shall be kept properly bolted together and no drifting shall be allowed except for the purpose of drawing assembled section together slight inaccuracies in matching of holes may be corrected. But drifting to enlarge holes is prohibited. Failure in any of the above respect will involve the rejection of defective members.

Laying out:

As far as possible structures shall be drawn out to full size on a level platform, with a steel tape and an accurate square being used for lying out. The members shall be drawn and the joints arranged as shown in the approved drawings.

Wooden templates 12 mm to 20 mm thick shall be made to correspond to each member and plate and bolt holes marked in them accurately by drilled holes large enough to fit the marking punch accurately. Templates for plates may be made of sheet metal. In case of repetitive work all templates shall be of steel. For accurate and mass drilling of holes, jigs fitted with drill bushing shall be used.

Erection:

Columns and struts to be erected in plumb and to centers and levels. proper derricks and suitable lifting tackles at such points that they are not liable to get buckled or deformed. Trusses and frame girders shall be lifted at two points about 1/3 to 1/4 length along each span from the ridge or centre. Immediately the frames or trusses are placed in position, they shall be secured against overturning. Every precaution shall be taken to prevent toppling. In case of trusses, all wind bracings shall be placed at the same time as the trusses are erected. The method of hoisting, erection and launching proposed to be adopted shall be got approved from the Engineer — in — Charge or his representative / Consultant. The approval of the EIC, however shall not relieve the contractor from his responsibility for the work being carried out in safe and proper manner without unduly stressing the various members. Proper and adequate plant such as lifting tackles, winches, ropes etc. shall be used.

Finishing:

Before member of the steel structure are placed in position or taken out of workshop, they shall be thoroughly cleaned of dust, loose scales etc. and given one coat of red lead paint, subsequent coats shall be applied after all the members are fixed in position finally.

Painting:

After all members have been given initial coat of red lead, they shall be given two coats of approved paint when fully installed.

Measurement: Rate for the steel superstructure shall be for unit of one tonne. In case of rolled sections, length shall be measured correct to a centimeter and weight calculated on the standard weight per meter tabulated in ISI Hand book for structural steel sections.

Weight of steel plates of each thickness shall be calculated separately on the basis of actual shape provided without taking into account wastage of cut off. In case of bolt work, weight of bolts nuts and washers shall be added in full, no deduction shall be made for rivets holes. No increase in weight shall be allowed in welding work due to welding.

The rate should include supply, fabrication and erection in position at site of all structural steel sections required for all operations of fabrication, hoisting, erection and satisfactory completion of the item and all labour and materials etc. including painting the structural steel work.

15. Walk way slab:

30 mm thick GI grating including cost of all materials, tools and plants and labour as per IS code of practice and standard specification for Bridges

16. Wearing Coat:

A wearing coat to be done by the bidder as per direction of EIC including all cost of labour, materials, and tools and plants needed for the work at his quoted rate / amount.

17. Fabricating, providing and fixing M.S. Roller pipes:

M.S. roller pipes shall be provided as per design and drawings cost of which shall be quoted as per number basis unless specified otherwise.

18. CARRIAGE OF MATERIALS

The contractor shall solely remain responsible for the safe custody of those supplies, onwards from the date of issue till the same are used in the works, according to contract and the surplus ones are finally handed over including handing over of the works to this Directorate. Any loss or damage occurring during this period will have to be made good by the contractor at his own cost.

19. LAYING OF PIPES, SPECIALS, VALVES

It also includes carriage, storages, handling of pipes, specials, valves etc. lowering and laying of pipes and specials etc. in the trench carefully. The crane should be used for providing & laying in alignment 10 mm thick 100mm to 500 mm. dia. M S pipe. The rate includes the cost for construction of thrust block for the purpose of anchorage of DI/MS Pipes, specials and valves etc.

Laying of pipes shall strictly be executed as specified in I.S.6530 of 1972 / I.S.3114 of 1994 / I.S:12288-1987 / I.S:7634 (Part-I to III) -1975/2012/2003 of as applicable jointly or separately unless otherwise specified hereinafter.

Cutting the pipes to required sizes, if necessary, aligning them on bridge including laying, fitting & fixings shall be done as necessary. Removal of the surplus materials has to be done by the contractor after completion of the work up to the satisfaction of the Engineer-in-charge. The scheduled rates for providing & laying pipes are inclusive of the cost of the works of removal of surplus materials and cleaning site.

20. TESTING OF PIPE LINES

Testing of pipe line, joints and incidentally of the pipes, specials and valves shall be done by the contractors as per following conditions and according to the direction of Engineer-in-charge.

1. Hydraulic pressure test of pipe lines shall be demonstrated by the contractor while the works of laying completed and to stand a water pressure head of 61 m in case of cast iron & DI pipes for a continuous period of one hour. Pipe line testing reports month wise and section wise are to be submitted to the Executive Engineer at the end of each months.
2. For the purpose of demonstrating the hydraulic pressure test, the contractors must provide all necessary appliances tools and plants, specials, labourers etc. Further the contractors will arrange to procure water to perform the test if necessary. If necessary the contractors will have to sink small dia.(40mm.) tube well to procure water for testing. No extra payment will be made, for the procurement of water.
3. In a non-tube well area, if it is evident to the Engineer-in-charge that water for testing cannot be procured for reasons of water scarcity then the testing of different sections of the pipe line may be deferred up-to a maximum period when water from the new sources is available near the pipe lines. In that case the contractors must arrange to isolate, at their cost pipe sections [length of each section should not exceed 1000 m] for the purpose of demonstrating the hydraulic test.

21.0 DISINFECTION

1. After completion of the pipe line works, all the lines shall be thoroughly washed with clear water as per direction in writing of the Engineer-in-charge. Water shall be supplied free of cost to the contractor for this purpose if the source is constructed by that time. All T & P for tapping the water source will be provided by him at his own cost.
2. The cleaned lines shall then be disinfected with chlorinated water containing a dose of chlorine (Bleaching Powder will be supplied by the contractor as may be directed by the E.I.C. or his representative. The chlorinated water must be kept within the pipe lines for 24 hours.
3. After proper disinfection, the pipe lines should be rewashed thoroughly with clear water including checking the entire distribution system with pressure gauge and rectifying defects including chokage, leakage etc. if any at contractor's own cost up to the entire satisfaction of the Engineer-in-charge. The contractor will bear the cost of fitting of the pressure gauge and necessary labour and materials including supplying of pressure gauge etc.
4. No extra payment will be made for the works and measures mentioned in clauses 1 to 3 above excepting specifically mentioned in the schedule of quantities.

22.0 VALVE CHAMBER

1. The sluice valve/wash out valve/air valve chambers will have to be constructed in accordance with the departmental type drawing at relevant items of the schedule of quantities and as per the direction of the Engineer-in-charge.
2. The positions of valve chambers have been shown, as far as possible, in the drawing. However, the pinpointed sites and number may be changed widely for which no claim or compensation shall be entertained. It will be the responsibility of the contractor to obtain from Engineer-in-charge in writing, the final list and locations of all such chambers.
3. The rates for construction of valve chambers are inclusive of all relevant items of works to be involved.

23.0 JOINTS

1. For lead joints the contractor will supply requisite quantities of yarn of approved quality, labour, Tools & fuels etc. required to complete all such joints for which payments will be made only as per relevant item of the schedule of quantities. The rate of lead joints in the schedule includes the cost of lead among others.
2. For flange joints the contractor will have to supply bolts, nuts, (Tata brand or equivalent in quality), washers, rubber insertions (each material shall conform relevant I.S. specification), white zinc etc. of approved quality including supply of labor, tools & plants to complete the joints in all respects satisfactorily for which payment will only be made as per relevant item in the schedule of quantities.
3. For tyton joints the jointing materials will be supplied departmentally free of cost

**The Executive Officer
Burdwan Municipality**

SECTION - 5
GENERAL CONDITION OF CONTRACT

GENERAL CONDITIONS OF CONTRACT

01. Definitions and Interpretations

The following words and expressions used in this Section as also in the other Sections of these bid documents shall, unless there is anything repugnant in the subject or context have the meaning hereby assigned to them except where the contract otherwise refers.

i) The **Government** means the Government of West Bengal.

ii)	Department means the Municipal Engineering Directorate Government of West Bengal.
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iii)	Chief Engineer, Superintending Engineer, Executive Engineer & Assistant Engineer mean Engineer Officers of the M.E.Dte. Designated as such.
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iv)	Contractor/Bidder means the persons or persons, firm or company whose bid has been accepted and who have entered into the contract for the performance of the work.
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v) **Contract/Bid Price** means the sum as stated in the letter of acceptance subject to such additions thereto or deductions there from as may be made under the provisions of the contract documents.

vi) **Engineer-in-Charge** (E.I.C.) means the concerned Executive Engineer, respective Civil Divn for civil and Executive Engineer of respective Mechanical/Electrical Divn. for Electrical and Mechanical works.

vii) **Drawings** means the drawings referred to in the bid documents and any modification of such drawings approved in writing by the Superintending Engineer or his representatives and such other drawing as may from time to time be furnished or approved in writing by the Superintending Engineer or his representative.

viii) **Approved** means approved in writing including subsequent written confirmation of any previous verbal approval and approval means notional approval in writing including as aforesaid.

ix) **Employer** means M.E.. Dte./Deptt. Govt. of West Bengal.

x) **Site** means the land and other places envisaged by the Government where work or work to be executed and carried out and also to be used for working space.

xi)	Ground Level means the level of the referred point of exposed surface of the ground as indicated in the drawing.
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xii) **Holiday** means a public holiday for the purpose of section 25 of the Negotiable Instrument Act 1881 or such other day on which the office remains closed for the day.

xiii) **Month** means English Calendar month.

xiv) **Specification** means specifications referred to in the bid and any modification thereof or addition thereto as may from time to time be furnished or approved in writing by the Superintending Engineer.

xv) **Store** means such storage areas including departmental Godown, stack yard etc. maintained by the M.E. Department.

xvi) **Work** means all of the works called for or shown in the bid documents, including preparation, construction, improvement and cleaning of sites including removing of debris etc. and maintained in accordance with the contract.

xvii) **Tests** mean such tests as are prescribed by the specifications or considered necessary by the Engineer-in-Charge.

xviii) **Cost** – The work **cost** shall be deemed to include overhead cost whether on or off the site and statutory taxes as applicable.

2. Duties of Engineer-in-Charge and His Representatives

The Representative of Engineer-in-Charge shall be responsible to the Engineer-in-Charge and his duties are to watch and supervise the works and to test and examine any materials to be used or workmanship employed in connection with the works. He shall have no authority to relieve the contractor of any of his duties or obligations under the contract, nor to order any work involving delay or any extra payment by the Employer, nor to make any variation of or in the works.

3. Responsibility and Power of Engineer-in-Charge and His Representative

The Engineer-in-Charge or his representative shall watch and supervise the work. He shall have authority to stop the work whenever such stoppage may be necessary to ensure proper execution of the contract. He shall have authority to reject any work or materials which do not conform to the contract documents, to direct the application of forces to such portion of the work as in his judgment is required, to order the labour force increased or diminished, to direct the sequence of the work and to decide all questions which arise in the execution of the work. The Engineer-in-Charge

or his representative shall have the power of inspection of all work to be performed under this contract. All work shall be performed only in the presence of the Engineer-in-Charge or his representative. In order that inspection services may be provided, the contractor shall keep the Engineer-in-Charge or his representative posted concerning his operation plans at least one working day in advance. All work under or in course of execution or executed in pursuance of the contract shall at all times be open to the inspection and supervision of the Department and its representatives. The contractor shall at all times during the usual working hours, and at all other times at which reasonable notice of the intention of the Engineer-in-Charge or his representative to visit the works shall have been given to the contractor, either himself be present to receive orders and instructions or have responsible agent duly accredited in writing present for that purpose.

4. Custody of Drawings

Detailed working drawings shall be prepared and submitted by the successful Bidder after issuance of work order and before taking up the execution of work unless otherwise mentioned in the Tender Document. Departmental Drawings for the components which will be executed as per department drawing will be issued to the successful bidder. All the approved Drawings shall remain in the sole custody of the Engineer-in-Charge but two copies thereof shall be furnished to the Contractor free of charge. The Contractor shall provide and make at his own expenses any further copies required by him. At the completion of Contract the Contractor shall return to the Engineer-in-Charge all drawings provided under the Contract.

One copy of the Drawings, furnished to the Contractor as aforesaid, shall be kept by the Contractor on the site and the same shall at all reasonable times be available for inspection and use by the Engineer-in-Charge and his Representatives and by any other person authorized by the Engineer-in-Charge.

5. Contractor's General Obligations and Responsibility

The Contractor shall, subject to the provision of the contract, and with due care and diligence, execute and maintain the works and provide all labour, including the supervision thereof, materials, constructional Plant and all other things, whether of a temporary or permanent nature, required in and for such execution and maintenance, so far as the necessity for providing the same is specified in or is reasonably to be inferred from the contract.

6. Programme of Work

The Contractor shall furnish within a fortnight from the date of order to start the work, a progress schedule indicating a fortnightly periodical target of progress expected to be achieved indicating dates of completion of each major item of the work, also indicating the dates of arrival of major equipments required for completion of the work as per contract and also indicating intermediate progress at various stages of work within the total period of completion. The Schedule should aim and include practicable achievement towards completion of the whole work in the stipulated time and of proportionate completion of work on due dates. In case it is subsequently found necessary to alter the schedule, the Contractor shall submit in specified time a revised schedule for approval of the Engineer-in-Charge. The progress schedule shall be in the form of C.P.M Chart. The contractor shall also furnish the methodology to be adopted for execution of the individual item of work so as to ensure completion of the work within the target date of completion indicated elsewhere in this document. The submission to and approval by the Engineer-in-Charge or his Representative of such Programme or the furnishing of such particulars shall not relieve the contractor of any of his duties or responsibilities of timely completion of the work under the contract.

7. Contractor's Superintendence

The Contractor shall engage at his cost an experienced and qualified whole time technical personnel to be in day to day charge of the work and he should be authorized to receive instructions from the Engineer-in-Charge or his authorized representatives like Assistant Engineer and Junior Engineer. He shall receive orders given by the E.I.C. from time to time and shall take action on them promptly. Besides the technical personnel, the Contractor shall maintain at his cost Supervisors having sufficient training and experience to supervise various items and operations of the supervision of works by the Contractor at his cost. The contractor

shall furnish the names of the above technical personnel within 15(fifteen) days of receipt of work order. During execution, technically qualified supervisory staff should be provided at each site with site order book.

8. Contractor to Arrange All Labour : Materials : Tools & Plants

Unless otherwise specifically provided for in the schedule of materials attached to the Bid, all materials required for execution and completion of the work shall be of approved type and as per specifications and shall be procured, brought at site and stored by the contracting firm at his cost and risk. The rates quoted shall be inclusive of all costs of materials, labour, transportation, storage.

The rates shall also cover all taxes viz. GST, any local taxes, duties etc. that are payable by the firm under the law of the land. Statutory increase on such elements, if any during the period of contract shall not be paid extra.

9. Site Order Book

The Contractor within 7(seven) days from the written order to commence work shall supply at his own cost, a site order book to be kept at all the working site of work under the custody of the Assistant Engineer or his authorized representative. The site order book shall have numbered pages in triplicate which will be initialed by the Assistant Engineer. The directions or instructions from the Departmental Officers to be issued to the Contractor will be entered (in triplicate) in the site order book (except when such direction given by separate letters). The

Contractor or his authorized representative/agent shall regularly note the entries in the order book and also record thereon the action taken or being taken by him in compliance with such directions or instructions including any other relevant point relating to the work.

The Contractor or his authorized representative/agent may take away the duplicate pages of the site order book for his own record. A duly authorized representatives/agent of the Contractor shall receive such instructions as above.

10. Delay in Getting Site of Work

If at any time after the issue of work order, the work, and/or any part thereof cannot be started or shall remain suspended due to public opposition, non-availability of site, delay in shifting public utilities or for any other reason whatsoever within the period of completion of work, the Contractor shall be granted necessary extension of time in accordance with relevant clause of WBF 2912. But, he shall have no claim for extra payment or compensation whatsoever on the grounds of above delay. If, however, the above hindrances are not removed within the schedule time and the Contractor is not agreeable to execute further works in the extended time, the Bid may be terminated and the Contractor shall have no claim for any payment on account of idle labour, establishment etc. or compensation whatsoever on account of any profit or advantage which he might have derived from the execution of the aforesaid work in full or in part.

11. Survey : Layout and Access

The Contractor shall satisfy himself regarding the correctness of the site Layouts, levels etc. as shown in the drawings or given in the specifications. Before starting the work he shall also carry out layout survey of the whole work site jointly with the Department. Discrepancies noticed between Departmental drawing and the joint survey shall be informed in writing to the Engineer-in-Charge and got corrected by the Engineer-in-Charge. Such deviations as may arise out of the joint survey shall not vitiate the provisions of contracts and shall not entitle the Contractor for any extra payment of claim in any way. The Contractor shall provide for all arrangements labour, equipments and materials needed for carrying out layout survey, setting out, layout checking, inspections measurements, testing at his own cost for which no separate payment will be made. The Contractor shall also provide proper approach and access to all the works and stores including clearance of sites at his own cost.

12. Arrangement of Land

If on account of restriction of space within the project site, the Contractor experiences difficulties on installation of plant and machinery and also in stacking construction materials within the project site, he may have to arrange for lands (Road side flank, private land etc.) adjacent to the project site at his own and at his cost. The Contractor will not be entitled for any payment or any other incidental charges caused due to such arrangement. The work programme and plan of works shall have to be drawn accordingly.

13. Site Godown

The Contractor must provide at his own cost, suitable godown for cement, MS/Tor/HYSD bars and other materials at/near the site of work as may be instructed by the Engineer-in-Charge. The Cement godown shall have adequate capacity and shall be constructed as per directions of Engineer-in-Charge. The godown should be readily accessible and open to inspection by any officer of MEDDTe. at any time during the pendency of the Contract.

15. Watching, Guarding and Lighting

The contractor shall in connection with the works provide and maintain at his own cost all light, guards, fencing and watching when and where necessary or as required by the Engineer-in-charge, for the protection of the works, or for the safety and convenience of the existing plant, contractor's employees, employers supervisors or for any other reason deemed fit by the Engineer-in-Charge. During execution and even up to O & M period, the agency is liable for guarding the materials, equipments, machinery and structures etc. Any pilferage, if occurred, that is to be replenished at his own cost.

16. Discrepancies

If there is any discrepancy in any of the documents and drawings included in this contract or between different parts of the same documents or any ambiguity or insufficiency of information, the contractor shall point out the same to the Superintending Engineer/Executive Engineer in writing and receive his instructions, explanations or decision in the matter. Decision of Superintending Engineer is final and binding on the Contractor.

17. Materials to be Supplied by Contractor

The contractor shall supply all materials. The quality of such materials shall conform to the requirements of the BIS (Bureau of Indian Standard), P.W.D. or any other approved standard specification. In all cases, the latest modification or revision of such specifications will be applicable for use. All IS standard materials should bear IS mark as per BIS. All sampling, testing and transportation of such materials shall take place under the direction of the Engineer-in-Charge at the testing laboratory as may be designated by the Department at the cost of the Contractor. Tests will be made in accordance with the standard methods of testing of the I.S. or other standard specifications. The Engineer-in-Charge has full power to reject or condemn any workmanship or materials that he may deem unsuitable. All materials not conforming to the requirements of these specifications shall be considered as defective and shall be rejected for use and shall be removed by the Contractor from the site of the work within 24 hrs. at his own cost.

In case of non-compliance with such orders, the Engineer-in-Charge shall have the full authority to cause such removal at the cost and expense of the Contractor and the contractor shall not be entitled for any loss or damage on that account. The Engineer-in-Charge will have full right to inspect the store of Contractor for the use of this contract work. All materials and workmanship shall be of the respective kinds described in the contract and in accordance with the Engineer-in-Charge's instructions and shall be subjected from time to time to such tests as the Engineer-in-Charge may direct at the place of manufacture or fabrication, or on the site or at such other place or places as may be specified in the contract, or at all or any of such places. The Contractor shall provide such assistance, instruments, machines, labour and materials as are normally required for examining, measuring and testing any work and the quality, weight or quantity of any materials used and shall supply samples of materials before incorporation in the works for testing as may be selected and required by the Engineer-in-Charge, be it at site or at the manufacturer/Vendor's premises. Contractor will have to procure materials from manufacturers /Vendors as may be approved by the E.I.C. No variation will be allowed. Contractor will have to furnish original documentary evidence of procurement of the materials from the specified agencies along with their Certificate of Guarantee/Warranty along with two sets of photo copy of the same to the EIC before release of payment. The EIC will keep one set of photo copy with him and send the other set to the Superintending Engineer after due authentication by him. The original document will be returned to the contractor thereafter by the EIC. The materials that will be supplied by the contractor has to be tested by the Third Party inspecting agencies like B.V. / Crown / E.I.L. / Rites / D.G.S. & D. / Mecon / CIPET / SGS India Pvt. Ltd./ ITENG Engineering / Superintendence Company of India (P. Ltd.) already approved by the Department. Cost of samples – all samples of materials as may be required by the Engineer-in-Charge shall be furnished by the Contractor at the cost and expense of the Contractor. As the rate for completed items of work are inclusive of supply of stone, sand materials, the Contractor shall arrange for procurement of such stone, sand materials required for the work by his own resources and it shall be clearly understood that the Deptt. Shall not sponsor any traffic movement by wagon for stone materials etc.

18. Workmen's Compensation

In every case in which by virtue of the provisions of the Workmen's Compensation Act, 1923, and any other relevant Acts and Rules, compensation to a workman employed by the Contractor, is payable, then this should be done by the Contractor. If the Department is obliged to make any compensation under the said Rules and Acts, then the amount shall be recovered without prejudice, from the bills and dues of the Contractor. The Department shall not be bound to contest any claim made against it in respect of workmen's compensation.

19. Hours of Work: Night Work

All works enumerated in the bid including other works in connection therewith or incidental thereto, shall be carried out during the hours of sunrise to sunset. No works will be held on Sunday's and Holiday's except with the special permission of the Engineer-in-Charge.

For all works in the area, Contractors may have to execute the work during night as well as per direction of the Engineer-in-Charge with arrangement of necessary lights, barricades etc. The E.I.C. may also specify the nature of work to be carried out during night. No extra claim or compensation will be admissible for night work or any ancillary work there to save and except which has been provided in the schedule of work.

20. Contractor's Employees

No labour below the age of eighteen years shall be employed on the work. Any labour supplied by the contractor to be engaged on the work on day work basis either wholly or partly under the direct order or control of his representative shall be deemed to be a person employed by the Contractor.

The Contractor shall comply with the provision of all labour legislation including the requirement of the Payment of Wages Act and the rules framed there under and modifications thereof in respect of men employed by him in carrying out the contract. The Contractor shall comply at his own cost with any order or requirement of any Health Officer of the State or any local authority and the Engineer-in-Charge regarding the maintenance of proper environmental sanitation of the area where the contractor's labourers are housed or

accommodated, for the prevention of any communicable diseases. The Contractor shall provide, maintain and keep good sanitary condition and provide facilities for potable water at all times for the use of men engaged on the work and shall remove and clear away the same on completion of the work. Adequate precaution shall be taken by the Contractor to prevent nuisance of any kind in the site of work. The Contractor shall provide efficient medical attendant and care for his staff and for the workmen employed to the satisfaction of the Engineer-in-Charge or his representative. The Contractor shall arrange to provide first aid and treatment facilities to the labourers engaged on the works. The Contractor shall within 24-hours of the occurrence of any accident at or about the site in connection with the execution of the work, report each accident to the Engineer-in-charge and also to the competent authority where such report is required by law.

21. Safety Measures and Public Convenience

The Contractor shall in the course of execution of the work take all necessary precautions for the protection of all persons and property at his cost. The entire site of works shall be well illuminated from sunset to sunrise at his cost. The Contractor shall take adequate measures to protect the work and prevent accidents during the Project work and prevent accidents during the construction. He shall provide and maintain temporary side-walks access to construction site and where necessary, danger signals, Road closed sign, watchman and necessary appliances for properly safeguarding life and site of work for safety. The lamp must be kept lit from sunset till at least one hour after sunrise. He shall protect all excavations equipment and materials with barricades and danger signals so that no life may be endangered. The contractor shall include all costs for these works within his rates and no extra claim whatsoever on this account will be entertained. The Contractor shall so conduct his operation as to cause the least possible obstruction and inconvenience to the other users and contractors in adjacent site. He shall have under construction not more than such amount of work as he can handle properly with due regard to the right of others.

22. Loss and Damage

Neither the department nor the Engineer-in-Charge or his representative shall be answerable or accountable in any manner for any loss or damage that may happen to the work or any part thereof or to any of the materials or other things used in the performing the work, or for injury to any person, either a workman or any member of the public, or for damage to any property for any cause which might have been prorogated by the Contractor. The Contractor shall properly guard against all these injuries or damages to persons or property resulting from his operations under this contract at any time before issuance of the certificate of completion and maintenance. He shall indemnify and save harmless the Department from all suits or actions of ever description brought for, or on account of, any injury or damage received or sustained by any person or persons by reason of the construction of the work, negligence in guarding the same, the use of improper materials or of any act of omission or deviation from the contract.

23. Supervision of Work

The Engineer-in-Charge shall have the power at any time and from time to time by notice to the Contractor to delay or suspend the progress of the work or any part of the work during unsuitable weather for any other adequate reasons and on receipt of such notice, the Contractor shall forthwith suspend further progress of the work until further notice from the Engineer-in-Charge. The

Contractor shall recommence work immediately on receiving a notice to do so from the Engineer-in-Charge. The whole or any part of the time lost for such delay or suspension shall, if the Department in its absolute discretion thinks fit but not otherwise, be added to the time allowed for completion. But the contractor shall have no claim for extra payment or compensation whatsoever on the grounds of above delay.

24. Department's Right to Terminate Contract

If the Contractor should be insolvent or bankrupt, (or in case the Contractor is a Company, it goes into voluntary or judicial liquidation) or he should make a general assignment for the benefit of his creditors or a receiver should be appointed on account of his insolvency, or he should persistently or repeatedly refuse or should fail, except in cases for which extra of time is provided, to supply enough properly skilled workmen or proper materials, in order to maintain progress according to the progress of work, or he should fail to make prompt payment to labour contractors if any, or for materials or labour, or he should positively by laws, ordinance or the instruction of the Engineer-in-Charge or otherwise be guilty, of a substantial violation of any provision of the contract after giving the Contractor seven days written notice terminate the employment of the Contractor.

25. Occupying Prior to Completion

The Department expressly reserves the right to occupy at any time and for so long a time as the Engineer-in-Charge, may be notice in writing to the Contractor, require any portion or portions of the site of works, whether the works to be executed thereof be commenced or in progress or completed and to employ thereon agents and workmen other than the contractor or his men in the execution of matters not included in the contract.

The Contractor shall not obstruct such agents and workmen, and without extra charge and without relief from any liabilities or responsibility, or such allowance provide them free access to the work and to such facilities as in the judgment of the Engineer-in-Charge may be reasonably required.

26. Supplementary Specification

Whenever reference is made in these documents to certain special specifications, the references shall be construed to include all subsequent amendments, changes or additions that are published and in effect at the date of signing of this contract. The department reserves the right to issue additional conditions, specification etc. if necessary which will be incorporated with bid documents for the purpose of this work.

27. Clearance of Site on Completion

On the completion of the works the Contractor at his cost shall clear away and remove from the site all constructional plant, surplus materials, rubbish and temporary works of every kind, and level the whole of the site and works clean and in a workman like condition to the satisfaction of the Engineer-in-Charge. The Contractor at his cost shall take care for cleaning the working site from time to time for easy access to work site and also from safety point of view.

28. Land for Contractor's Establishment

For the purpose of constructing Contractor's Store yard, godowns, site office and ancillaries, he may utilize portion of the land belonging to the Employer at such location as would not interfere with the execution of works. For all these, the Contractor shall have to obtain the requisite permission of the Engineer-in-Charge as per rules in vogue. The Contractor shall for this purpose submit to the Engineer-in-Charge for his approval a plan of the proposed layouts for the site facilities. The Engineer-in-Charge reserve the right to alter and modify the Contractor's proposals as he may deem fit. In case sufficient land is not available with the Employer, the Contractor will have to arrange for private land at his cost to meet his requirements.

29. First-Aid Facilities

The Contractor shall provide at his own cost for medical attention to be promptly available when necessary. He shall for this purpose provide a number of First-Aid stations at suitable location within easy reach of the workmen and other staff engaged in the Works. Each First-Aid station shall be properly equipped and will remain in charge of a suitably qualified person. The Contractor shall also provide for transport of serious case to the nearest hospital. All these arrangements shall be to the approval of the Engineer-in-Charge. The Contractor shall provide, to the satisfaction of Govt. or Local Authority concerned, adequate medical attendance for his employees and labours.

30. Fire Fighting Arrangement

The Contractor shall provide at his own cost suitable arrangement for fire fighting. For this purpose he shall provide requisite number of Fire-Extinguishers and adequate number of

buckets, some of which are to be always filled with sand and some with water. These equipments shall be provided at suitable prominent and easily accessible places and shall be properly maintained.

31. Department's Right to Split Package

The Tender Inviting Authority reserves the right to split the package and accept or reject any part of the offer from the scope of work without assigning any reason.

32. Construction Records

The Contractor shall keep and supply to the Engineer-in-Charge the up-to-date records of the dimensions and positions of all permanent works (showing therein any approved deviation between the drawing and the work as actually executed). The information available from the records must be adequate and complete to enable preparation of completion drawing by the Contractor at his own cost from these records.

33. Test for Water Tightness of pipes, valves etc.

All pipe lines have to be tested for their respective hydrostatic pressure as per relevant I.S. code of practice till satisfactory test is achieved. The contractor shall have to make arrangement for water tightness testing as mentioned above by making arrangement at his cost for supply of water, its filling and disposal of water after the tests. The rates quoted by the contractor shall be inclusive of the cost of labour, materials, equipment and machinery required to give successful tests for water tightness. No extra cost in this respect will be given except what has been provided in the schedule of work.

34. Satisfactory completion of various items

The various items of the sub-work are to constitute the whole work should be completed in every respect as per satisfaction of the Engineer-in-Charge. Each sub-work will be considered as complete when it is completed as per drawing & specifications, as per standards, as a successful component part of the whole work.

35. Reports and Returns

The Contractor shall maintain at Site daily records of progress with regard to the works carried out, labour engaged and construction equipment deployed. These will form the basis of preparing periodic reports and returns as may be required by the Engineer-in-Charge and in the manner as directed by him. These daily records shall be made accessible to the Engineer-in-Charge or his Representative as and when desired by him. The Contractor shall also submit a weekly return on the first day of each week for the preceding week showing up-to-date progress and progress during the previous week of all important items of work.

36. Terms & Stages of Payment

Subject to deduction of Initial Security Deposit (2%), Security Deposit (8%) and any others in vogue, progressive payment may be made against the completion or partly completed item of works on prorated progress. Such interim payments, however, shall not be construed to mean that the respective items/components have been finally approved and accepted by the Department and the Contractor shall not be absolved of his responsibility set right at his cost any defects/deficiencies which may subsequently come to light.

The payment for the items executed will be released as per payment milestone/payment break up schedule of the tender Document. Prorata deduction will be made for less execution of works. No claim for interest or compensation will be entertained in respect to any money or balance which may be due or alleged to be due to the Contractor owing to any dispute between the Department and the Contractor or in respect to any delay in making payment or progressive or final bill to the Contractor. Payments will be made as per availability of fund.

37. Insurance of works, etc.

Without limiting his obligations and responsibilities, the Contractor shall insure in the names of the Employer and the Contractor against all loss or damage from whatever cause arising for which he is responsible under the terms of the contract and in such manner that the employer and Contractor are covered for the period of execution as well as during the period of Maintenance for loss or damage arising from a cause, and for any loss or damage occasioned by the Contractor in the course of any operations carried out by him for the purpose of complying with his obligations as follows:

- The works for the time being executed to the estimated current contract value thereof together with the cost of materials
- (a) The Constructional Plant and other things brought on to the site by the Contractor and the replacement value of such constructional Plant and other things. These shall include materials belonging to the Employer but issued to or intended to be issued to the Contractor for use in the work. Such insurance as mentioned in para (a) and (b) above shall be effected with an insurer and in terms approved by the Employer. The Contractor shall bear the cost of all

- (b) such insurance and whenever required, produce to the Engineer-in-Charge or his representative the policy or policies of Insurance and the receipts for payment of the current premiums.

38. Damage to Persons and Property

The Contractor shall, except if any so far as the contract provides otherwise, indemnify the Employer against all losses and claims in respect of injuries or damage to any person or material or physical damage to any property whatsoever which may arise out of or in consequence of the execution and maintenance of the works and against all claims, proceedings damages, costs, charges and expenses whatsoever in respect of or in relation thereto except any compensation or damages for or with respect to:

- (a) The Permanent use or occupation of land by the works or any part thereof.
(b) The right of the employer to execute the works or any part thereof on over, under, in or through any land.

© Injuries or damage to persons or property which are the unavoidable result of the execution or maintenance of the works in accordance with the contract.

- (d) Injuries or damage to persons or property resulting from any act or neglect of the Employer, his agents, servants or other contractors, not being employed by the Contractor, or for or in respect of any claims, proceedings, damages, costs, charges and expenses in respect thereof or in relation thereto or where the injury or damage was contributed to by the Contractor, his servants or agents such part of the compensation as may be just and equitable having regard to the extent of the responsibility of the Employer, his servants or agents or other contractors for the damage or injury.

39. Accident or Injury to Workmen:

The Employer shall not liable for or in respect of any damages or compensation payable at law in respect or in consequence of any accident or injury to any workman or other person in the employment of the Contractor or any sub-contractor, have and except any accident or injury resulting from any act or default of the employer, his agents, or servants. The Contractor shall indemnify and keep indemnified the Employer against all such damages and compensation, save and except as aforesaid and against all claims, proceedings, costs, charges and expenses whatsoever in respect thereof or in relation thereto.

40. Insurance Against Accident etc. to Workmen:

The Contractor at his cost shall insure against all liabilities indicated in clause 40, 41 and 42 with an insurer approved by the Employer, and shall continue such insurance during the whole of the time that any person is employed by him on the works and shall, when required, produce to the Engineer-in-Charge or his representative such policy of insurance and the receipts for payment of the current premium. Provided always that, in respect of any persons employed by any sub-contractor, the Contractor's obligation to insure as aforesaid under this sub-clause shall be satisfied if the sub-contractor shall have insured against the liability in respect of such persons in such manner that the Employer is indemnified under the policy, but the Contractor shall require such sub-contractor to produce to the Engineer-in-Charge when required, such policy of insurance and the receipt for the payment of the current premium.

41. Notification to Insurer:

It shall be the duty of the Contractor to notify the insurers under any of the insurances referred to in any matter or count which by the terms of such insurances are required to be notified and the Contractor shall indemnify and keep indemnified the Employer against all losses, claims, demands, proceedings, costs, charges and expenses whatsoever arising out of or resulting from any default by the Contractor in complying with the requirements of this sub-clause whether as a result of the avoidance of such insurance or otherwise.

42. All Insurance at Contractor's Cost :

The insurances referred to in this Bid document shall be entirely at the cost and expense of the Contractor.

43. Remedy on Contractor's Failure to Insure :

If the Contractor shall fail to effect and keep in force the insurances referred to in Clauses here to or any other insurance which he may be required to effect under the terms of the Contract, then and in any such case the Employer may effect and keep in force any such insurance and pay such

premium or premiums as may be necessary for that purpose from time to time and deduct double the amount so paid by the Employer as aforesaid from any monies due or which may become due to the Contractor, or recover the same as a debt due from the Contractor.

44. Initial Security Deposit, Security Deposit, Special Security Deposit. i) Initial Security Deposit

The earnest money deposit of successful bidder @ 2% (Two percent) of the value of the work or the sum mentioned in e-Tender Notice deposited online as per **G.O. No. 3975-F(Y) dt.28.07.2016 of the Audit Branch, Finance Department. Govt. of West Bengal**, will be retained as initial Security Deposit. The said sum of 2% will be adjusted against subsequent deduction of security deposit from each and every progressive bill.

ii) Security Deposit

Balance Security Deposit @ 8% (eight percent) will be deducted from each and every progressive bill. The entire amount of total 10% (ten percent) of Security Deposit (Initial 2% + Additional 8%) shall be refunded without any interest on completion.

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45.	Inspection Facilities
	The Contractor shall provide necessary facilities for inspection of work for quality control by the Engineer –in-Charge or his representative and for the purpose of carrying out his instructions as may be recorded in writing in site Order Book.

46. Testing & Testing Equipment

Testing of materials to be used in the permanent work or of the quality of finished items, shall have to be done from approved laboratory at the expense of the Contractor.

If the E.I.C. considers it necessary to satisfy himself as to quality of work, the Contractor shall offer sample of work done as necessary, pull down reasonable part of the work required for such inspection and testing. The contractor shall bear the cost of pulling down and shall make good the same at his own cost and to the full satisfaction of the E.I.C. without any extra cost. The Contractor shall provide at his own cost necessary equipments for such testing which by nature of work may have to be done at work site. These include sufficient number of slump cones, standard 150 mm metal cube moulds, set of I.S. sieves, weighing balances, graduated measuring cylinders, equipment for in-situ density test, holding detector, thermometers and any other miscellaneous equipment that may be required by the Engineer-in-Charge. The Contractor shall also provide at his cost facilities for curing of concrete cubes for testing purpose. The Contractor shall afford at his own cost necessary facilities in providing requisite materials and assistance that may be required by EIC including transportation charges to laboratory.

47. Idle Labour

No claim for idle labour would be entertained under any circumstances.

48. Labour Act

The Contractor should obtain the license under the provision of the Contract Labour (Regulation and Abolition) Act 1970 and the Contract Labour (Regulation and Abolition) General rules, 1971 including the provisions of amendments made there under and submit the same to the office of the Executive Engineer within ten days after formal agreement. The successful bidder whose bid will be accepted shall either personally deliver the license form in triplicate to the Licensing Officer of the area in which the establishment in relation to which the Contractor is selected for the job. The application form in Form IV shall be forwarded along with Form V which may be available from the Engineer-in-Charge of the concerned Division.

49. Local Employment

No labour/skilled labour should be imported from any district other than where works are to be executed without prior consent of the Executive Engineer. Imported labour /skilled labour can only be engaged with permission of the Executive Engineer when the exigency or progress of work so demands and sufficient local labours are not available.

50. Import License and Imported Equipments

Use of any imported equipment for the work is not envisaged. However, if it becomes absolutely necessary, requisite Foreign Exchange and import license shall have to be arranged for by the contracting Firm independently and the Dept. will not take any responsibility in this regard. A certificate stating the necessity of the particular materials for the work entrusted to the firm may be issued at its discretion by the Dept. at the request of contracting firm. Delay in getting any materials will not be entertained for extension of time limit of contract.

51. Water Supply , Sanitation & Power

The Contractor shall have to make his own arrangement for supply of electrical power and water at all stages of execution of work. Arrangement for obtaining water for the work as well as for the labourers and sanitation facilities for labourers shall have to be made by the Contractor at his cost. The quality of water shall be conducive for construction works in terms of soluble, insoluble materials and chloride content]. The cost of erection/installation for obtaining either electricity or water from W.B.S.E.D.C.L or Burdwan Municipality or any other agency shall have to be borne by the Contractor for which no extra claim can be placed before M.E. Department & Burdwan Municipality. However, Burdwan Municipality/ MED Directorate may provide power and water if the same is available at site. If the contractor draws power and water from Burdwan Municipality's Point then he is required to pay the charges of power and water as per consumption at the prevailing rates of W.B.S.E.D.C.L/Burdwan Municipality for (i) Power consumption and (ii) Connection for water.

But supply of power and water should not be considered as the responsibility of the Burdwan Municipality/ MED Department. Nevertheless, electrical power from Burdwan Municipality's point may not be continuously available due to various reasons including load-shedding. In that case water supply from Burdwan Municipality's point will also stop and the Contractor will make his own arrangement for water and power through generator at his cost.

52. Storage and Safety of Equipments

The equipment at site shall have to be stored in water proof shed with proper security arrangement made by the contractor within his quoted price. The Contractor shall insure at his cost all the equipment against pilferage and breakage at site during storage and erection under their custody till the work is completed and handed over to the Employer.

53. Language for Correspondences

All written materials and correspondence in connection with the contract shall be in English.

54. Contractor's Local Address

The Contractor shall furnish the postal address of his site Office. Any notice or instruction to be given to the Contractor under the terms of contract shall be deemed to have been served if it has been delivered to his authorized agent or representative of site or sent by registered letter to the site office or to the address.

55. Recoveries

Any recovery from the Contractor advised by the Employer/Government shall be recovered from any bill of this contract.

56. Reduced Rates

Reduced rates as decided by the E.I.C and subsequent approval from concerned Superintending Engineer shall be allowed for the works which in the opinion of the E.I.C. are not done in strict conformity with specification but are acceptable. Works which are not in conformity with the specification and not acceptable in the opinion of E.I.C. will not be paid for and the cost of rectification or dismantling of such unacceptable work will have to be fully and solely borne by the Contractor.

57. Minimum Wage Act

The Contractor is required to follow the provisions of Minimum Wage Act.

58. Precedence of Contract Documents

If any stipulation indicated in any component of contract documents be at variance in any respect with those in the other, the decision of the Superintending Engineer will stand final and binding.

59. Time of Completion

The entire work as per offer shall be completed within specified time as mentioned in tender notice from the date of issue of work order. The time of completion is firm and final and supersedes any other time mentioned elsewhere in any clause(s) of bid document. After the acceptance order is issued by the Bid inviting authorities, the selected Contractor shall forthwith contact the Executive Engineer and furnish within 10(ten) days of necessary Licenses, clearance – certificates and copies of papers in consultation with him to enable issuance of work order without undue delay. In case the contractor fails to submit the papers within time, the department shall not be responsible for the delay in issuance of work order. In that event, time of completion shall be counted from the date of issue of work order.

The period of completion given includes the time required for mobilization and testing as well, rectifications, if any, re-testing and completion in all respects to the entire satisfaction of the Engineer-in-Charge including the monsoon season.

A joint programme of execution of work will be drawn up by EIC and contractors indicating the monthly/weekly construction programme based on availability of work fronts. The contractor shall scrupulously adhere to these targets/programme by deploying adequate personnel and construction tools and tackles and he shall also supply all materials of his scope of supply in time to achieve the targets set out. The contractor shall give every day to day report on category-wise labour and equipment deployed along with the progress of work done on previous day. The progress of work shall be proportionate to completion time.

60. Action for Non-Compliance

Failure to comply with above conditions and specifications will result in the department taking action at the risk and cost of the Contractor. Submission of the bid binds the Contractor for complying with requirements of the above conditions and specifications without any extra payment on any account.

61. Progress Photographs

The Contractor shall at his own cost and expenses, arrange to take periodic still photographs to show the progress of work or interesting features thereof. The time and the position wherefrom a photograph is to be taken would be as per direction of the Engineer-in-Charge or his Representative. Two coloured prints of each of these still Photographs to an enlarged size of about 25 cm x 15 cm together with the softcopy, shall be supplied to the Engineer-in-Charge in albums by the Contractor at his cost and these shall become the property of the Employer. Each photograph shall be suitably captioned with the date of the photograph, location and other relevant particulars. Restrictions to photography or security restrictions that may be applicable to any particular area, must be carefully and rigidly observed. The number of still photographs (each consisting of two prints and the softcopy as aforesaid) for the complete works have to be submitted to EIC once it is asked to submit.

62. Deduction of Tax

Deduction of Good Service Tax, Income Tax, Labour welfare cess and any other taxes payable as per prevailing Tax Laws at the prescribed rate will be made at the time of making payment to the Contractor.

63. I.E. Act.

The Contractor is required to comply with the I.E. Act and Rules framed there under. He will have to produce to the EIC evidence of possession of Electrical Contractor's licence with current validity and also copy of Electrical Supervisor's Certificate with qualification, registration no. etc. in respect of employees involved in electrical works.

64. Typographical Error

Any arithmetical/typing mistake/ mistake in spelling or common attributes in nomenclature, and, or, mistake in unit rate of items in the BOQ shall be corrected in respect of Schedule of Rates of PWD/MEDD and treated as a part of Tender Document, even after issuance of Acceptance/Formal Work Order(s) upto the period of finalization of Tender including usual security/defect liability period of contract.

65. Completion Certificate:

The Engineer-in-Charge will issue certificate of completion of work when all works itemized in the Schedule of work or otherwise undertaken have been completed in all respect including successful hydraulic testing of the R.C.C Elevated Reservoir /CWR, other water retaining structures, pipes, valves etc., yield testing of Collector Well and Maintenance period will start from the date of issue of completion certificate. The Final Bill for the work shall be paid by EIC on completion of work in all respect including submission of the following documents by the Contractor in quadruplicate.

- a) Material reconciliation statement.
- b) Completion drawing showing salient details e.g. pipe diameter, length, location & type of valve, location of all specials (bend reducer, collar etc.) for bye pass inlet, outlet, overflow & wash out lines of Reservoir.
- c) Still photographs of work execution.
- d) Disinfection and rinsing results duly signed by Contractor and accepted by the EIC.
- e) Leak proofness results duly signed by Contractor and accepted by the EIC.
- f) As built drawing of all Components of the Scheme. The EIC shall send one set of documents as indicated above to the Superintending Engineer, before making final payment.

66. Disinfection:

The inside of pipeline etc. should be cleaned and flushed with water before water tightness and leak proofness testing. Thereafter disinfection shall be performed in the following manner. The system shall be drained completely. All valves shall be closed carefully and the system shall be filled with a strong chlorine solution of about 50 ppm free chlorine. This solution shall remain in the system for a period as directed but not exceeding 24 hours uninterruptedly. Chlorine residual test shall be done at various points by an ortho-tolidine reagent with a colour scale. The disinfection process shall be repeated until residual chlorine is not less than 10 ppm at all sampling points. After disinfection, the entire pipe line shall be rinsed with potable water till residual chlorine is less than 4 ppm at various points of testing and a report indicating the results be given by the contractor to the E.I.C. After disinfection and rinsing, the reservoir shall be re-filled by potable water up to its full capacity.

67. Safety Requirements:

CONTRACTOR shall use safety belts, whenever his workmen work at a high altitude to avoid risk of any accident or fall. Hard Top Hats to be used by the CONTRACTOR's workmen at the places wherever required.

Necessary Fire Protection arrangements by installing portable fire extinguishers on suitable locations at work site and material storage area should be made by the contractor at his own cost. The CONTRACTOR shall also use Safety devices like Welder's apron, hand gloves, goggles, helmets etc. and other accident preventive arrangement at work site as per prevailing safety code. First aid and other medical facilities to be provided at the work site by the CONTRACTOR. CONTRACTOR's personnel working at site should have Identity Badges during their stay inside the plant. Prior approval of identity badges or cards by Engineer-in-Charge shall be obtained by the CONTRACTOR. The CONTRACTOR shall take all precaution for work safety and to prevent accident to men working under him or to other CONTRACTOR's working at site.

**The Executive Officer
Burdwan Municipality**

SECTION - 6
VENDOR LIST

A.	CONSTRUCTION MATERIALS	LIST OF VENDORS
1	Cement (Premium grade cement)	ACC / ULTRATECH / AMBUJA / LAFARGE / JSW
2	Reinforcing Steel -	TATA / SAIL / RINL
3	Structural Steel -	SAIL / JINDAL / TATA
4	Plasticiser / Water Proofing Compound -	SIKA / CICO/ DR. FIX IT
5	Stone chips -	PAKUR / CHANDIL/PANCHAMI VARIETY
B	EQUIPMENT, VALVES, PIPES & FITTINGS, INSTRUMENTATIONS	
1	M.S Pipes /Gratings	SAIL / TATA /JINDAL
2	D.I.D.F. Pipe and Fittings -	ELECTRO STEEL CASTING LTD./ KEJRIWAL CASTING / KISWOK
3	DI SPECIALS -	ELECTRO STEEL CASTING LTD./ KEJRIWAL CASTING / KISWOK
4	C.I./Mechanical joints -	ORIENT / LAKSHMI ENGINEERING CORPN/ KEJRIWAL/ UPADHYAY / ELEGANT / MANSAROVAR CASTING
5	Sluice Valve and Non Return Valve -	IVC/ KIRLOSKAR / L & T (AUDCO) /VAG/ MCWANE KINNEDY
6	Butterfly Valve -	CRAWLEY & RAY / FOURESS /IVC CAL/L&T (AUDCO) / KIRLOSKAR / KSB
7	Ball Valve -	L&T/BDK
8	Sluice (gate) valve, non return valve -	KIRLOSKAR / IVC / AUDCO / KSB /
9	Pressure Gauge -	BELLS / H.GURU / FEBIG / WIKA/ CAPSTAN

Note:

- 1) Acceptance of the Department is mandatory to finalize the make of materials and equipment prior to ordering by the successful tenderer. Engineer-in-Charge / Superintending Engineer, / Technical Committee, M.E.Dte.may include or omit any vendor in the vendor list in concurrence with the report of quality assurance agency engaged by the department subsequently.
- 2) The successful bidders shall have to furnish list of vendors to the department from the above list for approval. Acceptance of the department is mandatory to finalize the make of the equipment, prior to ordering by the successful bidder. No other equivalent make other than mentioned above will be accepted.
- 3) Any other materials required for the work but not mentioned in the above list, shall be procured from approved list of vendors of ME Dte. Acceptance of the department is mandatory to finalize the make of the materials/ equipment, prior to ordering by the successful bidder.

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SECTION –7

Terms of payment (Bridge wise break up)

<p>1) Name of Work: Surveying, Planning, Design, Drawing and Construction of MS Pipe carrying Steel structural Bridge supported on RCC column / Pier with adequate piles foundation at suitable interval at different locations (as per enclosed Annexure) complete in all respect on Trunkey basis for water supply Project within Burdwan Municipality under AMRUT.</p> <p>Locations of site:-</p> <p>SL i) 3.00 m wide Bridge at Alamganj over Banka River - 35 % of the Quoted Rate</p> <p>SL ii) 1.20 m wide Bridge at near Kanchan Nagar ITI College over DVC Canal - 20 % of the Quoted Rate</p> <p>SL iii) 3.50 m wide Bridge at near Kanchan Nagar ITI College over DVC & Banka link canal - 25 % of the Quoted Rate</p> <p>SL iv) 1.50 m wide Bridge at near Lakurdi Jalkal Building over Banka River - 20 % of the Quoted Rate</p>			
<u>ITEMWISE BREAKUP</u>			
a)	Surveying, Soil Investigation, Hydraulic investigation & planning including all allied works at the Pier & abutment location for M.S Access Bridge at different location and submission, Approval of Soil report, Design & Drawing of Pile foundation, Pipe carrying steel Bridge, MS Pipe line and Sausase work etc.		
	Break up :	A	% of A
A	Soil testing and hydraulic invesigation and at different location on Banka river, DVC and submission and approval of Soil report	10% of SL (i), (ii), (iii) & (iv) respectivel y.	30%
B	Approval of Design & Drawing of Pile foundation		25%
C	Approval of Design & Drawing of Pipe carrying steel Bridge		25%
D	Approval of Design & Drawing of MS Pipe line and Sausase work etc.		20%
	Total =		100%
b)	Construction & Erection of M.S Access & Pipe carrying Bridge with joist , angle frame etc. at different location with necessary RCC abutments, piers on RCC Pile foundation with suitable spacing as directed by EIC, with M.S saddle support for MS Pipe line, 30 mm thick G.I. grating for walkway and pipe hand railing etc. with all ancillary allied and related works and as per instruction of EIC on trunky basis.		
	Break up :	B	% of B
A	Construction of pile foundation with pile cap & approved design & drawing.	50% of SL (i), (ii), (iii) & (iv) respectivel y.	35%
B	Construction of suitable column/ pier structure on pile foundation		20%
C	Fabrication of suitable steel Bridge with with joist , angle frame etc. support and others facilities		25%
D	Erection of steel Bridge including all finishing work, painting including all complete		20%
	Total =		100%
c)	Supplying, fitting & laying of different diameter (100 mm to 500 mm) 10 mm thick M S Pipe line for carrying water of rising main & distribution line with necessary welding joint as per IS code & specification and upto 3 m length of each side of Bridge end or as required as per site condition with necessary column support & thrust block, air valve, sluice valves arrangement & valve chambers along with ancillary allied and related works and as per instruction of EIC.		
	Break up :	C	% of C
A	Supplying of different diameter (100 mm to 500 mm) 10 mm thick M S Pipe line.	20% of SL (i), (ii), (iii) & (iv) respectivel y.	35%
B	Fitting, fixing & Laying of 10 mm th. M.S. pipes including Specials & Valves on saddle support at Pipe carrying Bridge etc. all complete		20%
C	hydraulic pressure testing, cleaning and disinfection of pipes etc.with necessary thrust block complete in all respect as per IS 12288-1987 (latest edition) and instruction of E.I.C.		25%
D	After Parmanent Road Restoration and completion of whole work complete in all respect.		20%

		Total =	100%
d)	Construction of Providing, placing, and setting in position laterite/ stone boulders of good quality boulder emmeshed in 10 gauge GI wire as per IS Code including gravel packing Bank Protection work by Boulder Sausage Work on both Upstream and Downstream side atleast 10 m or as per site condition of both bank at Banka Khal, DVC Canal and others Nalah including all ancillary, allied and related works on trunk basis as per instruction of EIC.		
	Break up :	D	% of D
A	Supply of good quality and gravel materials for Boulder Sausage Work & approval of design & drawing.	20% of SL (i), (ii), (iii) & (iv) respectively.	40%
B	Providing, placing, and setting in position laterite/ stone boulders Sausage Work of good quality and gravel packing as per approved drawing and all finishing work, including all complete and instruction of E.I.C		60%
		Total =	100%

NOTE :-

a) 2% of Earnest money deposited earlier will be converted into Security deposit after awarding the Contract and 8% of security deposit, will be recovered from each running account bill.

Security Deposit @ 8% (eight percent) will be deducted from each and every running bill. The Security Deposit will be refunded as per PWD order No. 5784-PW/L&A/2M-175/2017 Dated: 12.09.2017, wherein, Construction of new building / new bridge / new culvert, the Defect Liability Period of the work shall be five years from the actual date of completion of the work including operation and maintenance.

For work with five years Defect Liability Period:

- i) No security deposit shall be refunded to the contractor for 1st 3 years from the actual date of completion of the work;
- ii) 30% of the security deposit shall be refunded to the contractor on expiry of four years from the actual date of completion of the work;
- iii) The balance 70% of the security deposit shall be refunded to the contractor on expiry of five years from the actual date of completion of the work.

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SECTION- I
SCHEMATIC DRAWING

