OFFICE OF THE BOARD OF COUNCILLORS
SANTIPUR MUNICIPALITY

P.O. - SANTIPUR,DIST:-NADIA
PIN: 741404,WEST BENGAL

TEL-FAX : 03472-278029-277170 e-mail ID – santipurmunicipality@gmail.com

Memo No.:-01/AMRUT Dated:04.02.2019

BID No:WBMAD/SM/AMRUT/2(2nd CALL)/18-19

NOTICE INVITING e-BID

The Chairman,Santipur Municipality, on and for behalf of the Board of Councillors of Santipur Municipality invites sealed competitive e-Bid on Turnkey Basis (Two partssystem)for the following Storm Water Drainage works from reliable , resourceful, bonafied and experienced Companies/Firms/Contractors/Joint venturehaving experience and acumen in construction of similar nature of work in Government Department / Semi-Government Department/ State or Central Govt. undertaking / Statutory Bodies constituted under the statute of Central or State Govt. in a single contract during last 5 years from the date of this NIT.

1.	Name of Work:		Surveying Design Construction, and Commissioning of RCC Storm Water Drains with RCC cover slab for a total length of 7.43 KM(approx) with a pumping Station and screen chamber including Sub- Station (250 K.V.A) and Surrounding boundary wall with 5 years O&M within Santipur Municipality under AMRUT on Turnkey Basis.
2.	Scope of Work		i)Construction of main drain (P1) from the junction of K. C. Das Road uptoBarabazarGhat (approx length 1.522Km). ii)Construction of Drain from SutragarhKhudekali Tala uptoNabin Pally via Biswas Para (Drain-P2) iii)Construction of drain (P9) starting from Kutir para more uptoBarabazarGhat via Gulbaz More, Bharat Mata ,Malopara pore , C. R. Das Road(approx length 2.013) . iv)Construction of Drain(P10) Starting from opposite of of Electric Supply Office end of Motigange More via N. S. Road(approx length .596 Km). v)Construction of Drain(P12) starting from 2 no rail gate uptoSuradhanikhal(apprx length .777Km). vi)Construction of Drain(P13) starting from Goroshan Lane upto Haripur Bill(approx length 1.001Km). vii)Construction of Pumping Station & Screen Chamber including Sub-station building and surrounding boundary wall at Biswas Para adjacent to Drain -P2 viii) Supply and laying of storm water pumping main from Biswaspara pumping station to node no. 17. ix)Electro-mech. Component of pumping station for Pumping Station -2 for Drain P-2 refer clause 5 , section A for further scope of work.

2. Intending bidder may download the tender document from https://wbtenders .gov.in directly with the help of Digital Signature Certificates.

3.	Location of Work:		Within Santipur Municipality, P.S:-Santipur, Dist.:-Nadia (W.B.)
4.	Eligibility to participate in the Bid		Having experience in executing similar type of work in Government Department / Semi-Government Department / State or Central Govt. undertaking / Statutory Bodies constituted under the statute of Central or State Govt. having minimum credential as noted below. i)Intending tenderers should produce credentials of a similar nature of work of the minimum value of 30% of the work quantity during 5(five) years prior to the date of issue of this tender notice; or, ii)Intending tenderers should produce credentials of 2(two) similar nature of work, each of the minimum value of 20% of the work quantity during 5(five) years prior to the date of issue of the tender notice; or, iii)Intending tenderers should produce credentials of one single running work of similar nature which has been completed to the extent of 70% or more and work quantity of which is not less than the desired value at (i) above; In case of running works; only those tenderers who will submit the certificate of satisfactory running work from the concerned Executive Engineer, or equivalent competent authority will be eligible for the tender. In the required certificate it should be clearly stated that the work is in progress satisfactorily and also that no penal action has been initiated against the executed agency, i.e., the tenderer. **AND** Having sufficient qualified technical with sound knowledge and experience in execution of similar nature of works. **AND** Having annual turnover of at least Rs. 20 Core or above in any one year of last five Financial years. **AND** Having valid GST Registration, Trade Licence,PANCardetc.
			Note: a) Only works of nature depicted above completed successfully will be treated as credential.
5.	Documents to be produced in support of Credential for Bid Part-		A successful <u>performance and completion certificate</u> issued by the competent authority shall have to be furnished in support of credibility in terms with eligibility criteria depicted in this Notice (**Ref:Sl. No. 4 :Eligibility to participate in the Bid**). Besides this, following documents shall have to be furnished:

<table>
<tr><td></td><td>I(Prequalification Documents)</td><td></td><td></td></tr>
<tr><td></td><td></td><td>a.</td><td>Particulars of ownership/partnership or Board of Directors pertaining to the Organization/Company/Firm</td></tr>
<tr><td></td><td></td><td>b.</td><td>Copies of valid PAN Card, , GST Registration Certificate,Copies of professional Tax clearance certificate.</td></tr>
<tr><td></td><td></td><td>c.</td><td>Bank solvency Certificate not less than Rs. 5.0 cores.</td></tr>
<tr><td></td><td></td><td>d.</td><td>Valid documents in support of annual Turnover.</td></tr>
<tr><td></td><td></td><td>e.</td><td>List of machines and equipment's necessary for field as well as laboratory test for all materials.</td></tr>
<tr><td></td><td></td><td>f.</td><td>Experience and address, fax & telephone nos. , mobile no., & E-mail ID nos. of the firm.</td></tr>
<tr><td></td><td></td><td></td><td>All documents in original to be produced in due course of time as & when asked by the Bid inviting authority.</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td>6.</td><td>Earnest Money</td><td></td><td>2% (Two percent) of the quoted bid price</td></tr>
<tr><td></td><td></td><td>a.</td><td>Rs. 15,00,000.00 (Rupees Fifteen Lakh only) as an initial Earnest Money Deposit shall accompany with Bid Proposal, in favour of the "The Chairman, Santipur Municipality,"</td></tr>
<tr><td></td><td></td><td>b.</td><td>Earnest Money Deposit i.e. 2% of bid amount beyond Rs. 15 , 00,000.00 shall have to be deposited after acceptance of Bid Proposal.</td></tr>
<tr><td></td><td></td><td></td><td>Note:- The Earnest Money, as specified in this NIeB shall be paid by online internet bank transfer or NEFT or RTGS (as per GO No. 3975-F(Y) dt. 28.07.2016 of Finance Deptt., Govt. Of West Bengal). Every such Transfer shall be done on or after the date of publish of NIeB. 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.
i) Net banking (any of the banks listed in the ICICI Bank Payment gateway) in case of payment through ICICI bank payment gateway.
ii)RTGS/NEFT in case of offline payment through bank account in any bank</td></tr>
<tr><td>7.</td><td>Cost price of Bid documents</td><td></td><td>NIL</td></tr>
<tr><td>8.</td><td>Date and Time Schedule :-</td><td></td><td>
<table>
<tr><td>Sl. No.</td><td>Particulars</td><td>Date and Time</td></tr>
<tr><td>a)</td><td>Date of uploading of NIeB. and Bid Documents online) (Publishing Date)</td><td>04.02.2019 at 15.00 p.m</td></tr>
<tr><td>b)</td><td>Documents download/sell start date (Online)</td><td>04.02.2019 at 15.00 p.m</td></tr>
<tr><td>c)</td><td>Date of Pre Bid Meeting with the intending bidders In the office of the Chairman,Santipur Municipality.</td><td>12.02.2019 at 13.00 p.m</td></tr>
<tr><td>d)</td><td>Bid submission start date (On line)</td><td>13.02.2019 at</td></tr>
</table>
</td></tr>
</table>

					10.00 a.m
			e)	Bid Submission closing (On line)	28.02.2019 at 12.00 noon
			f)	Bid opening date for Technical Proposals(Online)	02.03.2019 at 12.00 a.m
			g)	Date of uploading list for Technically Qualified Bidders (online)	To be notified later
			h)	Date and Place for opening of Financial Proposal (Online)	To be notified during uploading of Technical Evaluation Sheet of Bidders
			i)	Date of uploading of list of qualified bidders along with the offer rates through (on line),	To be notified later.
			j)	Also if necessary for further negotiation Through offline for final rate.	To be notified later.
9.	Time of completion		Time of completion of the Contract is 180 (one hundred and eighty) calendar days from the date of issue of Work Order.		
10.	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 with regard to availability of materials and their sources and all relevant factors as might affect their rates and prices along with approach to the site. They are also acquainted with relevant IS specifications with latest amendments, , 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, labours, water supply, Highest Flood Level(HFL), and diversion of transportation and barricading , if required, electricity and any other general information including topological condition & existing level and level pertaining to and needed for the work to be completed in time properly.		
11.	Bid documents		A full set of Bid documents consists of 2 Parts. These are **PART I** :-Containing all documents in relation to the name of the firm applied for and credential possessed along with all documents as depicted in Sl. No. 4 along with this NIeB and its all corrigenda's. **And** Section A: Description of the Project. Section B: Conditions & requirements for-Bidding. Section C: General conditions of the Contract. Section D: General Specification of workmanship and material for		

			civil works & Section E: ANNEXURES i) Contour Map OfSantipur Municipality ii) Yearly Rainfall Data iii) Ward boundary and Existing Road Network within Santipur Municipal area. iv) Municipal K form **PART II** :-Containing the Following Document. Bid Price / Price Schedule (Bill of quantities).(.xls format)
12.	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.
13.	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 and even a legal action may be taken by Directorate.
14.	Acceptance of Bid		The "Chairman, Santipur Municipality" will accept the Bid. He /She does not bind himself/herself 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.
15.	Intimation		i) 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 in Municipal K form "with the "The Chairman, Santipur Municipality", and fulfil all his obligations as required by the Contract. After the Bid is provisionally accepted, the Bidder shall undertake profile survey of the alignment of the drain and submit detail Design (Hydraulic & structural), Drawings based on contour map and rainfall data. If it is found technically correct and acceptable with proper examination by the Superintending Engineer, East Circle, M.E. Directorate, approval of the submitted drawings will be accorded(Approval of Electro – Mechanical drawings will be accorded by the KMDA). Even after approval from the competent authority, if it is necessary to rectify anything at site, it is the sole responsibility of the contractor to reconstruct the same at his own cost at site after necessary approval from competent authority. Eventually, all the parts, Design, Drawings etc. of the successful Bidder shall be taken as a part of the agreement.
16.	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 contract, and other obligation, if any.

17.	Name & address of Engineer-In-Charge (EIC) of the Work		Executive Engineer, Nadia Division, Municipal Engineering Directorate, Department Of Urban Development & Municipal Affairs,
18.	Execution of Work		The Contractor is liable to execute the whole work as per direction and instruction of the Executive Engineer, Nadia Division of Municipal Engineering Directorate who is the "Engineer in Charge" of the work after due approval of "Superintending Engineer, East Circle, M.E. Directorate."
19.	Payment		Payment will be made to the successful Bidder by the "Chairman, Santipur Municipality" periodically only on receipt of written recommendation from the Executive Engineer, Nadia Division of Municipal Engineering Directorate.
20.	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.

21.	In case office faces sudden closure owing to reason beyond the scope and control of "The Chairman, Santipur Municipality", any of last date/dates as schedule in Sl. No 8 may be extended up-to/to next and following working day without issuing further and separate notice should the "The Chairman, Santipur Municipality", feels it to be necessary and exigent.
22.	Persons having authenticated and having registered Power of Attorney may be considered lawfully becoming to be acting on and for behalf of the Bidder.
23.	Sufficient care has been taken to avoid variance in between the contents of the listed. Documents in the Bid document. 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.
24.	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.
25.	Bid Acceptance Authority is the "The Chairman, Santipur Municipality".
26.	In case of any dispute arising from any clauses of similar nature between bid documents and municipal Form "K", the decision of the Superintending Engineer, East Circle, M.E. Directorate, will be final and binding.
27.	All usual deductions for taxes as applicable i.e. GST, IT, and Labour welfare cess etc. as applicable will be made from the bills from time to time .
28.	No conditional Bid shall be entertained.
29.	The requisite cost of Earnest Money, as specified in this NIeB shall be paid by online internet bank transfer or NEFT or RTGS (as per GO No. 3975-F(Y) dt. 28.07.2016 of Finance Deptt., Govt. Of West Bengal). Every such Transfer shall be done on or after the date of publish of NIeB. 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

	participating in the Bid and entering into a contract for the work as mentioned in the Notice inviting Bid, 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.	Prospective applicants are advised to note carefully the minimum qualification criteria as Mentioned in 'Instructions to Bidders' before bidding.
32.	During scrutiny, if it is come to the notice to Bid inviting authority that the credential or any other papers found incorrect/manufactured/fabricated, that Bidder will not be allowed to participate in the Bid and that application will be out rightly rejected without any prejudice.
33.	Before issuance of the work order, the Bid 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 manufacture or false, in that case, L.O.A./ work order will not be issued in favour of the bidder under any circumstances.
34.	If any discrepancy arises between two similar clauses of Bid document or on different notifications, the decision of "Superintending Engineer, East Circle, M.E.Dte." is final & binding.
35.	The Bidders quoting rate in BOQ will be treated as the "Quoted rate inclusive of all type of taxes for Central Govt., State Govt., and any other Statutory body as admissible by rules and regulation of the Government (Central/State) time to time. Therefore All usual deductions for taxes as applicable i.e, IT, Labour welfare cess etc. will be deducted from the bills submitted by contractor time to time for their works. No extra claim in any circumstances beyond the quoted rate and subsequently approved by the tender inviting authority will be entertained.
36.	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 Bid 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 Bid. The power of attorney shall have to be registered in accordance with the provisions of the Registration Act, 1908.
37.	Any legal matter will be settled within the jurisdiction of Hon'ble District Judges Court at Nadia, Dist.-Nadia, West Bengal.
38.	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.
39.	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. 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.

40.	Additional Security Deposit @ 8% (eight percent) will be deducted from each and every running bill. The entire amount of such 10% (ten percent) of Security Deposit (Initial 2% EM + additional 8%) will be refunded without any interest only after the schedule sequrity period i) 30 % of the security deposite shall be refunded to the contractor on expiry of one year after the issuance of certificate of completion of work ii) further 30 % of the security deposit shall be refunded to the contractor on expiry of two years iii)the balance 40 % of the security deposit shall be refunded to the contractor on expiry of three years
41	Intending bidders will not have to pay the cost of tender documents for the participating in e –tendering but successful L1(Lowest) bidder will have to pay the cost of tender documents of 3 sets as admissible to the Chairman, santipur Municipality.
42.	The prospective bidder is to quote the rate through on line in space marked for quoting rate in the BOQ.

Chairman

Santipur Municipality

INSTRUCTION TO BIDDERS/BIDDERS

SECTION – A-I

1. ***General guidance for e-Biding***
Instructions/ Guidelines for bidders for electronic submission of the Bids have been annexed for assisting them to participate in e-Biding.

2. ***Registration of Bidder***
Any Bidder willing to take part in the process of e-Biding will have to be enrolled and registered with the Government e-procurement system, through logging on to **https://wb.tender.gov.in** The Bidder is to click on the link for e-Biding 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 NIeB 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. Online transfer of Earnest Money receipt.(Scanned copy)

2. NIeB(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.

A-2. Non statutory Cover Containing/My Documents

i. Professional Tax (PT) deposit receipt Challan (up to date), PAN Card, IT Return for the Current Assessment year, GSTN Registration Certificate (up to date).
ii.Registrationcertificateunder company act(if any)
iii.Registered deed of Partnership firm/Article of Association &Memorandum
iv.. Power of Attorney (For Partnership Firm/ Private Limited Company, if any)
v. Tax Audit Report along with Balance Sheet and Profit and Loss A/c for the last five years(year just preceding the current Financial Year will be considered as year – I)
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).
ix. Credential :Scanned copy of Original Credential Certificate as stated in NIeB (under sl. no -4).

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			
Bidder Document Sub Category Master			
Sl. No.	**Category Name**	**Sub Category Name**	**Sub Category Description**
A	CERTIFICATES		

		A1. CERTIFICATES	1. GSTN/P.F/PAN / P. Tax clearance certificate. 2. Income Tax Acknowledgement Receipt (Latest) .
B	COMPANY DETAILS		
		B1. COMPANY DETAILS 1	1. Proprietorship Firm (Trade License). 4. Power of Attorney (For Partnership Firm/ Private Limited Company, if any)
C	CREDENTIAL		
		C1. CREDENTIAL1	Similar nature Work &Completion Certificates along with work order and payment certificate issued by competent authority (as per Sl No. 4 of NIeB)
D	EQUIPMENT		
		D1.LABOURTARY	1. List of Machineries and equipment necessary for field as well as laboratory test of all materials as per NIeB
		D2. CIVIL MACHINERIES	
		D2. ELECTRICAL MACHINERIES	
		D2. MECHNANICAL MACHINERIES	
		D2. MISCELLENEOUS MACHINERIES	
E	FINANCIAL INFO		
		E1. P/L & BALANCE SHEET 2011-2012	P/L & BALANCE SHEET (As per NIeB)

		E2. PAYMENT CERTIFICATE 1	Payment Certificate in support of valid credential only to be submitted(as per NIeB)
		E3 PAYMENT CERTIFICATE 2	
F	MANPOWER		
		F1. TECHNICAL PERSONNEL	1. List of sufficiently qualified technical person (as per Sl No 4 of NIeB)
		F2. TECHNICAL PERSONNEL ON CONTRACT	1. List of technical personnel employed under the organisation (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 NIeB)
		DECLARATION 2	2. Valid Document in support of annual (As per NIeB)
		DECLARATION 3	3. Corrigendum and additional document (if any).

Note:- **Failure of submission of any of the above mentioned documents (as stated in A1 & A2) will render the Bid liable to summarily rejected for both statutory &non statutorycover. 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 frompayment 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. 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-statutory
Cover 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 ofthe documents already submitted and if these are not produced within the stipulated time frame, their proposals will be liable for rejection.

C. Financial proposal
As per Sl. 11, Bid Price / Price Schedule is to be uploaded digitally signed by the Bidder quoting rate online through computer in the space marked for quoting rateseparately for each work from sl No- 1 to 5.
6. Financial capacity of a Bidder will be judged on the basis of working capital and available bid capacity as mentioned in the NIeB 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 documentse.g. NIeB, all addenda-corrigendum, different filled-up forms (Section –B), Price schedule and the same will be executed between the Bid Accepting Authorityand the successful Bidder

Chairman
Santipur Municipality

SECTION – B

FORM –I

PRE-QUALIFICATION APPLICATION

To
The Chairman,
Santipur Municipality,
PO:-Santipur, Dist:-Nadia,
West Bengal,

Ref: - Bid for_____

_____ (Name of work) _____

_____**NIeB No.:**

Dear Sir,

Having examined the Statutory, Non statutory and NIeB 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 overdraft)					
c) Working capital : (a) – (b)					
d) Net worth : (Proprietors Capital or Partners Capital or Paid up Capital + Reserve and 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 31.03.2018	As on 31.03.2017	As on 31.03.2016	As on 31.03.2015	As on 31.3.2014	As on 31.03.2013

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 …… years by occupation …… do hereby solemnly affirm and confirm as follow:

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

2. That, I have inspected the site of work covered under NIeB (NIeB 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 saidbefore 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. //2018 Dated:

Copy forwardedfor information to-

1. The Sabhadhipati, Nadia District,
2. The Director, SUDA, ILGUSBhawan, salt lake City, Kolkata.
3. The secretary, M.E.Directorate, Bikash Bhawan, Salt Lake City, Kol- 700091,
4. The Chief Engineer,M.E.Directorate, BikashBhawan, Salt Lake City, Kol- 700091.
5. The additional Chief Engineer, South, M.E.Directorate, Bikash Bhawan, Salt Lake City, Kol- 700091
6. The District Magistrate, Nadia District
7. The Superintending Engineer(EastCircle), M.E.Dte.,
8. The Executive Engineer,NadiaDivision,M.E.Dte.
9. The Executive Officer, Santipur Municipality.
10. Notice Board.
11. RespectiveFile.*Chairman*

SECTION – A

DESCRIPTION OF THE PROJECT

1.0 GENERAL

Surveying, Design, Construction of Storm Water Drainage at fivelocationswithinSantipur Municipal area .

The High Flood Level (HFL)will be determined by the bidder from the nearby benchmark of Irrigation deptt. upon obtaining approval from the authority.

2.0 PROJECT BACKGROUND WITH SALIENT INFORMATION

The Municipality has conducted a reconnaissance survey of the town to understand the current drainage pattern, coverage of drains, water logging areas and other critical issues. After field survey and discussions with the stakeholders, it was observed that existing storm water drains which effectively dispose storm water intercepted from peripheral drains into the nearby outfalls are quite inadequate. All these drains only cater limited areas of the entire town and remaining areas have poor drainage facility. As a result, several areas of the town are facing the acute problem of water logging during rainy season. At present ward no. 4, 5, 7, 9 to 15, 21 & 22 are badly affected due to poor drainage system which results in losses in the form of damaged roads, reduced serviceability and serious health hazard to general public. There is a Khal surrounding the periphery of the town to dispose storm runoff.

The major water logged areas of the town have mentioned below:

Sl. No.	Location	Ward No.
1	L.K. Maitra Road	13
2	K.B. Pramanick Street	13 & 7
3	Mahabharat Poddar Lane	7
4	Pancharatna Road	7 &14
5	Shyamchand Road	13 & 14
6	Lebutala para Lane	15

7	Haripur Street &Khudekali tala	10
8	Haridas Roy Road	09 & 11
9	K.C. Das Road	12 & 11
10	Karikar Para Street	22
11	Hekmat Street	09 & 08
12	Stadium Para	4&5
13	Ramchandra goswami road	4
14	Saheb danga Lane	15
15	Biswas Para Street	21

3.0 PROPOSED DRAINAGE SCHEME

The Santipur Municipal town has been sub-divided into 24 nos. ward. Presently, the people in ward nos. 4, 5, 7, 9 to 15, 21 & 22 have to suffer from water logging for prolong period during rainy season. Under this situation it has been decided to propose following drains in this phase to overcome the water logging problem of the town and balance will be taken up in next phase:

Sl NO.	NAME OF DRAIN	LENGTH (mtr)	OUTFALL LOCATION
1	Construction of Drain from the Junction. of K.C. Das Road uptoBarabzarGhat (Drain P1)	1522	Khal
2	Construction of Drain from SutragarhKhudekali Tala uptoNabin Pally via Biswas Para (Drain-P2)	1519	Khal
3	Construction Of Drain Starting From Kutir Para More uptoBarabazarGhat via Gulbaz More, Bharat Mata, Malopara pore, C.R. Das Road (Drain - P9)	2013	Khal
4	Construction of Drain Starting FromOpposit of Electrict Supply Office end of Motigange More Via N.S. Road (Drain - P10)	596	Khal
5	Construction of Drain starting from 2 no Rail Gate uptoSuradhani Khal (Drain - P12)	777	Khal

6	Construction of Drain Starting from Goroshan Lane upto Haripur Bill (Drain -13)	1001	Khal
	TOTAL	**7428**	

4.0 LOCATION

The drains are withinSantipur Municipality , P.S: Santipur, Dist.: Nadia

5.0 SCOPE OF WORK

The main scope of work envisages profile survey of the alignment of proposed drainage work ,design (Hydraulic and structural) as per minimum rainfall intensity of 27mm/hr and as per CPHEEO manual (sewragae) and relevant I.S codes with minimum surcharge 1t/m2 and soil parameters as per representative soil investigation of the area and consideration of uplift pressure if any with the invert level of each drain at the outfall point (i.e at khal) should be above the HFL matching with the adjacent road to prevent inundation of the catchment area during high flood period alternately by providing hydraulic structures at the suitable locations/ outfall points to prevent innundation of the catchment area of the drain during high flood period andapproval of drawings by the the SE(East Circle), MED and execution as per specification and satisfication of the Engineering-in-charge i.e Executive Engineer, Nadia Division.

a) Preparation of sub base at the bottom of drain by providing CC,BFS and layer of 150mm(min) sand filling.
b) Shifting of utility services from the alignment of proposed drain and relocation at permanent location.
c) Earthwork and necessary earth filling work.
d) RCC drain with bottom slab not less than 150mm thick, wall section of thickness not less than 150mm thick and top cover slab not less than 150 mm thick and grade of concrete M20 (1:1.5:3).
e) Reinforcement of Fe 500 HYSD steel using not less than 8 mm tor bar for both horizontal and vertical direction with maximun spacing @ 200 mm c/c.
f) Necessary Shoring work
g) Plastering to wall ,floor with 1:4 cement sand mortar 15 mm thick.
h) Neat cement punning 1.5 mm thick in wall ,floor
i) Construction of M. S gratings on the vertical side of wall adjacent to the road and manhole covers on the top of slab withspecification as per relavent I. S code.
j) Dismantling of cement concrete works and removing rubbish from site to a specified location.

k) Minimum section to be adopted with breadth and depth of 300 mm x350 mm respectively with clear cover as per below noted table as well as per CPHEEO Sewerage manual

Sl. No.	Drain Size	Free Board
1	Beyond 300 mm bed width	10 cm
2	Beyond 300 mm &upto 900 mm bed width	15 cm
3	Beyond 900 mm &upto 1500 mm bed width	30 cm

l) Const of Pumping station building (area not less than 130 sqm), construction of Sub station building (area not less than 87 sqm) and operator room (area not less than 25 sqm) including of sinking well of diameter not less 11.0m and depth not less than 10.4m with steel cutting edge weighing not less than 40 kg/m , concrete grade M25 (both bottom plug & well steining).

m) Construction of boundary wall for pumping station at Biswas para adjacent to drain P2(length not less than 100m)

n) Screen chamber as per CPHEEO manual, sewerage.

o) Storm water main drain of DI , K9 pipe 200mm dia of length not less than 300 m including supply of pipe, fittings , inspection chambers and valves etc .

Chairman
Santipur Municipality

SECTION - B

CONDITIONS & REQUIREMENTS FOR BIDDING

1. Submission of eBid document will not be allowed beyond the schedule time indicated in the eBidding.

2. Each Bidder shall upload his offer in envelopes (statutory and non-statutory)& .xls sheet after digitally signed super scribing the name of the work, name & address of the bidder, NIB No and date of submission of the eBid.

3. Each page of the eBid documents, drawing etc. has to be digitally signed / initiated by the authorized signatory.

4. No eBid proposal will be entertained without the earnest money being submitted as indicated in the NIB. No interest will be allowed for the said earnest money and the Bid issuing authority will hold the same till finalization of the eBid.

5. Any conditional eBid will be liable for rejection.

6 The Bid inviting Authority reserves the right to reserve or amend the eBid documents prior to the date notified for submission of the eBid or also to extend the time mentioned in the NIB under intimation to the Bidders.

7. eBid once offered cannot be withdrawn within a period of 120 calendar days from the date set for opening of eBids. Any extension of this validity period if required will be subject to concurrence of the Bidders.

8. Bidders would be at liberty to point out any ambiguities, contradictions, omissions, etc. seeking clarifications thereof or interpretation of any of the conditions of the eBid documents before the Bid Inviting Authority by uploading his/her doubt within a period of Forty eight hours before the date of Pre bid meeting as per schedule.

9. Written clarification or amendments etc. as may be issued by the Bid Inviting Authority in pursuance to the representation made by the intending Bidders under Clause 10 above shall be final and binding on the Bidders and shall form a part of the eBid documents. Bid Inviting Authority however, reserves the right to have pre Bid conference with the intending Bidders if deemed necessary. Any point or irregularities or questions could not be raised after expiry of pre bid meeting.

10. 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 with regard to availability of materials and their sources and all relevant factors as might affect their rates and prices. The Bidders must be acquainted that invert level of drain at outfall point should be above HFL and top level of drain must match with the adjacent road.

11. If expenses incurred for site inspection and all activities in the preparation and uploading of the eBid shall be borne by the Bidders.

12. Extra claim or any concession on the ground of insufficient data or information and absence of knowledge of conditions prevailing at the site or situation arising during the execution of the work shall not be entertained.

13. eBid, which have been considered valid on the result of general examination (Prequalification stage) at the time of opening, shall be subjected to subsequent detail scrutiny. Notwithstanding the general examination carried out earlier, the Bid Inviting authority reserves the right of rejection of any eBid, which may be found to be defective during the detail scrutiny.

14. Bidders before uploading the eBid documents shall have to ensure that "Declaration by the eBidder" in the pro-forma set out in the eBid documents is to be filed separately with the eBid documents in the form of Affidavit to be affirmed by the same person signing the Bid documents.

15. The Bid inviting authority reserves the right to accept or reject any or all of the eBid received or to split up the work in groups or to relax any clause without assigning any reason thereof.

16. This set of Bid documents consists of:

a. Detail Notice inviting Bid.

b. Declaration by the eBidder.

c Main Bid Documents consists of PART I & PART II (Technical) &financial(.xls format)

d. Municipal Tender Form.

Chairman
Santipur Municipality

SECTION – C

GENERAL CONDITIONS OF CONTRACT

1.0 DEFINITIONS AND INTERPRETATION

(1) In the Contract, as hereinafter defined, the following words and expressions shall have to be meanings hereby assigned to them, except where the context otherwise requires:

(a) "Approved" means approved in writing, including subsequent written confirmation of previous verbal approval and "approval" means approval in writing, including as aforesaid. "However in spite of approval from Competent Authority contractor is solely responsible for design-cum-execution of the whole project as it is turnkey job"

(b) Authority means the "The Chairman, Santipur Municipality" or his Authorized representative.

(c) "Bank" means the "State Bank of India" or any other Nationalized Bank.

(d) "Calendar day" means a period of twenty four hours extending from midnight to midnight.

(e) "Cash" includes cheque, bank drafts and any other payment voucher authorizing payment from any bank or treasury.

(f) "Contractor" means the person or persons, firm or Corporation who have entered into the contract for the performance of the work.

(g) "Contract price" means the sum as stated in the Bid submitted by the contractor subject to such additions there to or deductions therefore as may be made under the provisions of the contract documents and accepted by the Employer.

(h) "Constructional Plant" means all appliances or things of whatsoever nature required in or about the execution or maintenance of the works but do not include materials or other things intended to form or forming part of the permanent works.

(i) "District" or Santipur Municipal Area means the area described as such in Schedule-I of The Act;

(j) "Drawings" means the drawings referred to in the Bid documents and any modification of such drawings approved in writing by the "Superintending Engineer, East Circle, M.E.Dte." or his representatives of Municipal Engineering Directorate from time to time.

(k) "Employer" means "The Chairman, Santipur Municipality"

(l) "Engineer in Charge" means the Executive Engineer, Nadia Division of Municipal Engineering Directorate.

(m)"Engineer's Representatives" means any Assistant Engineer or Sub-Assistant Engineer or any Technical Personnel of works appointed from time to time by the Employer or the Engineer

to perform the duties set forth in Clause 2 hereof, whose authority shall be notified in writing to the Contractor by the Engineer-in Charge.

(n) "Existing Ground Level (EGL)" means the level of the referred point of the exposed surface of the ground, road or pavement free from extraneous materials and High Flood Level (HFL) means the maximum water level during flood for last consecutive years as decided by competent govt. Departmentand Finished Ground Level (FGL) is the referredtop most point at which land development has to be done by good earth with proper compaction and consolidation.

(o) "Holidays" means a public holiday for the purpose of Section 25 of the Negotiable Instruments Act, 1881 or such other day on which the office of the Authority remains closed for the day.

(p) "Local Authority" not only means a Municipal Corporation or Municipality (ULB) or other authority legally entitled to the control or manage local funds but also includes the West Bengal State Electricity Distribution Company Ltd.

(q) "Month" means English calendar month.

(r) "Permanent Work" means the permanent works including equipment to be supplied, executed, erected and maintained in accordance with the Contract.

(s) "Road" shall include a street, avenue, lane, by-lane or any other access routes over which a person authorized by a Local Authority has a right of way.

(t) "Rupees" (or Rs. in abbreviation) shall mean Rupees in Indian Currency.

(u) "Site" means the land and other placed on, under in or through which the Permanent. Works or Temporary Works are to be executed and any other lands and places provided or arranged by the employer for working space or any other purpose as may be specifically designated in the Contract as forming part of the Site.

(v) "Specification" means the specification 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 "Superintendent Engineer, EastCircleMunicipal Engineering Directorate,. Further specification laid down in the P.W.D Schedule of Govt. Of West Bengal & all relevant& latest IS codes with latest amendments will be implied after due approval from S.E (EC). In case of any ambiguity or completion of different schedule the decision of S.E (EC), will be final and bindings.

(w) "Store" means such storage areas including depot, go down, stockyard, dumping yard etc. maintained by the Authority) or where supply of any material for the construction or any work has been undertaken by any authorized agent, by such agent within the District.

(x) "Temporary Works" means all temporary works of every kind required in or about the execution or maintenance of the Permanent Works.

(y) "Bid Date" means the date fixed for receipt of Bids as per Notice Inviting Bids or as extended by subsequent notification(s).

(z) "Bidder" means the person, or persons, Firm, Company or Corporation submitting a Bid for the work contemplated either directly or through a duly authorized representative;

(aa)"The Act" West Bengal Municipal Act, 1975.

(bb)"Time" expressed by hours of the clock shall be according to the Indian Standard Time.

(cc)"Water main" means any pipe or conduit of cast iron, steel or of any other material intended to conveyor distribute water;

(dd)"Works" shall include both Permanent Works and Temporary Works.

(ee)"Work" means all of the work of the project called for or shown in the Bid documents including preparation, construction improvement and cleans up.

(ff) SE(EC) means the Superintending engineer, east Circle, m.e.directorate.

(2) Singular and Plural: Works importing the singular only also include the plural and vice versa where the context demands.

(3) Headings or Notes: The headings and marginal notes in these Conditions of Contract shall be deemed to be part thereof or be taken into consideration in the interpretation or construction thereof or of the Contract.

(4) Cost: The work "cost" shall be deemed to include overhand costs whether on or off the Site.

(5) Period of completion: The period of completion shall be 365 (Three sixty five Days) after issuing the work order.

2.0. ENGINEER IN CHARGE AND HIS REPRESENTATIVES

(1) Duties and Powers of Engineer in Charge and his Representative - The Engineer shall carry out such duties in issuing decisions, certificates and orders as are specified in the Contract. Fixation and acceptance of rates for altered or substituted items of work or for additional items of work or their deletion shall however always rest with the same authority (by designation) as had accepted the original Bid.

(2) Representative(s) shall be responsible to the EIC and his/their 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, not, accept as expressly provided hereunder or elsewhere in the Contract, to order any work involving delay or any extra payment by the Employer, nor to make any variation of or in the Works.

(a) Failure of the Engineer's Representative to disapprove any work of materials shall not prejudice the power of the Superintendent Engineer, East Circle Municipal Engineering Directorate , thereafter to disapprove such work or materials and to order the pulling down, removal of breaking up thereof.

(b) If the Contractor shall be dissatisfied by reason of any decision of the Engineer's Representative he shall be entitled to refer the matter to the Superintendent Engineer, East Circle Municipal Engineering Directorate, , who shall thereupon confirm, reverse or vary such decision.

3.0 ASSIGNMENT

The Contractor shall not assign the Contract or any part thereof, or any benefit or interest therein or there under, otherwise than a change in the Contractor's bankers of any money due or to become due under this contract, without the prior written consent of the EIC.

4.0 SUBLETTING

The Contractor shall not sublet the whole of the Works. Except where otherwise provided by the Contract, the Contractor shall not sublet any part of the Works without the prior written consent of the Superintendent Engineer, East Circle, Municipal Engineering Directorate, which shall not be unreasonably withhold and such consent, if given, shall not relieve the Contractor form any liability or obligation under the Contract and he shall be responsible for the acts, defaults and neglects of the said sub-contractor including his agents, servants or workmen as fully as if they were the acts, defaults or neglects of the Contractor, his agents, servants or workmen, provided always that the provision' of labours on a piece-work basis shall not be deemed to be a subletting under this clause.

5.0 CONTRACT DOCUMENTS

(1a) Language: The Contract documents shall be drawn up in the English language. All correspondence, orders, notices etc. shall also be in English.

(1b) Law: The law of India and of the State of West Bengal shall apply to the Contract and the Contract is to be construed accordingly.

(2) Documents Mutually Explanatory: The several documents forming the contract are to be taken as mutually explanatory of one another but in case of ambiguities or discrepancies the same shall be explained and adjusted by the Superintendent Engineer, East Circle Municipal

Engineering Directorate, in terms of the provisions in Clause B-2.3 of the Conditions and Requirements for Biding (omitted portion) who shall thereafter issue to the Contractor instructions thereon. Provided always that if, in the opinion of the Engineer, compliance with any such instructions shall involve the Contractor in any cost, which by reason of such ambiguity or discrepancy could not reasonably have been foreseen by the Contractor, the Engineer shall certify and shall pay such additional sum as may be reasonable to cover such costs with recommendation of the Superintendent Engineer, East Circle Municipal Engineering Directorate,.

6.0 DRAWINGS

(1) Custody of drawing: All the approved Drawings shall remain in the safe custody of the Executive Engineer, Nadia Division, Municipal Engineering Directorate, but one copy thereof shall be furnished to the Contractor free of charge. The Contactor shall provide and make at his own expenses any further copies required by him. At the Completion of the Contract, the Contractor shall return to the Executive Engineer, Nadia Division, Municipal Engineering Directorate, Govt. of West Bengal all drawings as provided under the Contract. (Minimum 6 copies of Design & drawing as hard copy has to be submitted by the contractor)

(2) One copy of approved drawing is to be kept on site. One copy of the Drawings furnished by 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, and his Representatives and by any other persons authorized by the Engineer in writing.

(3) Disruption of progress: The Contractor shall give written notice to EIC whenever planning or progress of the works is likely to be delayed or disrupted unless any further approval of drawing or order, including a direction instruction or approval is issued by Superintendent Engineer, East Circle Municipal Engineering Directorate, on recommendation of Executive Engineer Nadia Division, Municipal Engineering Directorate within a reasonable time. The notice shall include details of the drawing or order required, and of why and by whom it is required and of any delay or disruption likely to be suffered if it is further delayed.

(4) The contractors should submit required design calculations along with drawing. If required by Superintendent Engineer, East Circle Municipal Engineering Directorate, / E.I.C the design shall be submitted in latest version of civil, Mechanical, & Electrical software's with their hard copies and soft copies (in CD). Besides this the soft copies of all Drawing may also be submitted in AutoCAD format as & when required.

7.0 ADDITIONAL COPIES OF DRAWINGS

The EIC shall have full power and authority to supply to or demand from the Contractor, from time to time, during the progress of the Works, such further drawings as shall be necessary for the purpose of the proper and adequate execution and maintenance of the Works. The

Contractor shall carry out and be bound by the same. Adequacy as determined by the EIC shall be final and binding on the Contractor.

8.0 GENERAL OBLIGATION

Contractor's General Responsibilities - The Contractor shall, subject to the provision of the Contract, and with due care and diligence, execute and maintain the Works and supply all labour, including the supervision thereof, materials, equipment, Constructional Plant and machinery, tools and all other things whether of a temporary or permanent nature, required for such execution and maintenance, so far as necessary for providing the same is specified in or is reasonably to be inferred from the Contract. The Contractor shall take full responsibility for the adequacy, stability, safety & security or all Site operations and methods of construction, erection etc. During trial run and annual maintenance period the contractor has to assured safety and security of the whole plant by providing necessary guard/watchmen at his own cost.

9.0. CONTRACT AGREEMENT

The Contractor shall, when called upon to do so, enter into and execute a Contract Agreement, to be prepared and completed in the form annexed with such modification as may be necessary.

10.0. GUARANTEE

The contractor shall stand guarantee for successful operation of the plant for 12 months from the date of successful commissioning of the pump and shall within the O&M period, after 3 months trial run remove/rectify/ make good any such deficiency forthwith at his own cost. During the guarantee period (after the trial run period) the firm's representative shall visit the site once in a month and advice in writing the Superintendent Engineer, East Circle Municipal Engineering Directorate, about the condition, state of health, and operation & maintenance procedure of the equipment.

The successful Bidder shall also give the following guarantee in respect of the equipment supplied by him.

i) All equipment shall be free from any defects due to faulty design of the components, materials and/or workmanship

ii) The equipment shall operate satisfactory. The performance and efficiency shall not be less than guaranteed values.

iii) Formal acceptance of the work or equipment covered under the contract will not be made by the EIC until all the work done by the contractor has satisfactorily passed all tests required and run for a reasonable period to his satisfaction.

If during testing of work, including equipment prior of formal acceptance, the same or the material thereof must satisfy in respect of meeting the specification guaranteed or otherwise the

Contractor shall replace all such equipment etc. in a condition which will meet the guaranteed performance and be up to the specification, in both material and workmanship.

Any such work shall be carried out by the contractor at his own expense, if such work shall, in the opinion of the Engineer-in-Charge, be necessary due to the use of materials or workmanship not in accordance with the contract and/or to the neglect or failure on the part of the contractor to comply with any obligation expressed or implied on the contractor's part under the contract. If the contractor shall fail to do any such work as per aforesaid requirement of the Engineer-in-Charge, the EIC shall be entitled to have such work carried out by its own workman, or by others hired for the purpose, and if such work is in the opinion of the Engineer-in-Charge for which the contractor should have carried out at the contractor's own cost, the department shall be entitled to recover from the contractor the supervision cost deemed fit together with the cost increased for the purpose and may deduct the same from any money due to or that may become due to the Contractor.

10.1 START-UP GURANTEES

Until such time as the equipment or material installed and erected under the contact is finally accepted by the Department in keeping with the terms and condition of this contract and associated specifications the responsibility for proper storage, testing, maintenance and efficient of the same shall be that of the contractor. Prior to start-up contractor shall be required to service of the equipment and during start-up render such assistance as may be necessary or request for by the Employer.

When the equipment has not been manufactured by the bidder, Back to Back Guarantee shall be provided and the manufacturer recommendations for installation of the same shall be strictly adhered to and any defects developing due to faulty installation transportation and / or erection during start-up or during a period of one year from the date of commissioning shall be rectified, remedied or made good by the contractor through manufacturer, if considered by the Department, at his own cost. When the equipment has manufactured by the bidder himself, rectification within similar period is compulsory.

11.0. INSPECTION OF SITE

The EIC shall have made available to the Bidder with the Bid documents such data like its location, distance from fixed point including the layout drawing and location of the primary grid point, level drawing data the source of filling the reservoir and the Bid shall be deemed to have been based on such data. But the Bidder shall be responsible for his own interpretation thereof. The Bidder may also undertake investigations at his own cost on such levels or any other levels prior to submission of his offer.

The Bidder shall also be deemed to have inspected and examined the site and its surroundings and information available in connection therewith and to have satisfied himself, so far as is

practicable, before submitting his Bid; as to the form and nature thereof, including the sub-surface conditions, topography together in the level, the hydrological and climatic conditions, the extent and nature of work and materials necessary for the completion of the Works, the means of access to the Site and the accommodation he may require and, in general shall be deemed to have obtained all necessary information, subject as above mentioned, as to risks, contingencies and all other circumstances which may influence or affect his Bid.

12.0 SUFFICIENCY OF BID AND ADVERSE PHYSICAL CONDITIONS, ARTIFICIAL OBSTRUCTIONS

The Bidder shall be deemed to have satisfied himself before Bidding as to the correctness and sufficiency of his Bid for the Works and of the rates and prices quoted in the Schedule of prices, which Bid rates and prices shall, except in so far as it is otherwise provided in the Contract, cover all his obligations under the Contract and all matters and things necessary for the proper execution and maintenance of the Works. If, however, during the execution of its Works the Contractor shall encounter physical conditions, other than Climatic conditions on the Site, or artificial obstructions, which conditions or obstructions could, in his opinion, not have been reasonably foreseen by an experienced contractor, the Contractor shall forthwith give written notice thereof to the Engineer and if, in the opinion of the Engineer, such conditions or artificial obstructions could not have

been reasonably foreseen by an experienced contractor, then the Engineer shall certify and the EIC shall pay the additional cost to which the Contractor shall have been put by reason of such conditions, including the proper and reasonable cost with due recommendation of Superintendent Engineer, East Circle Municipal Engineering Directorate.

a) Of complying with any instruction which the Engineer may issue to the Contractor in connection therewith, and

b) Of any proper and reasonable measures approved by the EIC on recommendation of Superintendent Engineer East Circle Municipal Engineering Directorate, which the Contractor may take in the absence of specific instructions from the EIC as a result of such conditions or obstructions encountered.

13.0. WORK TO BE TO THE SATISFACTION OF ENGINEER IN CHARGE

Save in so far as it is not legally or physically impossible, the Contractor shall execute and maintain the Works in strict accordance with the Contract to the satisfaction of the EIC and shall comply with and adhere strictly to the EIC's instructions and directions on any matter whether mentioned in the Contract or not touching or concerning the Works.

14.0. WORK PROGRAM

(1) Program to be furnished: Within thirty (30) calendar days, the Contractor shall, after the acceptance of his Bid, submit to the EIC for his approval a program showing the order of procedure in which he proposes to carry out the Works. The Contractor shall, whenever required by the EIC, also provide in writing for his information, general description of the arrangements and methods, which the Contractor proposes to adopt for the execution of the Works.

(2) If at any time it should appear to the EIC that the actual progress of the Works does not conform to the approved program referred in sub-clause (1) of this Clause, the Contractor shall produce, at the request of the EIC, a revised program showing the modifications to the approved program necessary to ensure completion of the Works within the time for completion as defined in Clause 42 hereof.

(3) The submission to and approval by the EIC of such program or the furnishing of such particulars shall not relieve the Contractor of any of his duties or responsibilities under the Contract.

15.0. CONTRACTOR'S SUPERINTENDENCE

The Contractor shall give or provide all necessary superintendence during the execution of the Works and as long thereafter as the Superintendent Engineer, East Circle Municipal Engineering Directorate, may consider necessary for the proper fulfilling of the Contractor's obligations under the Contract. The Contractor or a competent and authorized agent or representative approved of in writing by the Chairperson, which approval may at any time be withdrawn, is to be constantly on the Works and shall give his whole time to the Superintendence of the same. If such approval be withdrawn by the Superintendent Engineer, EastCircle Municipal Engineering Directorate, the Contractor shall, as soon as is practicable, having regard to the requirement of replacing him as hereinafter mentioned after receiving written notice of such withdraw, remove the agent from the works and shall not thereafter employ him again on the Works in any capacity and shall replace him by another agent approved by the Superintendent Engineer, East Circle Municipal Engineering Directorate,. Such authorized agent or representative shall receive, on behalf of the Contractor, direction and instruction from the Superintendent Engineer, East Circle Municipal Engineering Directorate, or, subject to the limitations of Clause 2 hereof the Engineer's Representative. The agent or representative of the Contractor must be able to speak and communicate in English/Bengali. In the absence of the Contractor's designated agent or representative for a particular operation on any site of the works the Contractor's supervisory staff or sub-agent or leading hands shall be instructed to receive and carry out any instruction or direction issued or given by the Superintendent Engineer, East Circle Municipal EngineeringDirectorate, or the EIC.

16.0. EMPLOYEES

(1) Contractor's Employees - The Contractor shall provide and employ on the Site in connection with the execution and maintenance of the Works with minimum 3 nos. HT operator with 3 nos. electrician shall be provided at the time of operation of the plant and guarding arrangement should be provided at night.

a) Such technical assistants as are skilled and experienced in their respective calling and such sub-agents, foreman and leading hands as arc competent to give proper supervision to the work they are required to supervise, and

b) Such skilled, semi-skilled and unskilled labour as is necessary for the proper and timely execution and maintenance of the Works.

c) Employees covered under (a) and (b) may have to be provided with identity cards as specified by the EIC.

(2) The Engineer shall be at liberty to object to and require the Contractor to remove forthwith from the Work any person employed by the Contractor in or about the execution or maintenance of the Works who, in the opinion of the Executive Engineer, Nadia Division, misconducts himself, or is incompetent or negligent in the proper performance of his duties, or whose employment is otherwise considered by the Executive Engineer to be undesirable and such person shall not be again employed upon the Works without the written permission of the Executive Engineer. Any person so removed from the Works shall be replaced as soon as possible by a competent substitute approved by the Executive Engineer.

17.0. SETTING-OUT

The Contractor shall be responsible for the true and proper setting-out of the Works in relation to original points, lines and levels of reference given by the Engineer in writing and for the correctness, subject as above mentioned, of the position levels, dimensions and alignment of all parts of the Works and for the provision of all necessary instruments, appliances/and labour in connection therewith. If, at any time during the progress of the Works, any error shall appear or arise in the position, levels, dimensions or alignment of any part of the Works, the Contractor required to do so by the Engineer or the Engineer's Representative, shall at his own cost, rectify such error to the satisfaction of the Engineer or the Engineer's Representative, unless such error is based on incorrect data supplied in writing by the Engineer, in which case the expense of rectifying the same shall be borne by the Employer. The checking of any setting-out or of any line or level by the Engineer or the Engineer's Representative shall not in any way relieve the Contractor of his responsibility for the correctness thereof and the Contractor shall carefully protect and reserve all bench-marks, sigh trails pegs and other things used in setting out the Works.

18.0. WATCHING AND LIGHTING

The contractor shall in connection with the works provide and maintain at his own cost all lights, guards, fencing, as and when/where necessary or as required by the EIC or the

Engineer's Representative, for the protection of the works, contractor's employees, and employee's supervisor or for any other reason deemed fit by the Engineer.

19.0. WORKS & RISKS

(1) Care of Works: From the commencement of the Works until the date stated in the Certificate of Completion for the whole of the Works, pursuant to Clause 47 hereof, the Contractor shall take full responsibility for the care thereof. Provided that if the EIC shall issue a Certificate of Completion in respect of any part of the Permanent Works, the Contractor shall cease to be liable for the care of that part of the Permanent Works (O&M not counted) from the date stated in the Certificate of Completion in respect of that part and the responsibility for the care of that part shall pass to the EIC provided further that the Contractor shall take full responsibility for the care of any outstanding work which he shall have undertaken to finish during the period to Maintenance until such outstanding work is completed. In case any damage, loss or injury shall happen to the Works, or to any part thereof, from any cause whatsoever, save and except the expected risks as defined in sub-clause (2) of this Clause, while the Contractor shall be responsible for the care thereof the Contractor shall, at his Own cost, repair and make good the same, so that at completion the permanent Works shall be in good order and condition and in conformity in every respect with the requirements of the Contract and the EIC instructions. In the event of any such damage, loss or injury happening from any of the excepted risks, the Contractor shall, if and to the extent required by the EIC and subject always to the provisions of Clause 62 hereof, repair and make good the same as aforesaid at the cost of the Employer. The Contractor shall also be liable for any damage to the Works occasioned by him in the Course of any operations carried out by him for the purpose of completing any outstanding works or complying with his obligations under Clause 48 or 49 hereof.

(2) Expected Risks: The 'expected risks" are war, hostilities, invasion, act of foreign enemies, rebellion, revolution insurrection or military or usurped power, civil war or unless solely restricted to employees of the Contractor or of his sub- contractors and arising from the conduct of his workers, riot commotion or use or occupation by the EIC of any part of the Permanent. Works, or a cause solely due to the Engineer's design of the Works, or ionizing radiations or contamination by radio-activity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel, radio-active toxic explosive, or other hazardous properties of any explosive, nuclear assembly or nuclear component thereof, pressure waves cause by aircraft or other aerial devices travelling at sonic or supersonic speeds, or any such operation of the force of nature as an experienced contractor could not foresee, or reasonably make provision for or insure against all of which are herein collectively recurred to as "the expected risks."

20.0. INSURANCE OF WORKS, ETC.

Without limiting his obligations and responsibilities under Clause 19 hereof the Contractor shall insure in the names of the Employer and the Contractor against all loss or damage from whatever cause arising, other than the expected risks, 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 stipulated in Clause 19(1) hereof and are also covered during the Period of Guarantee for loss or damage arising from a cause, occurring prior to the commencement of the Period of Guarantee, 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 under Clause 48 or 49 hereof.

a) The Works for the time being executed to the estimated current contract value thereof together with the materials for incorporation in the Works at the replacement value.

b) The Constructional Plant and other things brought on the Site by the Contractor to the replacement value of such Constructional Plant and other things. These shall include materials belonging to the EIC but issued to or intended to be issued to the Contractor for use in the Works. Such insurance shall be affected with an insurer and in terms approved by the Employer, which approval shall not be unreasonably withheld, and the Contractor shall whenever required, produce to the EIC or the Engineer's Representative the policy or policies of insurance and the receipts for payment of the current premiums.

21.0. DAMAGES

(1) Damage to persons and property: The Contractor shall, except if and so far as the Contract provides otherwise, indemnify the EIC 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, operation 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 of occupation of land by the Works or any part thereof.

b) The right of the EIC to execute the Works or any part thereof on over under, in or through any land.

c) Injuries or damage to persons or property which are the unavoidable result of the execution, operation or maintenance- of the Works in accordance with the Contract.

d) Injuries or damages 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 EIC, his servant or agents or other contractors for the damage or injury.

(2) Indemnity of EIC: The Contractor shall indemnify the EIC against all claims, proceedings, damages, costs charges and expenses in respect of the matters referred to the provision to sub-clause (1) of this Clause.

22.0. INSURANCE

(1) Third Party Insurance : Before commencing the execution of the Works the Contractor, but without limiting his obligations and responsibilities under Clause 21 hereof, shall insure against his liability for any material or physical damage, loss or injury which may occur to any property, including that of the EIC, or to any person, including any employee of the EIC, by or arising out to the execution of the Works or in the carrying out of the Contract, otherwise than due to the matters referred to in the proviso to Clause 21 (I) hereof.

(2) Minimum Amount of third party insurance: Such insurance shall be affected with an insurer and in terms approved by the EIC, which approval shall not be unreasonably withheld, and for a least the amount started in the Appendix to the Bid. The Contractor shall, whenever required, produce to the EIC or the Engineer's Representative the policy or policies or insurance and the receipts for payment of the current premium. However, the Bidder should insure for an amount commensurate with the risk involved subject to the minimum amount prescribed elsewhere in the Bid.

(3) Provision to indemnify Employer: The terms shall include a provision whereby, in the event of any claim in respect of which the Contractor would be entitled to receive lt identify under the policy being brought or made against the Chairman, Santipur Municipality the insurer will indemnify the Employer against such claims and any costs, charges and expenses in respect thereof.

23.0. ACCIDENT, INJURIES

(1) Accident or injury to Workmen: The EIC shall not be 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 subcontractor, save and except an accident or injury resulting from any act or default of the EIC, his agents, or servants. The Contractor shall indemnify and keep indemnified the EIC 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.

(2) Insurance Against Accident, etc., to workmen: The Contractor shall insure against such liability with an insurer approved by the EIC, which approval shall not be unreasonably

withheld, 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 EIC or the Engineer's Representative such policy of insurance and the receipts for payment of the current premium. Provided always that, in respect of any person 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 EIC is indemnified under the policy, but the Contractor shall require such sub-contractor to produce to the EIC when required, such policy of insurance and the receipt for the payment of the current premium.

(3) Notification to insurer: It shall be the duty of the Contractor to notify the insurers under any of the insurance referred to in Clause 20, 22 and 23 hereof any matter or count which by the terms of such insurance are required to be notified and the Contractor shall indemnify and keep indemnified the EIC 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.

(4) All Insurances at Contractor's cost - The insurances referred to in Clause 21, 22 &

23 hereof shall be entirely at the cost and expenses of the Contractor and be included within his rates.

24.0. REMEDY ON CONTRACTOR'S FAILURE TO INSURE

If the Contractor shall fail to effect and keep in force the insurance referred to in Clause 20, 22 and 23 hereof, or any other insurance which he may be required to effect under the terms of the Contract, then and in any such case the EIC may effect and keep in force any such insurance and pay such premium or premiums including fines as may be necessary for that purpose and from time to time and deduct double the amount so paid by the employer as aforesaid from any moneys due or which may become due to the Contractor or recover the same as a debt due from the Contractor.

25.0. (1) Giving of Notices and Payment of Fees:

The Contractor shall give all notices and pay all fees required to be given or paid by any National or State Statute, ordinance, or other law, or any rules regulation, or bye-law of any local or other duly constituted authority 111 relation to the execution of the Works and by the rules and regulations of all public bodies and companies whose property or rights are affected or may be affected in any way by the Works.

(2) Compliance with Statutes, Regulations, etc. - The Contractor shall conform in all respects with the provisions of any such Statute, Ordinance or Law as aforesaid and the Rules, regulations or bye-laws or any local or other duly constituted authority which may be applicable to the Works and with such rules and regulations of public bodies and companies as aforesaid and shall keep the EIC indemnified against all penalties, fines and liability of every kind for breach of any such Statute, ordinance of Law, regulation of bye law.

26.0. FOSSILS, TREASURE TROVE ETC.

All fossils, Any treasure trove, coins articles of value or object with antiquity and structures and other remains or things of geological or archaeological interest discovered on the site of the Works shall as between the Employer and the Contractor be deemed to be the absolute property of the Employer and shall be handed over to the owner.

27.0. PATENT RIGHTS AND ROYALTIES

The Contractor shall save harmless and indemnify the EIC from and against all claims and proceedings for or on account of infringement of any patent, rights, design Trade mark or name or other protected right in respect of any Constructional Plant, machine works, or material used for or in connection with the Works or any of them and from and against all claims, proceedings, damages, costs, charges and expenses whatsoever in respect thereof in relation thereto. Except where otherwise specified, the Contractor shall pay all tonnage and other royalties, rent and other payments or compensations, if any, for getting stone, sand, gravel, clay or other materials or equipment required for the works or any of them.

28.0. INTERFERENCE WITH TRAFFIC AND ADJOINING PROPERTIES

All operations necessary for the execution of the Works shall, so far as compliance with the requirements of the Contract permits, be carried on so as not to interfere unnecessarily or improperly with the convenience of the existing plant workers, member of the public, or the access to use and occupation of public or private roads, railways and footpaths to or of properties whether in the possession of the EIC or of any other person or local authority.

29.0. TRAFFIC

(1) Extraordinary Traffic: The Contractor shall use every reasonable means to prevent any of the highways, railways or bridges communicating with or on the routes to the Site from being damaged or injured by any traffic of the Contractor or any of this sub-contractors and, shall select routes, choose and use vehicles and restrict and distribute loads so that any such extraordinary traffic as will inevitably arise from the moving of plant and material from and to the Site shall be limited, as far as reasonably possible, and so that no unnecessary damage or injury may be occasioned to such highways, railways and bridges.

(2) Special Loads: Should it be found necessary for the Contractor to move one or more loads of Constructional plant, machinery or pre-constructed units or parts of units of work over part of a highway, railway or bridge, the moving whereof is likely to damage any highway, railway or bridge unless special protection or strengthening is carried out, then the Contractor shall before moving the load on to such highway, railway or bridge give notice to the EIC or Engineer's Representative or the local authority of the weight and other particulars of' the load to be moved and his proposals for protecting or strengthening the said highway, railway or bridge. The Contractor at his own cost and expenses shall carry out such proposals, including any modifications thereto that the Engineer or the local authority may require.

(3) Settlement of Extraordinary Traffic Claims: If during the Carrying out of the Works damage or injury to railways, railway or bridge occurs due to moving of one or more loads of Constructional Plant machinery or pre-constructed units or parts of units of work, the Employer shall conduct the necessary investigation for the purpose of determining the Contractor's liability. If the damage is due to failure on the part of the Contractor to observe and perform his obligations under sub-clause (1) and (2) of this Clause then the restoration / repair of the damaged portion of road or structure certified by the Engineer or local authority to be due to such failure shall be undertaken by or be chargeable against the Contractor.

(4) Water-borne Traffic: Where the nature of the Works is such as to require the use by the Contractor of water-borne transport the foregoing provisions of this Clause shall be construed as though "highway" included a lock, dock, sea wall or other structure related to a waterway and "vehicle" included craft, and shall have effect accordingly.

30.0. RESTRICTION

(a) Restriction of Movements: The work shall have to be executed within the protected area of existing water works. The existing rules and regulation related to ingress and egress of labour and material shall have to be followed strictly in consultation with and as per direction of the EIC or the local authority as the case may be. No labour, Supervisor or Engineer of the contractor shall enter inside the treatment plant, pump house or any other existing installations without prior permission of concerned officers EIC.

(b) Opportunities for other contractors: The Contractor shall in accordance with the requirements of the EIC, afford all reasonable opportunities for carrying out their work to any other contractors employed by the Employer and their workmen and to the workmen of the employer and of any other duly constituted authorities who may be employed in the execution on or near the Site of any work not included in the Contract or of any contract which the Employer may enter into in connection with or ancillary to the Works. If, however, the Contractor shall, on the written request of the EIC or the Engineer's Representative, make available to any such other contractor, or to the Employer or any such authority, any roads or ways for the maintenance of which the Contractor is responsible, or permit the use by any such

of the Contractor's scaffolding or other plant on the Site, or provide any other service of whatsoever nature, the Employer shall pay to the Contractor in respect of such use or service such sum or sums if at all as shall, in the opinion of the Engineer, be reasonable.

31.0. CONTRACTOR TO KEEP SITE CLEAR

During the progress of the works the Contractor shall keep the site reasonable free from all necessary obstruction and shall store or dispose of any Constructional Plant and surplus materials and clear away and remove from the Site any wreckage, rubbish or Temporary Works no longer required.

32.0. CLEARANCE OF SITE ON COMPLETION

On the completion of the Works the Contractor shall clear away and remove from the site all Constructional Plant, surplus materials, rubbish and Temporary Works of every kind, and leave the whole of the Site and Works clean and in a workmanlike condition to the satisfaction of the Superintending Engineer,EastCircle, and Municipal Engineering Directorate.

33.0. LABOUR

(1) Engagement of labour: The Contractor shall make his own arrangements for the engagement of all labour, local or otherwise, and save in so far as the Contract otherwise provides, for the transport, housing, feeding and payment thereof.

(2) Supply of water: The Contractor shall, so far as is reasonably practicable having regard to local conditions, provide on the Site, to the satisfaction of the EIC representative, an adequate supply of drinking and other water for the use of the Contractor's staff and work people.

(3) Alcoholic Liquor or Drugs: The Contractor or his workmen shall not consume or sale or gift or be under the influence of any drug/narcotics or Alcoholic liquor within the vicinity of the Construction site.

(4) Arms and Ammunition: The Contractor shall not give, barter or otherwise dispose of to any person or persons, any arms or ammunition of any kind or permit or suffer the same as aforesaid.

(5) Festivals and Religious Customs: The Contractor shall in all dealing with labour in his employment have due regard to all recognized festivals days of rest and religious or other customs.

(6) Epidemic: In the event of any outbreak of illness of an epidemic nature, the Contractor shall comply with and carry out such regulations, orders and requirements as may be

made by the Government, or the local medical or sanitary authorities for the purpose of dealing with and overcoming the same.

(7) Disorderly Conduct etc.: The contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst his employees or workers and for the preservation of peace and protection of persons and property in the neighbourhood of the Works against the same.

(8) Compliance with Laws, regulation etc. relating to labour: In respect of the engagement, employment, transport, payment, feeding, housing and working conditions of labour and all matters connected there with the Contractor shall at all times during the continuance of the Contract, comply in all respects with and carry out all obligations imposed on him by the provisions and requirements of the following statutes.

(a) The Apprentices Act 1961 (Act 52 of1961) and Rules and Regulations issued there under from time to time.

(b) The Contract Labour Regulation and abolition Act 1970 (Act 37 of 1970) and Rules made there under (West Bengal Contract Labour Regulation and Abolition Rules 1972) from time to time.

(c) The Payment of Wages Act 1936, the Minimum Wages Act 1948, the Employees Liability Act 1938, the Industrial Disputes Act 1947, the Maternity Benefits Act 1961, the Employees State Insurance Act 1948 including modifications thereto the Rules and Regulations framed there under from time to time.

(d) Other existing National or State Statute, Ordinance or other Law or any Regulation or Bye-law of any local or other duly constituted authority which may be applicable, including any such Law, Regulation or Order that may be passed or ordered from time to time and come into force during the tenure of the Contract.

(9) Employees Provident Fund: The Contractor shall comply with the provisions of the relevant Employees Provident Fund Act or Rules in force in the State along with the provisions of all rules and Regulations made there under from time to time, and shall in particular be responsible for the payment of all contributions as laid down under the Act/Rules.

(10) Trade union rights: The Contractor shall recognize the freedom of all workmen employed by him in and for performance of the Contract to be members of registered Trade Unions and shall not in any manner prevent or discourage any such workman from becoming a member of a registered Trade Union or discriminate against any workmen who is a member of a registered Trade Union.

(11) Local Labour: As far as possible local labour shall be engaged as unskilled labour.

(12) Fair Wages - The Contractor shall in respect of all workers employed by him in and for the performance of the Contract pay rates of wages and observe the conditions of employment not less favourable than those provided under the relevant labour law as applicable to the State.

(13) Medical Attendance: The Contractor shall provide, to the satisfaction of the Government or Local Authorities Concerned, adequate medical attendance for his employees and labour.

(14) Report or Accident: The Contractor shall, within twenty four (24) hours of the occurrence of any accident at or about the site or in connection with the execution of the Work, report such an accident to the Engineer. The Contractor shall also report such accident to the competent authority whenever law requires such a report.

(15) Report required by Labour Commissioner: The Contractor shall submit, at the request of the Labour Commissioner or of the Assistant Commissioner of the State such returns as may be called for from time to time in respect of labour employed by the Contractor and by his subcontractors in the execution of the Contract. If so required, the Contractor shall furnish the names and address of all subcontractors to the Labour Commissioner. Statutory provisions in these regards are to be also complied with.

(16) The Contractor shall be responsible for observance by his subcontractor of all the foregoing provision of sub-clause (1) to (15) of this Clause 33.

34.0. RETURNS OF LABOUR ETC.

The Contractor shall, if required by the EIC, deliver to the EIC, or at his office a return in detail in such form and at such intervals as the EIC may prescribe showing the supervisory staff and the number of the several classes of labour from time to time employed by the Contractor on the Site and such information respecting Constructional Plant as the Superintending Engineer,East Circle, Municipal Engineering Directorate or his Representative may require.

35.0. MATERIALS AND WORKMANSHIP

(1) All materials and workmanship shall be of the respective kinds described in the Contract and in accordance with the Engineer's instructions and shall be subjected from time to time to such tests as the Engineer 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 material used and shall supply samples or materials before incorporation in the Works for testing as may be selected and required by the EIC, be it at site or at the manufacturer/Vendors premises or elsewhere.

(2) Cost of samples: The Contractor at the cost and expense of him shall furnish all samples of materials as may be required by the EIC.

(3) Cost of Tests: The cost of making any test shall be borne by the Contractor if such test is clearly intended by or provided for in the Contract and in the cases only of a test under load or of a test to ascertain whether the design of any furnished or partially finished work in appropriate for the purpose which it was intended to fulfil is particularized is the Contract in sufficient detail to enable to Contractor to price or allow for the same in his Bid.

(4) Cost of Tests not provided for, etc.: If the EIC orders any test, which is either;

a) Not so intended by or provided for, or

b) (In the cases above mentioned) is not so particularized, or

c) Though so intended or provided for is ordered by the Engineer to be carried out by an independent person or organization at any place other than the Site or the place of manufacture or fabrication of the materials tested, then the cost of such test shall be borne by the Contractor, if the tests shows the workmanship or materials not to be in accordance with the provisions of the Contract or the Engineer's instruction, but otherwise the cost shall be borne by the Employer.

36.0. INSPECTION OF OPERATIONS

The Engineer and any person authorized by him shall at all times have access to the Works and to all workshops stores and places where work is being prepared or from where material manufactured articles or machinery are being obtained for the Works and the Contractor shall afford every facility for and every assistance in or in obtaining the right to such access.

37.0. EXAMINATION

(1) Examination of work before covering up: No work shall be covered up or put out or view without the approval of the Superintending Engineer, East Circle, Municipal Engineer Directorate or the his authorized Representative and the Contractor shall afford full opportunity for the EIC or the Engineer's Representative to examine and measure any work which is about to be covered up or put out of view and to examine foundations before permanent work is placed thereon. The Contractor shall give due notice to the Engineer's Representative where any such work or foundations is or are ready or about to be ready for examinations and the Engineer's Representative shall, without unreasonable delay, unless he considers if unnecessary and advises the Contractor accordingly attend for the purpose of examining and measuring such work or of examine such foundations

(2) Uncovering and making openings: The Contractor shall uncover any part or parts of the Works or make opening in or through the same as the Engineer may from time to time direct and shall reinstate and make good such part or parts to the satisfaction of the Superintending Engineer, East Circle, Municipal Engineer Directorate or the his authorized Representative. If any such part or parts have been recovered up or put out of view after compliance with the

requirement of sub- clause (I) of this Clause and are found to be executed in accordance with the Contract, the expenses of uncovering, making openings in or through, reinstating and making good the same shall be, borne by the Employer, but in any other case all costs shall be borne by the Contractor.

38.0. REMOVAL

(1) Removal of improper work and materials: The EIC shall during the progress of the works have power to order in writing from time to time.

a) The removal from the Site, within such time or time as may be specified in the order, of any materials, which in the opinion of the Engineer, are not in accordance with the Contract.

b) The substitution of improper, substandard and unsuitable materials, and

c) The removal and proper re-execution, notwithstanding any previous test thereof or interim payment therefore, of any work which in respect of materials or workmanship is not in the opinion of the Engineer, in accordance with the Contract

(2) Default of Contractor in Compliance: In case of default on the part of the Contractor in carrying out such order, the Employer shall be entitled to employ and pay other persons to carry out the same and all expenses consequent thereon or incidental thereto shall be recoverable from the Contractor by the Employer, or may be deducted by the Employer from any sum due or' which may become due to the Contractor.

39.0. SUSPENSION

(1) Suspension of work: The Contractor shall, on the written order of the Engineer, suspend the progress of the works or any part thereof for such time or times and in such manner as the Engineer may consider necessary and shall during such suspension properly protect and secure the work, so far as is necessary in the opinion of the Engineer. The extra cost incurred by the Contractor in giving effect to the Engineer's instruction under this Clause shall be borne and paid by the Employer unless such suspension is

a) Otherwise provided for in the Contract, or

b) Necessary by reason of some default on the part of the Contractor, or

c) Necessary by reason of climatic conditions on the Site, or

d) Necessary for the proper execution of the work or for the safety of workmen or Works of any part thereof in so far as such necessity does not arise from any act or default by the Engineer or the Employer or from any of the expected risks defined in Clause 19 hereof provided that the Contractor shall not be entitled to recover any such extra cost unless he gives written notice of his intention to claim to the Employer within twenty-eight days of the

Engineer's order. The EIC shall settle and determine such extra payment and/or extension of time under Clause 43 hereof to be made to the Contractor in respect of such claim as shall in the opinion of the Employer be fair and reasonable.

(2) Suspension lasting more than 90 days: If the progress of the Works or any part thereof is suspended on the written order of the EIC and if permission to resume Work is not given by the EIC within a period of ninety days from the date of suspension then, unless such suspension is within paragraph (a), (b), (c) or (d) of sub-clause (1) of this Clause, the Contractor may serve a written notice on the Employer requiring permission within twenty eight days from the receipt thereof to proceed with the Works, or that part thereof in regard in which progress is suspended and, if such permission is not granted within that time, the Contractor by a further written notice so served may, but is not bound to, elect or treat the suspension where it affects part only of the Works as an omission of such part under Clause 50 hereof, or where it affects the whole Works as an abandonment of the Contract by the Employer.

40.0. COMMENCEMENT TIME AND DELAYS

Commencement of works: The Contractor shall commence the Works on Site within the period named in the Appendix to the Bid after the receipt by him of a written order to this effect from the Engineer and shall proceed with the same with due expedition and without delay, except as may be expressly sanctioned or ordered by the Engineer, or be wholly beyond the Contractor's Control. The successful contractor shall within four weeks from the date of issue of Letter of Intent furnish one or more drawing stating and showing the following:

1.0 Layout of cable trenches, cable trays showing the locations and levels together without position of hooks at the under site of the operating platform stating the maximum load required to be withstood.

2.0 Any other data that the Bid considers relevant for construction of civil structure.

3.0 Any other reasonable data that may be asked for.

41.0. POSSESSION

(1) Possession of site: Save in so far as the contract may prescribe, the extent of portions of the Site of which the Contractor is to be given possession from time to time and the order in which such portions shall be made available to him and subject to any requirement in the Contract as to the order in which the Works shall be executed, the Employer will, with the Engineer's written order to commence the Works, give to the Contractor possession of so much of the Site as may be required to enable the Contractor to commence and proceed with the

execution of the Works in accordance with the Programmed referred to in Clause 14 hereof, if any, and otherwise in accordance with such reasonable proposals, of the Contractor as he shall, by written notice to the Engineer, make and will, from time to time as the Works proceed, give to the Contractor possession of such further portions of the Site as may be required to enable the Contractor to proceed with the execution of the Works with due dispatch in accordance with the said Programmed or proposals, as the case may be. If the Contractor suffers delays or incurs cost for failure on the part of the Employer to give possession in accordance with the terms of this Clause, the Employer shall grant an extension of time for the completion of the Works and certify such sum as, in his opinion, shall be fair to cover the cost incurred, which sum shall be paid by .the Employer.

(2) Way leaves etc.: The Contractor shall bear all costs and charges for special or temporary way leaves required by him in connection with access to the Site. The Contractor shall also provide at his own cost any additional accommodation outside the site required by him for the purpose of the works.

42.0. TIME

(1) Time of Completion and progress of Works: The progress of the work shall conform to the approved Work Programmed in terms of Clauses 14 hereof, and subject to any requirement in the contract as the completion of any section of the Works before completion of the whole, the whole of the Works shall be completed, in accordance with the provisions of Clause 47 hereof, within the time stated in the Contract calculated from last days of the period named in the Appendix to the Bid as that within which the Works are to be commenced, or such extended time as may be allowed under Clause 43 hereof.

(2) Failure in keeping to stages of work Programmed: If the Contractor does not keep to the approved program and continues at any stage to fail behind his schedule by as much as twenty percent (20%) of the said approved work programmed, within thirty (30) days from receipt by him of a written notice from the Engineer, or if in the opinion of the Engineer the delay will substantially affect operation activities or execution of a major work item and it is ascertained by the Engineer that the Contractor cannot remedy the occasion within the stipulated time, the Superintending Engineer, East Circle, M.E.Dte on recommendation of Engineer shall have full authority to undertake measures to recover from such adverse condition as he feel so as per govt. norms or in terms of the provisions of Clause 62 thereof.

43.0. EXTENSION OF TIME FOR COMPLETION

Should the amount of extra or additional work of any kind or any cause of delay referred to in these Conditions, or other special circumstances of any kind whatsoever which may occur, other than through a default of the Contractor, be such as fairly to entitle the Contractor to an extension of time for the completion of the works, the EIC on recommendation of Engineer shall determine the period of such extension and shall notify the Employer and the Contractor

accordingly. Provided that the Engineer is not bound to take into account any extra or additional work or other special circumstances unless the Contractor has within twenty-eight days after such work has been commenced, or such circumstances have arisen or as soon as is practicable, submitted to the Engineer full and detailed particulars of any extension of time to which he may consider himself entitled in order that such submission may be investigated at the time.

44.0. NO NIGHT OR SUNDAY WORK

Subject to any provision to the contrary contained in the Contract, none of the Permanent Works shall, save as hereinafter provided, be carried on during the night or on Sundays, if locally recognized as days of rest, or other locally recognized equivalent without the permission in writing of the Engineer, except when the works is unavoidable or absolutely necessary for the saving of life or property or for the safety of the Works, in which case the Contractor shall immediately advise the Engineer, provided always that the provisions of the Clause shall not be applicable in the case of any work which it is customary to carry out by rotary of shifts.

45.0. RATE OF PROGRESS AND NIGHT WORK WHEN PERMITTED

If for any reason, which does not entitle the Contractor to an extension of time, the rate of progress of the Works or any section is at any time, in the opinion of the Engineer, too slow to ensure completion by the prescribed time or extended time for completion, the EIC on recommendation of the Engineer shall so notify the Contractor in writing and the Contractor shall thereupon take such steps as are necessary and the Engineer may approve to expedite progress as to complete the Works or such section by the prescribed time or extended time. The Contractor shall not be entitled to any additional payment for taking such steps. If as a result of any notice given by the EIC under this Clause, the Contractor shall seek the EIC permission to do any work at night or on Sundays, If locally recognized as days of rest, or their locally recognized equivalent, such permission shall not be unreasonable refused. When work at night has to be carried out, the Contractor shall, at his own cost and expense, make adequate arrangements for lighting and provide necessary facilities for safety etc. and comply with all stipulations as may have been imposed by the EIC in granting permission for night work.

46.0. DAMAGES FOR DELAY

(1) Liquidated Damages for Delay: If the Contractor shall fail to achieve completion of the Works within the time prescribed by Clause 42 hereof, then the Contractor shall pay to the Employer the sum stated in the Contract as liquidated damages for such default and not as a penalty for every day of part of a day which shall elapse between the time prescribed by Clause 42 hereof and the date of certified completion of the Works, the Employer may without prejudice to any other method of recovery, deduct the amount of such damages from any money in his hands, due or which may become due to the Contractor. The payment or

deduction of such damages shall not relieve the Contractor form his obligation to complete the Works, or from any other of his obligations and liabilities under the Contract.

(2) Reduction of liquidated Damages: If, before the completion of the whole of the Works any part or section of the Works has been certified by the Engineer as completed, pursuant to Clause 47 hereof, and occupied or used by the Employer, the liquidated damages for delay shall, for any period of delay after such certificate and in the absence of alterative provision in the contract be reduced in the proportion which the value of the part or section so certified bears to the value of the whole of the Works.

(3) Extent of Liquidated Damages: The liquidated damages referred to in sub-clause (1) for delay of each day or part thereof, shall be at the rate of one percent (l %) or such smaller amount as the Employer may decide, or the total value of the Contract Price excluding the value of such part or section of the works as may have been covered by certificate of completion in terms of the provisions of sub-clause (2) above, Provided however that in no case shall be total amount of liquidated damages exceed ten percent (10%) of the total Contract Price for whole Works.

(4) Liquidated Damage as Reasonable Compensation: The 'Liquidated damage' referred to in sub-clause (1) to (3) above, shall be considered as reasonable compensation to the applied to the use of the Employer without reference to the actual loss or damage sustained and whether or not any damage shall have been sustained.

(5) No bonus for early completion: -The Contractor shall not be entitled to payment of any bonus for early completion of the Works.

47.0. CERTIFICATION OF COMPLETION OF WORK

(1) Erection: Erection of Mechanical and electrical equipment shall be construed to have been completed where equipment in question is placed in position undergoes all necessary tests such as those for alignment, verticality, leak proof, insulation etc. as may be specified elsewhere in the Bid documents and put to operation.

(2) Completion: Completion is a stage when the equipment and the structure as a whole is certified by the Employer. The date shall only be indicative for the purpose of reckoning the period of Maintenance Period and shall not be co-related with the release of any payment provided that non-continuous of sporadic functioning shall not be deemed as commissioning and also provided that non-commissioning of minor works, the decision on determination of major or minor works resting with the employer, shall not nullify the act of completion for the aforesaid purpose. An item shall be considered as minor work where its non-completion may not in the opinion of the employer, stand in the way of commencement of plant operation.

(3) Trial Run:-The Trial Run period shall be for three months including 72 hours with load operation of 8 hours at a stretch operation of all equipment as per specification and to the satisfaction of Engineer-in-Charge.

48. MAINTENANCE

(1) Maintenance Period: Maintenance period shall be for a period of one year counted from the date of certified commissioning i.e. after successful trial runs of 3 months. The Contractor shall provide spare parts at his cost required during the maintenance period.

(2) Cost of Execution of work of repair, etc.:- The repair work shall be carried out by the Contractor at his own expense if the necessity thereof shall, in the opinion of the Engineer, be due to the use of materials or workmanship not in accordance with the Contract, or to neglect or failure on the part of the Contractor to comply with any obligation, expressed or implied, on the Contractor's part under the Contract. If, in the opinion of the Engineer, such necessity shall be• due to any other cause, the value of such work shall be ascertained and paid for as if it was an additional work.

(3) Remedy on contractor's failure to carry out work required: If the Contractor shall fail to do any such work as aforesaid requirement by the Engineer, the Employer shall be entitled to employ and pay other persons to carry out the same, which in the opinion of the Employer, the Contractor was liable to do at his own expense under the Contract. In the said event, all expenses consequent thereon or incidental thereto shall be recoverable from the Contractor by the Employer, or may be deducted by the Employer from any sum due or which may become due to the Contractor.

49.0. CONTRACTOR TO SEARCH

The Contractor shall, if required by the EIC in writing, search under the directions of the Engineer, for the cause of any defect, imperfection or fault appearing during the progress of the Works or in the period of Maintenance. Unless such defect, imperfection or fault shall be one for which the contractor is liable under the contract, the cost of the work carried out by the contractor in searching as aforesaid shall be borne by the Employer. If such defect, imperfection or fault shall be one for which the contractor is liable as aforesaid, the cost of the work carried out in searching as aforesaid shall be borne by the contractor and he shall in such case repair, rectify and make good such defect, imperfection or fault at his Own expense in accordance with the provisions of Clause 48 hereof to the satisfaction of the Engineer.

50.0. ALTERATIONS, ADDITIONS AND OMISSIONS

(1) Variations: The Employer may make any variation of the form, quality or quantity of the Works or any part thereof that may, in his opinion, be necessary and for that purpose, or if for any other reason it shall, in his opinion, be desirable, he shall have power to order the Contractor to do and the Contractor shall do any of the following:

a) Increase or decrease the quantity of any work included in the contract.

b) Omit any such work.

c) Change the character or quality or kind of any such work.

d) Change the levels, lines position and dimensions of any part of the Works and

e) Execute additional work of any kind necessary for the satisfactory completion of the works or for deriving satisfaction of the Employer. It is expressly provided that no such variation shall, in any way vitiate or invalidate the Contract, but the value, if any, of all such variations shall be taken into account in ascertaining the amount of the Contract Price.

(2) Orders for variations to be in writing: The Contractor shall make no such variations without an order in writing from the Employer. Provided that no order in writing shall be required for insignificant increase or decrease in the quantity of any work where such increase or decrease is not the result of an order given under this Clause, but is the result of the quantities exceeding or being less than those stated in the Schedule of prices. Provided also that if for any reason the Employer shall consider it desirable to give any such order verbally, the Contractor shall comply with such order and any confirmation in writing of such verbal order given by the Employer whether before or after the carrying out of the order, shall be deemed to be an order in writing within the meaning of this Clause. Provided further that in the event of non-receipt of written confirmation from the Employer, the Contractor shall, within eleven days, confirm the same from his end in writing to the Employer, and If such confirmation is not contradicted in writing within fourteen days by the employer, it shall be deemed to be an order in writing by the Employer.

51.0. VALUATION

(1) Valuation of variations: All extra or additional work done or work omitted or substituted by order of the Employer shall be valued at the rates and prices set out in the Contract if, in the opinion of the Employer, the same shall be applicable as it is or with addition to or subtraction from an accepted item, if the contract does not contain any rates or prices applicable to the extra or additional work, then the rates or prices shall be obtained from the Applicable Circle, Public Works Department schedule of rates as was in vogue on the date of submission of the Bid. The same is being escalated to an extent determined by comparing the cost of a similar item appearing in the Schedule of Prices with those in PWD schedule. Where such rates are not available in P.W.D. schedule of rates, the market-analysed rate as approved by the Employer shall be final and binding. In case of such analysed rates, 10% profit including overhead consultant's fees, ST. Turnover Tax etc. shall be allowed. No other overhead, or other expenses shall be taken into account shall be considered to be inclusive of contractors profit.

(2) Variation Exceeding 20%: - If, on certified completion of the whole of the Works, it shall be found that a reduction or increase greater than twenty percent (20%) of the sum named in the Letter of Acceptance, excluding all fixed sums, provisional sums if any, results from

a) The aggregate effect of all Variation Orders, and

b) All adjustments upon measurement of the estimated quantities set out in the Schedule of Prices excluding all provisional sums, and adjustments of price made under Clause 66 (1) hereof but not from any other clause, of the Contract Price shall be adjusted by such sum as may be agreed between the Contractor and the Employer or, failing agreement, fixed by the Employer having regard to all material and relevant factors, including the Contractor's site and general overhead costs.

(3) Claims: The Contractor shall send to the EIC once in every month an account giving particulars, as full and detailed as possible, of all claims for any additional payment to which the Contractor may consider himself entitled and of all extra or additional work ordered by the Employer which he has executed during the preceding month. No final or interim claim for payment for any such work or expense will be considered which has not been included in such particulars. Provided always that the Employer shall at his discretion be entitled to authorize payment to be made for any such working expense, notwithstanding the Contractor's failure to comply with this condition, that the Contractor has, at the earlier practicable opportunity, notified the Employer in writing that he intends to make a claim for such work, provided always that a release of payment shall be preceded by the claim and valuation of variation, in that order.

52. PLANT TEMPORARY WORKS AND MATERIALS

1. Plant, etc. exclusive use for the works: All Constructional Plant, Temporary Works and materials provided by the Contractor shall, when brought to the Site be deemed to be exclusively intended for the execution of the Works and the Contractor shall not remove the same or any part thereof, except for the purpose of moving it from one part of the Site to another, without the consent, in writing, of the Engineer which shall not be unreasonably withheld.

2. Removal of plant, etc.: Upon completion of the Works the Contractor shall remove from the Site all the said Constructional Plant and Temporary Works remaining thereon and any unused material provided by the Contractor to the satisfaction in the Engineer.

3. Employer not liable for damage to plant, etc. The employer shall not at any time be liable for the loss of or damage to any of or damage to any of the said Constructional Plant, Temporary Works or materials same as mentioned in Clause 19 and 62 hereof.

4. Octroi, Sales tax, GST Cess and other imposts. The Contractor shall pay Octroi, Sales Tax, GST, Cess, Work Contract Tax and all other taxes, duties and charges as may be applicable

from time to time in respect of materials purchased by him or plants and equipment brought to Site. No separate payment shall be made for all these and they shall be deemed to have been covered within the Contractor's rates for the finished items of work.

5. Temporary Works: At least fourteen (14) days in advance of taking up any temporary works, the contractor shall submit to the Engineer for approval complete drawings of all temporary works he may require for the execution of the Works. He shall, so required by the Engineer, submit his calculations relating to the strength of the temporary works proposed. Modifications that the Engineer may require shall be made by the Contractor at the latter's cost and expenses. At the discretion of the Engineer, a higher stress up-to a maximum of twenty five percent (25%) in excess of the stress normally allowed for permanent structures may be permitted in the design of temporary works. Notwithstanding the approval by the Engineer of any of the temporary works, the contractor shall remain wholly responsible for their adequacy, safety, proper maintenance and of all obligations in regard to such works specified or implied in the Contract, until the removal of such works.

53.0. APPROVAL OF MATERIAL, ETC. NOT IMPLIED

The operation of Clause 52 hereof shall not be deemed to imply any approval by the Engineer of the materials or other matters referred to therein shall not interfere with rejection of any such materials at any time by the Engineer.

54.0. MEASUREMENT

For measurement, the metric system should be used.

55.0. WORKS TO BE MEASURED

The engineer shall, except as otherwise stated, ascertain and determine by measurement the value in terms of the Contract of work done in accordance with the Contract. He shall, when he requires any part or parts of the works to be measured, give notice to the Contractor's authorized agent or representative, who shall forthwith attend or send a qualified agent to assist the Engineer or the Engineer's Representative in making such measurement, and shall furnish all particulars required by either of them. Should the Contractor not attend, or neglect or omit to send his agent on two consecutive occasions, then in the third occasion the measurement shall be made unilaterally by the Engineer, which shall be taken to be the correct measurement of the work. For the purpose of measurement such permanent work as is to be measured by records and drawings at suitable intervals of such work and the Contractor, as and when called upon to do so in writing shall, within fourteen days, attend to examine and agree upon such records and drawings, with the Engineer or Engineer's Representative and shall sign the same when so agreed. If the Contractor does not so attend to examine and agree upon such records and drawings on two consecutive occasions they shall be taken to be correct. If, after examination of such records and drawings, the Contractor does not agree with the same or does

not sign the same as agreed, they shall nevertheless be taken to be correct, unless the Contractor shall, within fourteen days of such examination, lodge with the for decision by the Engineer, a notice in writing giving details of the respects in which such records and drawings are claimed by him to be incorrect together with reasons thereof.

56.0. METHOD OF MEASUREMENT

The Works shall be measured as per relavant IS code.

57.Mode of payment :

The payment break up schedule will be approved by the S.E (East), MED after issuance of work order by the Chairman, SantipurMunnicipality .

	e) In case if the Length Of the Surface drain constructed is lesser than the given length in Sl. No 1 to 6 for any reason, the agency will be paid lesser equal to their (quoted rate/Total length of each serial)Xnon Constructed Length. The rate as per above will be compared withthe Department Estimate by braeking Lumpsum rate Of BOQ in a proportionate & Justified manner on the basis of value of work which will be approved by SE(EC)
	f) There should be no excess payment than the amount accepted by the Chairman, santipur Municipality in any circumstances.

58.0. APPROVAL ONLY BY MAINTENANCE CERTIFICATE

No Certificate other than the Maintenance Certificate referred to in Clause 59 hereof shall be deemed to constitute final approval of the Works.

59.0. MAINTENANCE CERTIFICATE

(1) The Maintenance Certificate stating that the Works have been completed and maintained to the satisfaction of the Engineer, shall be issued by him within twenty eight days after the expiration of the period of Maintenance, or if different periods of maintenance shall become applicable to different sections or parts of the Works, the expiration of the latest such period, or as Soon thereafter as any works ordered during such period, pursuant to Clauses 4) and 48 hereof (shall have been completed to the Satisfaction of the Engineer). With regard to defects that may arise during the Period of Maintenance, the Contractor shall be responsible to carry out restoration/rectification of damages as are attributable to defects in works carried out under this Contract. The decision of the Employer in the regard shall be final and binding on the contractors.

2) Cessation of Employer's liability: The Employer shall not be liable to the Contractor for any matters or thing arising out of or in connection with the Contractor for any matters or thing arising out of or in connection with the Contract or the execution of the Works, unless the

Contractor shall have made a claim in writing in respect thereof before the delivery of the Maintenance Certificate under this Clause.

3) Unfulfilled obligations: Notwithstanding the issue of the Maintenance Certificate the Contractor and, subject to the sub-clause (2) of the Clause, the Contractor shall remain liable for the fulfilment of any obligation incurred under the provisions of the Contract prior to the issue of the Maintenance Certificate which remains imperforated at the time such Certificate is issued and for the purpose of determine the nature and extent of any such obligation, the Contract shall be deemed to remain in force between the parties hereto.

60.0. REMEDIES AND POWERS

1) Default of contractor: If the Contractor shall become bankrupt, or have a receiving

order made against him, or shall present his petition in bankruptcy, or shall made an arrangement with or assignment in favour of his creditors, or shall age to carry out the Contract under a committee of inspection of his creditors or, being a corporation, shall go into liquidation (other than a voluntary liquidation for the purpose of amalgamation or reconstruction), or if the Contractor shall assign the Contract, without the consent in writing of the Employer first obtained, or shall have an execution levied on his goods, or if the Engineer shall certify in goods, or if the Engineer shall certify in writing to the Employer that in his opinion the Contractor :

a) Has abandoned the Contract, or

b) Without reasonable excuse has failed to commence the Works or has suspended the progress of the Works for twenty eight days after receiving from the Engineer written notice to proceed, or

c) Has failed to remove materials from the Site or to pull down and replace work for twenty eight days after receiving from the Engineer written notice that the said materials or work had been condemned and/or rejected by the Engineer under these conditions, or

d) Despite previous warnings by the Engineer, in writing, is not executing the Works in accordance with the Contract, or is persistently or flagrantly neglecting to carry out his obligation under the Contract, or

e) Has, to the detriment of good workmanship, or in defiance of the Engineer's instructions to the contrary, sublet any part of the Contract.

Then the Employer may, after giving fourteen day notice in writing to the Contractor, enter upon the Site and the Works and expel the Contractor therefore without thereby avoiding the Contract, or releasing the Contractor from any of his obligations or liabilities under the Contract, or affecting the rights and powers conferred on the Employer or the Engineer by the

Contract, and may himself complete the Works or may employ any other contractor or agency to complete the Works. The Employer or such other contractor may use for such completion so much of the Constructional Plant, Temporary Works and materials, which have been deemed to be reserved exclusively for the execution of the Works, under the provisions of the Contract, as he or they may think proper and the Employer may, at any time, sell any of the said Constructional Plant, Temporary Works used and unused materials and apply the proceeds of sale in or towards the satisfaction of any sums due or which may become due to him from the Contractor under the Contract.

2) Valuation at date of forfeiture: The Engineer shall, as soon as may be practicable after any such entry and expulsion by the Employer, fix and determine expert, or by or after reference to the parties, or after such investigation or enquiries as he may think fit to make or institute and shall certify what amount, if any, had at the time of such entry and expulsion been reasonably earned by or would reasonably accrue to the Contractor in respect of work then actually done by him under the Contract and the value of any of the said unused or partially used materials, and Constructional Plant and any Temporary Works.

3) Payment after forfeiture: If the Employer shall enter and expel the Contractor any money on account of the Contract until the expiration of the Period of Maintenance and thereafter until the costs of execution and maintenance, damages for delay in completion, if any and all other expenses incurred by the Employer have been ascertained and the amount thereof certified by the Engineer. The Contractor shall then be entitled to receive only such sums or sums, if any, as the Engineer may certify would have been payable to him upon due completion by him after deducting the said amount. If such amount shall exceed the sum which would have been payable to the Contractor on due completion by him, then the Contractor shall, upon demand, pay to the Employer the amount of such excess and it shall be deemed a debt due by the Contractor to the Employer and shall be recoverable accordingly.

61.0. URGENT REPAIRS

If, by reason of any accident, or failure, or other event occurring to in or in connection with the Works, or any part thereof, either during the execution of the Works, or during the period of Maintenance, any remedial or other work or repair shall, in the opinion of the Engineer or the Engineer's Representative, be urgently necessary for the safety of the Works and the Contractor in unable or unwilling at once to do such work or repair, the Employer may employ and pay other persons to carry out such work or repair as the Engineer or the Engineer's Representative may consider necessary. If the work or repair so done by the Employer is work which in the opinion of the Engineer, the Contractor was liable to do at his own expense under the Contract, all expenses properly incurred by the Employer in so doing shall be recoverable from the Contractor by the Employer, or may be deducted by the Employer from any sums due or which may become due to the Contractor. The Engineer or the Engineer's Representative, as the case

may be, shall, as soon after the occurrence of any such emergency as may be reasonably practicable, notify the Contractor thereof in writing.

62.0. SPECIAL RISKS

Notwithstanding anything in the Contract contained:

1) No liability for war, etc., Risks- The Contractor shall be under no liability whatsoever whether by way of identity or otherwise for or in respect of destruction of or damage to the Works, same to work condemned under the provision of Clause 38 hereof prior to the occurrence of any special risk hereinafter mentioned, or to property whether of the Employer or third parties, or for or in respect of injury or loss of life which is the consequence of any special risk as hereinafter defined The employer shall indemnify and save harmless to Contractor against and from the same and against and from the same and against and from all claims, proceedings, damages, costs, charges and expenses whatsoever arising there out or in connection therewith.

2) Damage to works, etc., by special risks - If the Works or any materials on or near or in transit to the Site, or any other property of the Contractor used or intended to be used for the purposes of the Works, shall sustain destruction of damage by reason or any of the said special risks the Contractor shall be entitled to payment for:

a) Any permanent work and for any materials so destroyed or damaged and so far as may be required by the Engineer, or as may be necessary for the completion of the Works, or the basis of cost plus such profit as the Engineer may certify to be reasonable;

b) Replacing or making good any such destruction or damage to the Works;

c) Replacing or making good such materials or other property of the Contractor used or intended to be used for the purposes of the Works.

3) Projectile missile etc.: Destruction, damage, injury or loss of life caused by the explosion or impact whenever and wherever occurring of any mine, bomb, shell, grenade, or other projectile, missile, ammunition, or explosive of war, shall be deemed to be a consequence of the said special risks.

4) Increase cost arising from special risks: The Employer shall repay to the Contractor any increased cost of or incidental to the execution of the Works, other than such as may be attributable to the cost of reconstructing work condemned under the provisions of Clause 38 hereof, prior to the' occurrence of any special risk, which is howsoever attributable to or consequent on or the result of or in any way whatsoever connected with the said special risks,

subject however to the provisions in this Clause hereinafter contained in regard to outbreak of war, but the 'Contractor shall as soon as any such increase of cost shall come to his knowledge forthwith notify the Superintending Engineer, EastCircle, Municipal Engineering Directorate thereof in writing.

5) Special Risks: The special risks are war, (whether war be declared or not), invasion, act of foreign enemies, the nuclear and pressure waves risk described in Clause 19(2) hereof, or in so far as it relates to the country in which the works are being or are to be executed or maintained, rebellion, revolution, insurrection, military or usurped power, civil war, or unless solely restricted to the employees of the Contractor or of his Sub-Contractor and arising from the conduct of the works, riot, commotion or disorder.

6) Outbreak of war: If, during the currency of the Contract, there shall be an outbreak of war, whether war is declared or not, in any part of the world which, whether financially or otherwise, materially affects the execution of the works, the Contractor shall, unless and until the Contract is terminated under the provisions of this Clause, continue to use his best endeavours to complete the execution of the Works. Provided always that the Employer shall be entitled at any time after such outbreak of war to terminate the Contract by giving written notice to the Contractor and upon such notice being given, this Contract shall, except as to the rights of the parties under this Clause and to the operation of Clause 64 hereof, terminate but without prejudice to the rights of either party in respect of any antecedent breach thereof

7) Removal of plant of termination: If the Contract shall be terminated under the provisions of the last proceeding sub-clause, the Contractor shall, with all reasonable dispatch, remove from the Site all constructional Plant and shall give similar facilities to his Sub-Contractors to do so.

8) Payment if Contract terminated: If the Contract shall be terminated as aforesaid, the Contractor shall be paid by the Employer, in so far as such amounts or items shall not have already been covered by payments on account made to the Contractor, for all work executed prior to the date of termination at the rates and prices provided in the Contract and in addition

a) The amounts payable in respect of any preliminary items, so far as the work carried out or performed, and a proper proportion as certified by the Engineer of any such items, the work or service comprised in which has been partially carried out or performed.

b) The cost of materials or goods reasonably ordered for the Works which shall have been delivered to the Contractor or of which the Contractor is legally liable to accept delivery such materials or goods becoming the property of the Employer upon such payments being made by him.

c) A sum to be certified by the Engineer, being the amount of any expenditure reasonably incurred by the Contractor in the expectation of completing the whole of the Works in so far as

such expenditureshall not have been covered by the payments in this sub-clause before mentioned.

d) Any additional sum payable under the provisions of sub-clause (I), (2) and (4) of this Clause.

Provided always that against any payments due from the Employer under this sub- clause, the Employer shall be entitled to be credited with any outstanding balances due from the contractor for advances in respect of Constructional Plant and materials and any other sums which at the date of termination were recoverable by the Employer from the Contractor under the terms of the Contract and provided that if the termination be made in exercise of Clause C-60(1), no payment shall be released under ClauseC-62(8) (a) to (d).

63.0. FRUSTRATION

Payment in event of Frustration: A war, or other circumstances outside the control or both parties, arises after the Contract is made so that either party is prevent from fulfilling his contractual obligations, or under the law governing the Contract, the parties are released from further performance, then the sum payable by the Employer to the Contractor in respect of the work executed shall be the same as would have been payable under Clause 62 hereof if the Contract had been terminated under the provisions of Clause 62 thereof.

64.0. SETTLEMENT OF DISPUTES

Settlement of Disputes: If any dispute or difference of any kind whatsoever shall arise between the Employer and the Contractor or the Engineer and the Contractor in connection with, or arising out of the Contract, of the execution of the Works, whether during the progress of the Works or after their completion and whether before or after the termination, abandonment or breach of the Contract, it shall be settled in the court of law having jurisdiction provided that such a recourse shall not be resorted to without exhausting all other reasonable avenues of redresser.

65. NOTICES

(1) Contractor's local office and service of notices to contractor: The Contractor shall have a local office at or near the Site of Work full address thereof shall be intimated by the Contractor or his authorized Agent to the Employer as well as to the Engineer. All Certificates notice or written orders to be given by the Employer or by the Engineer to the Contractor under the terms of the Contract shall deemed to have been served by sending by post to or delivering the same to the Contractor's local office.

(2) Service of notice to employer: All Notice to be given to the employer under the terms of the Contract shall be served by sending by Registered post or delivering the same to the address given below:

OFFICE OF THE COUCILLORS OFSANTIPURMUNICIPALITY

P.O. - Santipur, Dist. – Nadia

(3) Change in Address of the Employer, the Engineer or the Contractor may change a nominated address to another address by prior written notice to the other two and in that event shall resume receiving of communication 28 days after delivery of such notice.

66. PRICE ADJUSTMENT

(1) The prices to be paid to the contractor for the whole work shall remain firm during the stipulated Contract period or extension thereof and no price adjustment shall be allowed.

(2) The statutory changes in price in the form of Taxes, duties etc. shall however be taken into account. For this purpose the taxes and duties prevailing on the last date of submission of the technical bid (or revised price bid, if applicable) shall be taken as the base. Such taxes and duties for different bought out items shall be specified by the contractor, falling which the assessment of the Employer shall be final and binding. Changes in price of Petrol, Diesel Lubricants, and Electricity etc. shall not be considered.

67.0. MISCELLANEOUS

Dangerous materials: Explosive, chemicals, combustible articles and items and similar materials intended for the Works shall be conveyed, stored and used by the Contractor and his sub-contractors In accordance with all laws, decrees, instruments, orders and regulations imposed by the Government or any of its instrumentalists. Observance of all safety provisions shall be the obligation of the Contractor and nothing herein shall release him from full responsibility for damage or injury to persons or properties resulting from his use of these dangerous materials.

68.0. CONTRACT CONFIDENTIAL

Except with the prior written approval of the Employer and to subject the such conditions as may be prescribed, the Contractor and/or any member of his organization shall not in any case communicate to any person or entity and information connected with the performance of the Services or in carrying out the Works not make public any information for the purpose of publication or advertisement. The Contractor shall treat all matters related to the Contract as private and confidential.

69.0. CONTRACTOR TO PROVIDE FACILITIES

The Contractor shall provide such labours, materials and other facilities that the Engineer or his Representative may require to assist them in carrying out normal tests and checks on materials and workmanship and in measurement of works.

70.0. INTERFERENCE WITH EXISTING FACILITIES

The Contractor shall carry out the works in such a way as to the minimum extent of interference to the use of existing facilities of any kind.

71.0. ACTS OF INFLUENCE

Neither the Contractor nor any of his Agents, Representatives, Employees or members of his organization shall commit any act which may influence the judgment or decision of the Employer or the Engineer or any their agents, representatives, employees or members of their respective organization. Any breach of this provision shall constitute a breach of Contract on the part of the Contractor and apart from penal measures against the Contractor according to the law the Employer shall have the Authority to take action for the Contractor's default in terms of the provisions of Clause 60 hereof.

72.0. INDIVIDUALS NOT PERSONALLY RESPONSIBLE

No personal liability shall be imposed on the members or the Employer or on the Engineer or their duly authorized representatives, agents or employees for acts performed or discharged in the exercise of their authorized duties or responsibilities or in carrying out their obligations by virtue of the provisions or scope of work contained in the Contract, if being understood that they are acting solely as agents and representatives of the Employer in good faith.

73.0. CONTRACT EMBODIES WHOLE ARRANGEMENT

The Contract becomes effective immediately on Issue of the letter of acceptance to the successful Bidder. The Contract (with annexure if any) as subsequently executed embodies the whole arrangement between the parties entering into the Contract All previous correspondence, negotiations, representation, explanations statements, promises or guarantees (whether oral or written) as are not included with the Contract as executed, shall normally be excluded in the interpretation of the Contract.

74.0. COMPLETION DRAWING

Completion drawing including detailed construction drawing shall have to be submitted in original with 6 (six) copies of prints of each. The original drawings shall be drawn on thick polyester film approved by the Engineer-in-Charge. Scale and size of drawings shall also be as

specified by the Engineer-in-Charge. Soft copy of drawing copied in CD/DVD should be submitted in addition. No extra payment will be made for it. The Completion drawings are to be got approved by the Employer and shall have to be submitted before the issue of certificate of final acceptance as in Clause C-57 (6).

75.0. BIDDER SHALL VISIT THE SITE

Intending Bidder shall visit the site and make him thoroughly acquainted with the local site condition, nature and requirements of the works, facilities of transport condition effective labour and materials, access, delivery, loading, unloading and storage for materials and removal of unsuitable materials. The Bidder shall deemed to be incorporate in their Bidder quotation for cost of procurement, carriage, freight and other charges as also for any special difficulties and including incorporation any or all inconveniences, police restriction for transport etc for proper execution of work as indicated in the drawing. The successful Bidder will not be entitled to any claim of compensation for difficulties faced or for losses incurred on account of any condition which existed before the commencement of the work or which in the opinion of the owner might be deemed to have reasonably been inferred to be so existing before commencement of work.

76.0 GOVERNMENT AND LOCAL RULES / LAW OF STATE

The contractor shall conform to the provisions of all local Bye-laws and Acts relating to the work and to the work and to the Regulations etc. of the Government and Local Authorities and of any company with whose system the structure is proposed to be connected. The contractor shall give all notices required by said Act, Rules, Regulations and Bye-laws etc. and pay all fees payable to such authority/authorities for execution of the work involved. The cost, if any, shall be deemed to have been included in his quoted rates, taking into account all liabilities for licenses, fees for footpath encroachment and restorations etc. and shall indemnify the owner against such liabilities and shall defend all actions arising from such claims or liabilities.

77.0 STORE SHED

The Contractor shall provide at his own cost a store shed of adequate capacity for storing materials. The shed should be of such construction that it must protect the materials against deterioration. A raised platform well above the highest flood level shall be made for stacking cement in such a way that the cement procured earlier can be consumed first so as to avoid deterioration due to prolonged stacking. Any modifications to the store shed in suggested by the Superintending Engineer of East Circle of Municipal Engineering Directorate recommendation for better storing of materials that shall have to be carried out by the Contractor at his own cost.

78.0 LAND FOR CONTRACTOR'S ESTABLISHMENT

For the purpose of constructing Contractor's Store yard, go-downs, site office and ancillaries, he may utilize portion of the land belonging to the Employer at such location as would not interfere to execute other co works. For all these, the Contractor shall have to obtain the requisite permission of the Engineer. The Contractor shall for this purpose submit to the Engineer for his approval a plan of the proposed layouts for the site facilities. The Engineer reserves the right to alter and modify the Contractor's proposals as the Superintending Engineer of East Circle of Municipal Engineering Directorate may deem fit.

79.0 WATER AND ELECTRICITY FOR CONSTRUCTION

1. The Contractor shall have to make his own arrangement for supply of water and for electrical power that may be required for or in connection with the works. No payment on this account will be entertained. However, Municipality may assist in getting power.

2. Arrangement for supply of piped water may not be possible. The Contractor will have to make arrangement for supply of drinking water and water required for constructions works by sinking tube wells or other suitable alternatives. The Bidders shall investigate this matter during site inspection before submission of Bidders: No payment will be entertained on •this account.

3. Nevertheless electrical power from usual supply agencies may not be continuously available due to various reasons including load shedding. In case of non- availability of electrical power the contractor will have to make his own arrangements for electrical power through generations. Contractor should include such aspects while quote his rate. No payment will be entertained on this account. When drawing power from the Municipality power point, the contractor shall have to bear the cost of electrical charges. The route of conveyance shall be subject to approval by the Engineer-in-Charge and will be in accordance with prevailing I.E. Rules.

80.0 FIRST-AID FACILITIES

The Contractor shall arrange for medical attentions to be promptly available when necessary. He shall for this purpose provide a number of First-Aid stations at suitable locations 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 cases to the nearest hospital. All these arrangements shall be to the approval of the Superintending Engineer of East Circle of Municipal Engineering Directorate.

81.0 FIRE FIGHTING ARRANGEMENT / FIRE EXTINGUISHING ARRANGEMENT

The Contractor shall provide suitable arrangement for firefighting / fire Extinguishing. 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. This equipment shall be provided at suitable prominent and easily accessible places and shall be properly maintained.

82.0 SAFETY MEASURES

The Contractor shall be responsible for the safety of all workmen and other persons entering or in the works and shall at his own expense and to the approval of the Superintending Engineer of East Circle of Municipal Engineering Directorate, take all measures necessary to ensure their safety. Such measures shall include the provisions of helmets (Specially where work at a height is involved), provision of gum-boots to workers engaged in cement concrete or other works, scaffolding or other measures required for working at a height, shall be strong and rigid and have to be provided with suitable and convenient access. Shoring required for deep excavation must be adequate and rigidly braced and strutted. The Contractor shall provide depending on the exigencies of the location and nature of work and other relevant factors, other safety measure that the Superintending Engineer of East Circle of Municipal Engineering Directorate may direct.

83.0 SUPERVISORY STAFF

The Contractor shall engage an experienced and qualified Site Manager to be in day-to- day charge of the work and he should be authorized to receive instructions from the Engineer. He shall receive orders given by the Engineer from time to time and shall act on them promptly. The Contractor shall, during working hours, maintain engineer and supervisors of sufficient training and experience to supervise the various items and operations of the work. Orders and directions as given to such engineers and supervisors or other staff of the Contractor shall be deemed to have been given to the Contractor. The Engineer of the Contractor responsible for this work, by whatever designation he may be known, but who will be specified on award of the Contract shall at least once in a fortnight inspect the works and shall discuss with the Engineer the conduct and progress of the work.

84.0 JOINT SURVEY

The Contractor shall satisfy himself regarding the correctness of the layouts, levels etc. as are shown in the drawings or given in the specifications. Before starting the work he shall also carry out at his own cost, survey of the whole work site jointly with the representative(s) of the Authority. Discrepancies noticed between drawings and the joint survey shall be informed in writing to the Superintending Engineer of East Circle of Municipal Engineering Directorate and got set right before execution of works. Such deviations as may arise out of the joint survey shall not viable the provisions of contract or entitle the Contractor to any extras in any way.

85.0 LAYOUT AND CHECKING

The contractor shall provide all labours, skilled and unskilled and all materials needed for carrying out, as directed, survey, laying out, setting out, checking of works, taking measurements, testing hydraulic and other structures, without any extra payment. The Contractor shall also provide approach and access to all the works and stores without any extra cost.

85. Reference Points

After the joint survey has been plotted and approved by the E.I.C. recommendation or his authorized representative, permanent base lines, cross line and bench marks shall be established by the Contractor so as to serve as reference points and "Dimensional Control Basis" of works. He shall prepare and submit a plan showing such reference points with their full description.

86.0 CO-OPERATION WITH OTHER CONTRACTORS

Some works in plant site, have been already done/are being done/will be done through other contractors. In the event of any such work the contractor shall have to work in full co-operation and in close co-ordination with other contractor/contractors. Any difficulty that may arise in this connection will have to be amicably settled by the contractors amongst themselves. If that be not possible, the matter shall be referred to the Superintending Engineer of East Circle of Municipal Engineering Directorate whose decision shall be final and binding on all the parties.

However, the site allocated to the contractor may be fenced at the Contractor's cost provided any necessary access to others as it required is given. The contractor will be permitted to use only the access to the site as indicated on the site plan of Bidder Drawing.

87.0 APPROVAL OF MATERIALS AND EQUIPMENT TO BE USED

Samples in large enough quantity of materials and descriptive data therefore requiring prior approval shall be furnished by the contractor to the E.I.C. Municipal Engineering Directorate in good time before the collection of such materials and equipment so as to permit inspection and testing. The samples shall be properly marked to show the name of the materials, name of the manufacturer and place of origin and item for which it is to be used. Only upon approval, the materials of approved quality shall be brought to site. Samples approved shall be on exhibition at all times, properly stores and prevented from deterioration for the purpose of comparison with the materials brought to site of work from time to time for use in work.

88.0 CONSTRUCTION RECORDS

The Contractor shall keep and supply to the Engineer 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 "as- made" drawing by the Contractor from these records.

89.0 PROGRESS PHOTOGRAPHS

The Contractor shall at his own cost and expense arrange to take periodic photographs to show the progress of work or interesting features thereof. The time and the position where from a photograph is to be taken should be as per direction of the Engineer or his Representative, Three copies of each of these photographs to an enlarged size of about 25 cm x 20 cm together with the CD/DVD, shall be supplied to the Superintending Engineer of EastCircle of Municipal Engineering Directorate 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, further prints and CD of the photograph, location and other relevant particulars shall not be kept by the Contractor or reproduced without written permission of the Employer. Digital Camera with 13.0 Mega pixels should be used for taking photos. Restrictions to photography or security restrictions that may be applicable to any particular area must be carefully and rigidly observed. The number of photographs (each consisting of three prints and the CD/DVD as aforesaid) for the complete works is not expected to exceed 100 (one hundred), No photograph of the plant and other installations shall be taken without prior approval of the concerned officers

90.0 SATISFACTORY COMPLETION OF VARIOUS ITEMS

The sub-works included in the Schedule of Prices are job works on lump sum basis. The various items of the sub-work are to fit in perfectly in the whole plant in every respect so as to form effective working parts of the whole plant as per satisfaction of the Superintending Engineer of East Circle of Municipal Engineering Directorate. Each sub- work will be considered as complete when it is completed as per specifications and put into commission, as per standards, as a successful component part of the whole plant.

91.0 CHECKING QUALITY OF WORK

Should the Engineer consider it necessary to satisfy himself as to the quality of the work, the Contractor shall, at any time during continuance of the contract, offer sample of work done or if necessary pull down a reasonable part of the work enough for such inspection and testing as the Engineer may direct and the Contractor shall make good the same at his cost and to the satisfaction of the Engineer without any extra cost.

92.0 RECORDING MEASUREMENTS

Though the offer is on lump sum basis, the Contractor shall give not less than five days' notice, in writing to the Engineer, about the work which is proposed to be covered or placed beyond the reach of measurements so that measurements may be taken before the work is covered, bar bending schedule is to be provided five days before the casting date. If any work is covered

without such written notice, the same shall be uncovered at the cost of the Contractor and in default hereof no payment or allowances shall be made for such work. These requirements apply for all the component items executed for the sub-work for which lump sum price is quoted

93.0 SITE ORDER BOOKS

1. For the purpose of quick communication between the Engineer or his Representative and the Contractor or his Agent or Representative, Site order Books shall be maintained at site in the manner described below. Any communication relating to the works may be conveyed through records in the Site Books. Such a communication from one party to the other shall be deemed to have been adequately served specified elsewhere in the General Conditions of Contract. Each Site Book shall have machine-numbered pages in triplicate and shall be carefully maintained and preserved.

2. The Contractor shall keep Site Books at various places Site work is being carried out so as to be readily available to the Engineer or his Representative. Any instruction or order which the Engineer or his Representative may like to issue to the Contractor may be recorded by him in the Site Book and two copies thereof taken by him for his record. The Contractor or his Agent or Representative may similarly maintain separate Site Book for any communication he may like to send to the Engineer or his Representative. Two copies thereof when sent to the Engineer's Representative and receipt obtained thereof, will constitute adequate service of the communication to the Engineer.

94.0 TECHNICAL ASSISTANCE

Training of Technical Personnel:-The Contractor shall undertake to train three technical personnel selected and sent by the ULB to the works of the Contractor. These engineers shall be given special training in the shop and drawing office where the equipment will be designed and manufactured and where possible in any other plant where Contractor's manufactured equipment of similar type is under installation tests or maintenance, to enable them to become fully familiar with the equipment being supplied by the Contractor. The period of training shall be as decided by the ULB but in any case shall not exceed six months for any individual. During the period of training the Contractor shall arrange for reasonable accommodation of the engineers and transport from the place of accommodation to the works or plant. The Contractor's supervisory personnel at site shall continuously and intensively instruct and train an adequate number of the ULB authority operating and maintenance personnel at site during erection and commissioning of the plant to enable them to take over the operation and maintenance of the plant after the maintenance period. No extra payment shall be made by ULB for the training of personnel under this clause.*Chairman*

Santipur Municipality

SECTION – D
GENERAL SPECIFICATIONS OF WORKMANSHIP AND MATERIALS FOR CIVIL WORK

1.0 GENERAL

1.1 General Materials

1.1.1 All materials used in the permanent works shall be of the best quality of the kind and to the approval of the Engineer-in-Charge. Any material not covered by these Specifications, shall comply with the relevant latest Indian Standard Specifications (Referred to as IS as revised or modified up-to the date one month prior to Tender date). British or American Standard Specifications shall be referred to in case any particular specification is not available in any of the aforesaid Specifications. For materials not specified in the aforesaid, direction of the Engineer-in-Charge shall be followed. All disputes shall be referred to the Employer, whose decision shall be final and binding.

1.1.2 Samples of materials to be supplied and used, by the Contractor in the works shall be to the prior approval of the Engineer-in-Charge. For this purpose the Contractor shall furnish in advance representative samples in quantities and in the manner as directed by the Engineer-in-Charge for his approval. Materials brought to the Site, which in the option of the Engineer-in-Charge do not conform to the approved sample and if so directed by him shall be removed by the Contractor from the Site and replaced by the materials of approved quality.

1.1.3 In spite of approval of the Engineer-in-Charge of any materials brought to the site, he may subsequently reject the same if in his opinion the materials has since deteriorated due to long or defective storage or for any reason whatsoever and is thereby considered unfit for use in the permanent works. Any material thus rejected shall be immediately removed from the Site at Contractor's cost and expense.

1.1.4 All materials brought to the Site shall be properly stored and guarded in the manner as directed by the Engineer-in-Charge and to his satisfaction.

1.1.5 The Engineer on written request of Chairman may carry out test of materials as he may decide. The Contractor shall, at his cost and expenses, for this purpose supply requisite materials and render such assistance to the Engineer-in-Charge as he may require.

1.2 **Workmanship**

All works are to be carried out in proper workman like manner. Items of works not covered by these Specifications or by other tender documents shall be carried out as per best practice according to the direction of the Engineer-in-Charge and to his satisfaction. The relevant IS Specifications or in case of necessity British or American Standard Specifications shall be taken as guide for the purpose.

1.3 **Works Included**

The rates for all items, unless specifically stated otherwise in the Contract, must cover the cost of all materials, labour, tools, machinery, plant, pumps, explosives, scaffolding, staging strong props, bamboos, ropes, templates, pages and all appliances and operations whatsoever necessary for efficient execution of work.

1.4 Ground Conditions

The Contractor is to visit the site and ascertain local conditions, traffic restrictions and obstructions in the area and allow for extra expenses likely to be incurred due to any limitations whatsoever.

1.5 Setting Out and Levelling

The Contractor is to set and level the works, and will be responsible for the accuracy for the same. He is to provide all instruments and proper qualified staff required for checking the Contractor's work.

1.6 Safety

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

1.7 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 site excavated foundation pits and trenches free from surface as well as subsoil/leakage water from any other source thereof and continue to do so to the complete satisfaction of the Engineer-in-Charge till the site is handed over. Method of dewatering shall need approval of the Engineer-in-Charge but no payment whatsoever is allowed on this count.

1.8 Rubbish

1.8.1 The Contractor shall clear all rubbish, vegetation, roots, soda etc., and dump them in the area indicated to the satisfaction of Engineer-in-Charge. No separate rate shall be allowed for the above work.

1.8.2 After the work is completed, the Contractor shall clear the area surrounding the buildings, all hutments and excess stores and remnants of building materials such brick bats, metal, sand, timber, steel etc.

1.9 Bench Marks and Ground water Gauges

The Contractor shall protect surveyor's benchmarks and ground water gauges, zero line marks and base line marks and base line marks from damage of movement during work.

1.10 Inspection

The Contractor shall inspect the Site of works and ascertain site condition and the nature of soil to be excavated.

1.11 Contractor's Staff

The Contractor must provide at all times efficient staff of trustworthy, skilful and experienced assistance capable of carrying out the work in accordance with the drawings and specification and to correct levels. The cost this establishment should be included in his rates.

1.12 Method of Measurement

Unless otherwise specified, the method of measurement for building works shall be as per IS: 1200.

1.13 Specifications Referred to

1.13.1 The specification contained herein are not exhaustive and for such items of works which may arise and which are not covered by this specifications, the provisions in the relevant Indian Standard (Latest Edition) shall apply.

1.13.2 A list of some Indian Standards is given herein.

1.13.3 Wherever reference to the Indian Standard mentioned below or otherwise appears in the specification, it shall be taken as reference to the latest version of the Standard.

IS Code No	Description
IS: 1200	Method of measurement of building and Civil Engineering works.
IS: 1542	Sand for plaster.
IS: 383	Aggregates-Coarse and fine, from natural source for Concrete.
IS: 515	Aggregates for use in Mass Concrete, natural and manufactured.
IS: 456	Code of Practice for Plain and Reinforced Concrete for General Building construction.

IS: 3370	Code of Practice for Concrete Structures for the Storage of Liquids.
IS: 12269	Specification for 53 Grade Ordinary Portland cements.
IS: 1786	Specification for High Strength Deformed bars & wires for concrete reinforcement.
IS: 1077	Common Burnt Clay Building Bricks.
IS: 1235	Flooring Tiles, Cement Concrete, Floor Finish
IS: 1443	Cement Concrete, Flooring Tiles, Laying and finishing.
IS: 1661	Cement and Cement Lime Pointing Plaster finishes on walls and Ceilings.
IS: 226	Structural Steel (Revised) Iron Work
IS: 800	Code of Practice for use of Structural Steel in General Building Construction.
IS: 1199	Workability of Concrete

2.0 EARTH WORK IN EXCAVATION & FILLINGS

2.1 General

Applicable provisions of Conditions of contract shall govern work under this section.

2.2 Excavation for Foundation, Trenches, Pit etc.

The excavation work shall be carried out in all kinds of Soil including Sand in workman link manner without endangering the safety of the nearby Structures or works without causing any hindrance to other activities in the area. The existence of old buildings, boundary walls, hutment, sewer lines, water lines, if any very close to the area of excavation should be given careful consideration while designing carrying out the excavation work. The excavation shall be done in such method as would technically be appropriate and befitting the site conditions subject to the approval of the Engineer-in-Charge. All foundation trenches shall be excavated to the full width and depths shown on the approved drawing or to such ordered to the Contractor.

The Contractor shall not undertake any earthwork without having obtained prior approval from the Engineer-in-Charge to the methods he proposes to employ in order to execute the work in the most efficient manner. He shall not modify such methods without the approval of the Engineer-in-Charge. This approval, however, shall not in any way make the Engineer-in-Charge responsible for any consequent loss or damage.

2.2.2 Should any excavation be taken down the specified levels, the Contractor shall fill in such excavation at his own cost with concrete as specified for foundations, well rammed in position until it is brought up to the specified level.

2.2.3 The Contractor shall notify when the excavation is completed and no concrete or masonry shall be laid until the soil for each individual footing, rafts etc. is approved.

2.2.4 The Contractor shall keep the site clear of water at all times. To this end he shall provide arrangements for bailing and pumping or any special arrangements as required within his quoted prices.

2.2.5 All foundation pits shall be refilled to the finished ground level (formation level) with approved materials, which shall be suitably consolidated in layers to the satisfaction of the Engineer-in-Charge.

2.2.6 Nothing extra will be paid for bailing out water collecting in excavation due to rains, ordinary springs, leakage from any other sources etc., or any other reason.

2.2.7 For the work of excavation the Tenderer shall include in his quotation the shoring, sheeting, bracing and sheet pilling (if required). The quotation shall also include the cost of compaction of foundation sub-base, removal and storage of excavated materials and back filling.

2.3 **Shoring**

Timber shoring whenever required shall be closed boarded with minimum 50mm thick good and seasoned timber planks of sufficient length driven side-by-side to the required depth. The gaps between adjacent timber planks shall such would not allow any flow of soi1 particles, if necessary, the sides of the planks shall be planed smooth to ensure this. Sufficient number of bracing struts, walling etc. is to be provided to make the shoring rigid and non-yielding by earth pressure. Where necessary, sheet pilling shall be done to ensure safety to the adjoining structures, if it is found that it is not feasible to protect the structure by timber shoring only. The Tenderer is strongly advised to inspect the site before tendering and apprise himself of the requirement of any Sheet piling in addition to the timber shoring before submitting his Quotation accordingly.

2.4 **Back Filling**

The space around the foundations in trenches or sites shall be cleared of all trash and loose debris and filled with approved excavated earth, all clods being broken up to the finished G.I. Filling shall be done in 200mm layers, each layer to be property moistened and well ranm1ed. Excavated materials which is surplus or which is consolidated unsuitable for back filling shall have to be disposed of in spoil dumps as directed by the Engineer-in-Charge. No extra payment will be made for this.

3.0 CONCRETE

3.1 General

3.1.1 Applicable provisions of Conditions of Concrete shall govern work under this section.

3.1.2 All concrete work, plain or reinforced shall be carried out strictly in accordance with this specification and any working drawing or instructions given from time to time to the Contractor.

3.1.3 The Contractor's states shall allow for wastages in all materials as well as for all tests of materials and concrete.

3.1.4 No concrete shall be cast in the absence of the Engineer-in-Charge or any other person duly authorized by him. The Contractor's Engineer shall personally check that both the form work and reinforcement have been correctly placed and fixed, and shall satisfy himself that all work preparatory to the casting is completely ready, before informing the Engineer-in-Charge for final inspection and approval and for which purpose at least 24 hours' notice shall be given by the Contractor.

3.1.5 The Indian Standards wherever referred to herein shall be the latest addition of such standards.

3.2 **Cement**

Cement shall conform for IS: 12269; 1987 Cement tests shall have to be carried out at Contractor's expense as and when directed. Cement, which has or practically set, shall not be used under any circumstances. The important structures should be constructed with the grade of cement not below 53 (Grade-53). No extra payment will be made for using Grade-53 cement or more grades available in departmental store.

3.3 **Aggregates**

The fine and coarse aggregates shall conform to all provisions and test methods of IS: 383 and/or IS: 5l5. Samples of aggregates, proposed to be used in the work shall be submitted free of charge in sufficient quantities to the Engineer-in-Charge with sieve analysis and other physical and chemical analysis data for his approval. He will preserve approved samples for future reference. This approval will not in any way relieve the Contractor of his responsibility of producing of specified qualities.

3.3.1 **Coarse Aggregates**

Coarse aggregates for use all reinforced and other plain cement concrete works shall be crushed black granite trap stone obtained from approved source and shall consist of uncoated, hard, strong dense and durable pieces of crushed stone, and be free from undesirable matters, viz. Disintegrated stones soft, friable, thin, elongated or laminated pieces, dirt, salt, alkali, vegetable matter or other deleterious substances. The aggregates shall be thoroughly washed with water and cleaned before use to the satisfaction of the Engineer-in-Charge at no extra cost of the Employer.

The maximum size of coarse aggregates shall be as follows unless specified otherwise elsewhere.

Reinforced Concrete : 20 mm

Plain Concrete : 20 mm

Thin R. C. C. Members With very

Narrow space : 12/15 mm.

Mat/Lean Concrete : 20/40 mm.

(The actual size to be agreed by the Engineer-in-Charge)

Grading of coarse aggregates for a particular size shall generally conform to relevant I.S Codes and shall be such as to produce a dense concrete of the specified proportions and or strength and consistency that will work readily in position without segregation.

3.3.2 **Fine Aggregates**

Sand shall be clear River sand brought from approved source and consist of siliceous material, having hard, strong, durable uncoated particles, free from undesirable matters viz. dust lumps, soft or flaky particles or other deleterious substances. The amount of undesirable shall not exceed the percentage limits by weights as specified in relevant IS Codes. Washing of aggregates by approved means shall be carried out, if desired by the Engineer-in-Charge, at no extra cost to the Employer.

Coarse and fine sand shall be well graded within the limits by weight as specified in relevant IS Code. Fineness Modulus shall not vary by more than plus or minus 0.20 from that of the approved sample. Fineness Modulus for sand should not be less than 2.5.

3.4 **Reinforcement**

3.4.1 The Contractor shall prepare and furnish to the Engineer-in-Charge, Bar Bending Schedules in considerations of the approved drawings for all R.C. C. works for review and checking by the Engineer-in-Charge well before taking up the work.

3.4.2 The High Yield Strength Deformed bar (HYSD) Fe –500 shall conform to IS: 1786-1990. And to be used in all type of works. Design of the structure shall be made using Fe-500 grade of steel.

All steel for reinforcement shall be free from loose, oil, grease, paint or other harmful matters immediately before placing the concrete.

3.4.3 The Reinforcement shall be bent to the shapes shown on the approved drawings prior to placing and all bars must be bent cold. The Steel shall be placed in such a way that it is rigidly held in position while concrete is being cast. The correct clearance from the form shall be maintained by either pre-cast mortar blocks or by metal supporting chairs to be supplied by the Contractor free of charge.

The intersection of roads crossing one another shall be bound together with soft pliable with No. 16 to 18 SWG at every intersection so that reinforcement will not be displaced in the process of depositing concrete. The loops of binding wire should be tightened by pliers and welding of reinforcement for lapping & binding should be done if desired by E.I.C. No extra payment will be made for this purpose.

3.4.4 The work of reinforcement shall also be inclusive of stirrups distribution bars, binders, initial straightening and removing of loose rust, if necessary, cutting to requisite length, hooking and bending to correct shape, placing in proper position including supplying and binding with block annealed wire as stated in clause 3.4.3 above.

3.5 **Water**

The Water shall be clean and free from Alkali oil or injurious amounts of deleterious materials. As far as possible, the water is of such quality that it is potable. If any chemical analysis of water is necessary and ordered, the same shall be carried out at an approved laboratory at the Contractor's cost and expenses.

3.6 **Concrete Proportioning**

3.6.1 The concrete proportions shall be as indicated on the approved drawings and shall conform to IS: 456 & IS: 3370. The quality and character of concrete shall be governed by IS: 383. It should be sampled and analysed as per IS: 1199. The concrete should stand the test specified in IS: 516.

3.6.2 The minimum cover of main reinforcement shall be as per relevant IS: Codes. Cover to any reinforcement of R.C.C. piles shall be minimum 65 mm in case in-situ and 50 mm in case of pre-cast piles. Suitable spacer blocks shall be provided at intervals not exceeding 1.2 m. throughout the length of the pile.

3.6.3 The workability shall be measured by slump. Slump for different grades of concrete shall not exceed following unless specifically permitted by the Engineer-in-Charge.

i) For M 15 concrete - 3.75 cm.

ii) For M 20 concrete - 2.50 cm.

iii) For M 25 concrete – 2.00 cm

3.6.4 All concrete works shall be thoroughly compacted and fully worked around the reinforcement, around embedded fixtures and into comers of the form work.

The Concrete shall be thoroughly and shall be efficiently vibrated during laying. The use of mechanical vibrators shall comply with IS: 2608, IS: 2506 and IS: 4656. Whenever vibration has to be applied externally, the design of formwork and deposition of vibration shall receive special consideration to ensure efficient compaction and to avoid surface blemishes.

3.6.5 Test for Water Tightness of Structures / Pipes

For liquid retaining structures including inlet chambers etc. shall be deemed to be satisfactory water tight as per relevant clause of IS: 3370. The Contractor at his own expenses, if necessary, shall undertake approved corrective measures.

As regards the pipelines, the tests shall be performed for the Hydrostatic Pressure of 10 Kg./Sq. cm in case of S.W.M., D.I. Pipes and 2 Kg./Sq. cm. for P. S. C. respectively. The tests shall be carried out as per relevant IS Codes and pipes shall be considered satisfactory if the tests results satisfy the requirements of the relevant clauses of the Codes. The Contractor shall give all these Hydraulic Tests by making his own arrangements for water supply and filling and disposing the water after the tests. The Contractor shall rectify the defects noticed and carry out the tests again and repeat the testing operation till successful result is obtained and accepted by the Engineer. The rates Quoted for the work shall be considered as inclusive of cost of all Labour, materials and equipment required to give successful tests for Water tightness.

3.7 **Workmanship**

3.7.1 All Concreting work shall be carried out according to the IS: 456, IS: 3370, and other related codes. It should, however, be noted that for every 15 M^3 of concrete placed or for every one day's volume of concrete whichever is lower, a minimum of 3 (three) Cubes shall be kept for test purpose, and tested at the Contractor's cost and expenses at a Laboratory as approved by the Authority. The number of test cubes may, however, be altered at discretion of the Engineer-in-Charge. It is compulsory to test 3 (three) cubes in each case.

3.7.2 Structural Concrete

Design mix Concrete shall be on all concrete works except in case of Mud-mat concrete lean concrete where nominal mix concrete will be allowed.

Design mix Concrete will be used in Reinforced Concrete Structures shall be in Grade of M20 or more, for works of water retaining structure Grade of concrete as per latest amendment of IS:3370 to be used.

The mix shall be designed to produce the grade of concrete having required workability and a Characteristic Strength not less than appropriate values given in IS: 456 - 2000. For mix design, procedure given in Indian Standard recommendation or any other standard procedure shall be adopted. As long as the quality of materials does not change a mix design done earlier may be considered adequate for later work. Batching mixing, sampling and Strength Test of concrete shall be carried out in compliance with the relevant clause of IS: 456-2000 and all other relevant Indian Standards recommended therein.

The mix design by the Contractor shall be used for works only after obtaining written approval of the Engineer-in-Charge. Mix design shall be entirely the responsibility of the Contractor and any approval by the Engineer-in-Charge shall not relieve him of his responsibility in respect thereof.

The Contractor shall prepare all the Calculations. Tabulations, Graphs etc. pertaining to Mix Design Test result and supply copies of such Calculations, tabulations, Graphs etc. required by the Engineer-in-Charge.

On proportioning concrete, the quantity of both cement and aggregate shall be determined by weight, where the weight of cement is determined on the basis of weight per bag a reasonable number of bags be weighed periodically to check the net weight or should be either weighed or measured by volume in calibrated tanks, All measuring equipment's shall be maintained in a clean serviceable condition and shall periodically checked for accuracy.

The grading of coarse and fine aggregates shall be checked frequently and frequency of testing shall be determined by the Engineer-in-Charge. Where weight batching is not possible or practicable, the quantities of coarse and fine aggregates may be determined by volume but cement in any case shall be weighed by weight only. If fine aggregate and volume batching is adopted, allowance shall be made for bulking. The bulking shall be determined in accordance with IS: 2386 (Part-III).

The Water-Cement Ratio shall be maintained to its correct value. Surface moisture content of aggregate shall be determined as per IS: 2386 (Part-III) and the amount of water to be added shall be adjusted accordingly to maintain the correct Water-cement ratio.

During the progress of work in order to ensure correct strength of concrete proper control should be exercised by the Contractor as specified in Specifications mentioned in the Clause 3.7.1 above. Test strength of every sample shall be determined in accordance with the

recommendations of IS: 456-2000. If one out of ten consecutive test cubes shows a deficiency in strength up-to a maximum limit of 10%, the concrete will be deemed satisfactory. If two of the test cubes out of ten shows a deficiency in strength up to a limit of 10%, the concrete shall be deemed to be less satisfactory and a reduction of 1 % will be made on the cost of such concrete. If three out of ten test cubes show deficiency in strength up to a limit of 10%, a reduction of 5% will be made on the cost of such concrete. If more than three test cubes show a deficiency in strength up-to a limit of 10% a reduction of 10% will be made on the cost of such concrete. If more than five shows a deficiency in strength up-to a limit of 10%, the concrete shall be rejected. Such rejected concrete work shall have to be dismantled and replaced to the satisfaction of the Engineer-in-Charge by the Contractor free of cost to the Employer. No payment for the dismantled concrete, the relevant formwork and reinforcement, embedded fixtures etc. wasted in the dismantled portion, shall be made. In the course of dismantling, if any, damage is done to the embedded items or adjacent structures, the same shall also be made good free of charge by the Contractor to the satisfaction of the Engineer-in-Charge.

If the deficiency in strength of one-test cubes exceeds the 10% limit, a reduction of 5%) will be made on the cost of such concrete. if the deficiency in strength to two out of ten test cubes exceeds the 10% limit, a reduction of 10% will be made on the cost of such concrete. If the deficiency in strength of three out of ten test cubes exceeds the 10% limit, a deduction of 20% on the cost of such concrete will be made.

With permission of the Engineer-in-Charge for any above mentioned grades of concrete, if the quantity of water has to be increased in special cases, cement shall also be increased proportionally to keep the ratio of water to cement same as adopted in trial mix design for each grade of concrete. No extra payment for additional cement will be made.

3.9 Form Work

3.9.1 The Form Work shall conform to IS: 456. Whenever necessary, shuttering must be provided.

The work shall also include providing all necessary staging, cantering, formwork and moulds for placing concrete. Shuttering may be of approved dressed timber true to line, not less than 37 mm. thick. Surface to be in contact with concrete are to be planed smooth. Alternatively, sufficiently rigid plywood shuttering or steel shuttering may be used. In every case, joints of the shuttering are to be such as to prevent the loss of liquid from the concrete. In timber shuttering the joints shall, therefore, be either tongued or grooved or the joints must be perfectly close and lined with draft paper polythene films or other types of approved materials. In case of plywood or steel shuttering also the joints are to be similarly lined. All shuttering and framing must be adequately stayed and braced to the satisfaction of the Engineer-in-Charge for properly supporting the

concrete, during concreting and the period of hardening. It shall be so constructed that it may be removed without shock or vibration to the concrete. No through bolts are allowed for holding the shuttering in water retaining structure.

3.9.2 Cleaning, Treatment and Removal of Forms

All forms shall be thoroughly cleaned of old concrete, wood shavings, saw dust, dirt and dust sticking to them before they are fixed in position. All rubbish loose concrete chippings, shavings, saw dust etc. shall be scrupulously removed from the interior of the forms before the concrete is poured. Formwork shall not be used/reused, if declared unit or unserviceable by the Engineer-in-Charge.

If directed by the Engineer-in-Charge, compressed air jet/or water jet shall be kept handy along with wire brushes, brooms etc. for the purpose of cleaning.

Before shuttering is placed in position, the form surface in contact with the concrete shall be treated with approved non-staining oil or composition. Care shall be taken that the oil or composition does not come in contact with reinforcing steel or existing concrete surface. They shall not be allowed to accumulate at the bottom of the shuttering.

Forms shall be struck in accordance with the relevant clause of IS: 456 or as directed by the Engineer-in-Charge. The Contractor shall record on the drawings or in other approved manner, the date in which the concrete is placed in each part of the work and the date on which the form work is removed there from and have this recorded checked and countersigned by the Engineer-in-Charge.

The Contractor shall be responsible for the safe removal of the formwork, but the Engineer-in-Charge may delay the time of removal if he considers it necessary. Any work showing signs of damage through premature removal of formwork or loading shall be entirely reconstructed without any extra cost to the Employer.

3.10 Protection and Curing of Concrete

Newly placed concrete shall be protected by approved means; from rain, sun and wind and extreme temperature. Concrete placed below the ground level shall be protected from failing earth during and after placing. Concrete placed in ground containing deleterious substance shall be kept free from contact with such ground or, with water draining from such ground during placing of concrete and for a period of at least 3 (three) days or as otherwise directed by the Engineer-in-Charge, the ground water around newly poured concrete shall be kept to an approved level by pumping or other approved means of drainage at the cost of the Contractor. Adequate steps shall be taken to prevent flotation or flooding. Steps, as approved by the Engineer-in-Charge, shall be taken to project immature concrete from damage by debris, excessive loading, vibration, abrasion, mixing with earth or other deleterious materials, etc. that may impair the strength and durability of the concrete.

As soon as the concrete has hardened sufficiently for the surface to be marked it should be covered with Hessian, canvas, or similar materials and kept continuously wet for at least 7 (seven) days after final setting. This period may be extended at the discretion of the Engineer-in-Charge, up-to 14 (fourteen) days. Concrete slabs and floors shall be cured by flooding with water of minimum 25 mm depth for the period mentioned above.

Approved curing compounds may be used in lieu of moist curing with the permission of the Engineer-in-Charge. Such compound shall be applied to all exposed surface of the concrete as soon as possible after the concrete has set. No extra payment is allowed on such count.

3.11 **Concrete Finish**

The Concrete surface on removal of form work shall be such that no finish is necessary, If, however, the surfaces is not satisfactory the Contractor shall, if so instructed, remove unwanted, projecting parts by chipping and smoothening the surface with cement rendering at his own expenses. The shutter marks shall invariably be removed by rubbing with carborandum stone. The Contractor shall therefore take all precaution for avoiding the shutter marks.

3.12 **Construction Joints**

These shall be in according with IS: 337 or as directed.

3.13 **Expansion Joints**

Expansion joints shall be provided at position as directed and the spacing shall not exceed the limits specified in IS: 456. These shall comply strictly with the details shown on approved construction drawings. Reinforcement shall not extend across any expansion Joint and the break between the two sections must be complete.

3.14 Details of typical expansion joints and construction joints should comply with the suggestive arrangements shown in IS: 3370 (Part-I), Clause 8.1 (a)(2), Figure 2 (for expansion Joints) and Clause 8.1(a) Figure 1, Clause 8.1 (b) Figure 4 (for construction joints).

3.17 **Contractor's Supervision**

The Contractor shall provide constant and strict supervision of all the items of construction during progress of work, including the proportioning and mixing of the concrete and bending

and placing of reinforcement. Before any important operation, such as concreting or stripping of form work adequate notice shall be given.

The cement and sand shall be thoroughly mixed dry in specified proportions. Water shall then be added just sufficient to make a stiff and workable paste. The mortar shall be used within half an hour of mixing.

4.1 The Contractor shall build all brickwork uniformly no one portion being raised more than 1 meter above another at a time. The joints shall not exceed 12 mm. in thickness and should extend the full thickness of the brickwork. All joints shall be properly raked and the surface washed down.

4.2 All the bricks shall be kept fully immersed in water at least for a minimum period of six hours till they are completely soaked and only thoroughly soaked bricks shall be used in the work.

4.3 The Contractor shall keep wet all brickwork for at least 10 (ten) days after laying. The surface of unfinished work shall be cleaned and thoroughly wetted before joining new work to it.

5.0 PLASTERING, PAINTING AND SURFACE TREATMENT

5.1 Cement Plaster

5.1.1 The plastering work shall be governed by IS: 1661. Unless otherwise specified cement plaster shall be composed of 1 part of cement and 6 parts of sand. For ceiling plaster, the composition shall be 1 part of cement and 4 parts of sand. The thickness of ceiling plaster shall be 6 mm. The thickness of plaster to the fair faces of brickwork shall be 19 mm. The thickness mentioned shall be minimum thickness. The Contractor shall allow in his rate for any rubbing out due to inequalities of brickwork.

5.1.2 The rate shall also include for forming of any moulding drip course etc., and for extra thickness due to corbelling of brick work in parapet or at any other place. All internal angles shall be rounded off as per drawing or as directed by the Engineer-in-Charge without any extra charges (if required).

5.1.3 Cement and sand shall be measured and mixed dry thoroughly to a uniform colour on a platform specially constructed for the purpose. Care should be taken to see that no foreign matters get mixed with the mixture. Only enough water shall be mixed to make the mixture workable. The mix shall then be turned over and again to a uniform colour and texture number more cement mortar shall be mixed at a time than cannot be used within thirty (30) minutes of mixing.

5.1.4 Surface to be plastered are to be brushed clean, wetted for 24 hours before the plaster is put in and the joints of the brick work raked out 12 mm. deep minimum. The concrete faces to be plastered shall be chipped, roughened and soaked with water for achieving required bond with the plaster without any extra cost.

5.1.5 The surface of the plaster shall be finished absolutely in one plane. The Contractor shall rub down any unevenness with carborandum stones at his cost and expenses. Care shall be taken to see that no mark remains at the junction of plastering done at different times. If necessary, the junctions shall be rubbed with carborandum stones to eliminate such undesirable marks. The Contractor may be required to use normal sprinkling of thin cement slurry on the surface for satisfactory finishing of the plastering work for which no extra payment shall be made.

5.1.6 Plaster shall be protected and cured by keeping it thoroughly wet with sprinkling of water for 10 (ten) days continuously.

5.1.7 The cost of plastering work shall also include the cost of necessary scaffolding, staging etc. as would be required for the work.

6.0 SURFACE FINISHING

6.1 General

The cost of all the items of work under this section should include the cost of necessary scaffolding, staging, preparing sub base, removing stains from the floor, skirting, wood work, glass etc. caused through execution of the work.

7.0 Defects Liability Period

i) No Amount shall be refunded to the contractor for first 3 years from the actual date of completion of work;
ii)30% of same 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 same shall be refunded to the contractor on expiry of five years from the actual date of completion of work;

Chairman
Santipur Municipality

Section of Electro Mechanical

SECTION – E

Specific Conditions for Electrical Appliances

1.0 **H.T. SWITCHGEAR AT SUBSTATION**

The offer of the tenderer shall include complete design of the 3 panel H.T. vacuum circuit breaker, current transformer ratio, size of the incoming cable, size of outgoing feeder cable for transformer etc. The cable entry boxes will be at the rear end of H.T. breaker. The capacity of the incoming H.T. breaker, outgoing feeder breaker and bus bars shall be as specified in this specification.

The rating of the H.T. Switch gear shall be 6 KV. The H.T. switchgear shall be of Indoor, 3 panel with 11 KV, 800A, 25 KA indoor vacuum circuit breaker, single/double break, trip free horizontally drawout, horizontal isolation complete with closing & tripping mechanism and anti pumping relay. The closing & tripping mechanism shall be suitable for 110 volt DC.

The V.C.B. shall be mounted on a break carriage complete with self contained manually operated fully interlocked, raising and lowering mechanism with integral earthing and circuit earthing. The operating mechanism shall normally be operated from remote electrical control but arrangement should also be made for local electrical control. Mechanical device shall also be provided on the breaker for manually tripping and closing. Each set of the circuit breaker shall have the following features:

a) 1 set mechanical ON & OFF indicator.

b) 1 rear entry cable box with glands suitable for 11 KV grade XLPE cable.

c) 1 set of indicating lamp ON / OFF / TRIP / SPRING CHARGED / TRIP CIRCUIT HEALTHY & DC FAIL (for Incomer only)

d) 3 double core current transformers of suitable ratio and accuracy class 5P10 & 1.0 shall be provided for protection & metering

e) Shunt trip coil rated for 110 V DC.

f) 1 space heater with ON & OFF switch

g) 1 suitable label.

h) Auxiliary switches with required contact.

In addition, 1 no resin cast and drawouttype PT shall be provided in the incoming breaker suitable for 3 phase, 3 wire 50 Hz system with a ratio of 11 KV /110 / √3 / 110 / √3 volts, 100 VA, class 1.0 / 3 P. Symmetrical breaking capacity of the circuit breaker shall be 25 KA and making capacity shall be 47 KA. The short time rating of the circuit breaker shall be 25 KA for 3 secs.

The circuit breaker shall be capable of carrying rated current at 45℃ ambient temperature without derating.

The main busbars shall be of electrolytic grade copper and rated for 800 A and 25 KA for 3 second. A continuous copper earth bus shall be provided for the entire length of switchgear. Continuous earth bar shall be provided for the entire length of switchgear.

The circuit breaker shall conform IS-2516-1977 with latest amendment.The burden of C.T. should not be less than 10 VA. The H.T. switch board shall comprise of 3 panel as follows:

1.1 **Details :**

a) Incoming feeder Panel : 1 No. (800 A)

i) 96 sq mm (0 – 8 or 12 KV) Voltmeter with Selector Switch
1 No

ii) 96 sq mm (0 – 10 or 20 A) Ammeter with Selector Switch
1 No

iii) Local/ Remote selector switch
1 No

iv) TNC Breaker Control switch
1 No

v) Double core Cast Resin 20 – 10 / 5 + 5, Class 5 P10 & 1.0, 10VA burden CT's 1set

(3 nos)

vi) Microprocessor based Non directional combined IDMTL over current & earth fault relay type P111 or equivalent
1 No

vii) Over voltage relay type VAGM 22
2 Nos.

viii) Trip Circuit supervision relay type VAX-31
1No

ix) Master trip relay type VAJH-13
1No

x) Multifunction meter (For Amp. Voltage, frequency, power factor etc.)
1No

xi) Power Factor Meter
1 No.

b) Out going feeder panels for transformers : 2 Nos. (800 A)

Each feeder panels shall have the following features.

i) (0 – 10 - 20 A) Ammeter with Selector Switch
1 set

ii) Local / Remote Selector Switch
1no

iii) TNC Breaker control Switch
1no

iv) Double core Cast Resin 10-20 /5+5, Class 5 P10 & 1.0, 10VA burden CT's
1set

(3nos)

v) Microprocessor based non directional combined IDMTL over current relay with high set instantaneous element and instantaneous earth fault element type P111 or equivalent
1no

vi) Trip circuit supervision relay type VAX-31
1no

vii) Master trip relay type VAJH-13
1no

viii) Auxiliary relay type VAA 33 or equivalent
2nos

2.00 **TRANSFORMER**

There will be total two (2) number of transformers, each having a capacity of 250 KVA.

Normally the specification of all the transformers are, 11 K.V./ 433 V with neutral brought out, 3 ph, 50 c/s, Dyn 11 vector group, shall be supplied and installed by the contractor. Each of the transformers should be equipped with:

i) Conservator with drain valves and oil gauge.
ii) Silica gel breather
iii) Bidirectional rollers
iv) Explosion vent
v) Oil filter valve
vi) Transformer tank drain valve, one upper and one lower.
vii) Earthing terminals – 2 nos.
viii) Air relieve plugs
ix) Rating and diagram plate
x) Bucholz's relay with Alarm and Trip
xi) OTI with Alarm and Trip contacts
xii) Marshalling box with contacts of Bucholz, OTI duly wired upto the terminal block.

Transformers will be wound with 99.99% electrolytic grade copper wires / flat and the H.T. sides of the transformer will be fitted with OFF circuit tap changing device with a range of ±5% in step of 2½%

Primary side (H.T.) terminal box shall be suitable for terminating one no. 11 KV grade, 300 sq. mm, Al. conductor 3 core XLPE insulated cable complete with sealing and armour clamping gland.

Secondary (L.T.) terminal box shall be suitable for 2 nos. of 1.1 KV grade 3½ core, 240 sq mm Al. conductor, XLPE insulated cable complete with sealing and armour clamping gland.

Transformers shall be supplied in fully oil filled condition. Transformers should be manufactured according to latest I.S.S. Manufacturers' test shall be carried out in

presence of the representative of KMDA/ MED/ ULB and a test certificate to be submitted. Temperature rise of the transformer should not be more than 50 / 55℃ over oil / winding and also comply with I.E. Rules.

2.01 **Data Sheet for Transformers**

2.00.00	Make	:	
2.01.00	Service	:	
2.02.00	Rating	:	
2.03.00	Vector Group & Connection	:	
2.04.00	No load current at rated voltage & frequency	:	
2.05.00	No load loss at rated voltage & frequency	:	
2.06.00	Load loss at rated voltage & frequency	:	
2.07.00	Impedance	:	
2.08.00	Efficiency at unit power factor		
2.08.01	At 100% load	:	
2.08.02	At 75% full load	:	
2.08.03	At 50% full load	:	
2.08.04	At 25% full load	:	
2.09.00	Efficiency at 0.8 power factor	:	
2.09.01	At 100% load	:	
2.09.02	At 75% load	:	
2.09.03	At 50% load	:	
2.09.04	At 25% load	:	
2.10.00	Whether suitable for parallel operation	:	Yes/No
2.11.00	Standard to which conform	:	

3.0 **Technical Specification for 415 V, 2 Incomer & 1 Bus coupler Multipanel M.V. Switchboard**

M.V. Switchboard is required to provide power to the two number incomer of MV Switchboard at pump house and auxiliary load at substation with lighting feeders etc.

The panel shall be suitable for 415 V ± 10%, 50 Hz ± 5%, 3 phase, 4 wire supply system. The incoming power shall be provided from secondary side of Transformers.

The MV Switchboard shall be 2 mm CRCA sheet steel enclosed, floor mounted type, self supporting, fully compartmentalised, dust & vermin proof, cubicle pattern, non-draw out and modular in construction. It shall be finished painted with powder coated paint after necessary chemical treatment for rust free surfaces and application of anti rust chemical coating. The base frame of the panel shall be made of ISMC – 75 channels.

The panel shall be dead front type with concealed type hinged doors at front and bolted covers at the rear. All hinged doors shall be interlocked with the respective switchgears such that the same cannot be opened while the feeder is ON.

It shall have rear access and the cable termination arrangement shall be provided at the rear of the respective feeder modules. The vertical dropper bus bars shall be placed in between two vertical aligned feeder modules.

The bus bar of MV Panel should be spitted into two sections with one bus coupler in between. Each section will receive power through an incoming MCCB connected with the secondary side of 250 KVA transformer.

The bus for the panel shall be made of E91E grade Aluminium alloy insulated with 1.1 KV grade heat shrink type PVC colour coded sleeve. The rating of the bus bar shall be 400 A for phases and 400 A for neutral. The current density of the bus bar shall not exceed 1 Amp / sq mm. The bus bars shall be supported on non hygroscopic type resin moulded insulators and the distance between insulators shall be so designed to make the bus bar system capable of withstanding a short circuit fault current of 50 KA (r.m.s.) for 1 sec. the front bus bar chamber shall be fully shrouded to avoid accidental contact with the live bus bars.

The minimum clearance between bus bars and bus bar to earth shall be as per IS.

Incoming & Outgoing MCCB termination shall be done with extended bus bar arrangement. The cable termination chamber shall be provided with cable supporting clamps. Each incoming MCCB shall receive 2 nos. 1.1 KV grade 3.5 core 240 sq mm XLPE insulated, armoured, aluminium cable. The control wiring of the panel shall be done with 1100 V grade PVC insulated 2.5 sq mm flexible copper wire with copper lugs and ferrule marking at each end.

All hinged door shall be earthed with flexible copper wire.

A continuous earth bus of size 50 x 10 mm and made of aluminium shall run throughout the length of the panel with drilled holes at the end for connecting the same with the station earth bus bar.

3.01 Feeder details with mounted components

3.02.2.1 400 A incoming feeders 1 no. comprising of following components:

a)	415 V, 4 Pole, 50 KA, 400A, M.C.C.B. with microprocessor based O/L, short circuit, earth fault (Adjustable).	-	1 No.
b)	Current Transformer of ratio 400 / 5 A, Class 1.0, 15 VA	-	3 Nos.
c)	96 sq mm (0 – 500 V) Voltmeter with Selector Switch	-	1 No.
d)	96 Sq mm (0 – 400A) Ammeter with selector switch	-	1 No.
e)	Red, yellow, blue phase indicating lamp	-	3 Nos.
f)	CB ON / OFF / TRIP / Spring charged indicating lamp	-	4 Nos.
g)	T.N.C. breaker control switch	-	1 No.
h)	Local / Remote Selector switch	-	1 No.

3.02.2.2 45 & 22 KW Star – Delta Motor feeders 2nos of each category., each comprising of following components:

a)	100A / 63 A MCCB (For 45 KW / 22 KW)with adjustable release for motor backup motor back up	-	1 No.
b)	170 A / 75 A Star – Delta Air Breaker Contactor with 240 V AC Coil	-	3 Nos.
c)	Clustered LED type indicating lamp for ON / OFF / TRIP	-	3 Nos.

d)	Start / Stop Push Button	-	1 Set
e)	Local / Remote Selector switch	-	1 No.
f)	96 Sq mm (0 – 75 – 225 A)/ (0 – 40 – 120 A), (For 45 KW / 22 KW) Ammeter with selector switch	-	1 No.
g)	True Digital Microprocessor based Motor Protection relay suitable for Overload Protection, Locked Rotor Protection, Phase Failure & Sequence Protection, Under/ Over Current Protection, Thermistor Protection	-	1 No.
h)	CT (75 / 5 A) /(40 / 5 A), (For 45 KW / 22 KW) , Class 1.0, 15 VA	-	3 Nos.
i)	CT (75 / 5 A) /(40 / 5 A), (For 45 KW / 22 KW) , Class 5 P 10, 15 VA	-	3 Nos.
j)	Suitably rated capacitor	-	1 Set
k)	Suitably rated capacitor switching contactor	-	1 No.
m)	Suitable rated HRC fuse link with fuse base for capacitor backup protection	-	3 No.
n)	Electronic ON / DELAY timer for delayed switching of capacitor	-	1 No.
o)	Capacitor ON / OFF Lamp	-	2 Nos.

2.02.2.3 Control Transformer feeder comprising of following components:

a)	415V / 240 V Single phase air cooled type control transformer of suitable rating with taps in primary & secondary side for motor feeders & valve actuator feeders control supply	-	1 Nos.
b)	Double pole suitable rated MCB for incoming line protection	-	1 Nos.
c)	Double pole suitable rated MCB for outgoing line protection	-	1 Nos.
d)	Two pole two-way suitable ratted rotary change over switch	-	1 Nos.

3.02.2.4 5 Nos. feeders for butterfly valve actuators, each comprising of following components :

a)	32 A TP MCCB	-	1 No.

3.02.2.5 MCCB feeders 5 nos. of following rating :

a)	63 A TPMCCB	-	1 Nos.
b)	32 A TPMCCB	-	2 Nos.
c)	32 A DP MCB	-	3 Nos.

Note: All the relays shall be suitable for 220V AC auxiliary supply.

3.03 Duty Category: Fuse Switch Unit: AC-23, Starter Contactors : AC-3 & Capacitor Switching Contactors : AC - 4 or capacitor duty.

3.04 Capacitor for Power Factor Correction: Suitable rating capacitors shall be provided with the motor circuit so as to improve the power factor to 0.97. The capacitors shall be suitable for operation in 440 / 415 V ± 10% 50 Hz ± 5% 3 phase, A.C. earthed system and shall of indoor type, having suitable mounting structure. The capacitors shall be naturally air cooled type with 100% polypropylene impregnated with non-toxic, non-PCB oil dielectric and the same shall be equipped with self discharging resistor. The capacitors shall conform to IS:2834 (latest amendments). The rating of the capacitors shall be determined from the load current of the motor.

The interconnection of the capacitors shall be made through suitably rated 1.1 kV grade PVC insulated Copper Conductor Cable.

The capacitors shall be connected with suitably rated capacitor duty contactor and necessary timers are to be provided to ensure time delay of at least 2 minutes between successive switching of capacitors. Each switching contactor capacitor shall be connected to respective motor feeder.

The capacitors shall have back up protection with suitably rated HRC fuse link.

4.0 TECHNICAL SPECIFICATION FOR CONTROL DESK AND INSTRUMENT PANEL

4.01 General

For remote operation of motors and for instrumentation Control Desk /Panel shall be provided. There will be one number of wall mounted control desk at the control room of Raw Water for M.V. Switchboard cum MCC No. 1 (200 A) with allied equipment.

The control panel shall be flat fronttype. The control panel shall be made of 2mm thick CRCA sheet steel wall mounted, dust and vermin proof and suitable for indoor installation in tropicalised climate. The degree of protection for the control panel shall be IP-54. The Control panel surfaces shall be degreased, derusted, pickled and phosphated to remove all grease, dust and dust particles and provide flawless smooth surface. After sheet treatment the Control panel surface shall be applied with Powder coating finish paint shade RAL 7302.

The Control Panel shall have one inclined / Straight vertical surface. The vertical surface shall be provided with Annunciator, Meters, Instruments, control / selector switches, push button for actuators, indicating lamps etc. The surface shall be designed such that operating/control devices are placed suitably and within the easy operational reach of the operator.

Control Desk shall comprise:

a) Digital Pressure Indicator (for delivery manifold) - 1 Nos.

b) Digital Valve Position Indicator (for Butterfly Valves) - 5 Nos.

c) Digital Water Level Indicator - 1 No.

d) 96 sq mm (0 – 500 V) Voltmeter for Incomer of M.V. Switchboard cum MCC - 1 No.

e) 96 sq mm Ammeter (for M.V. Switchboard cum MCC incomers and motor feeders) - 4 Nos.

f) Centrally located Microprocessor based Alarm Annunciator (adequate number of window) with LED illuminated annunciator, solid state hooter for audio alarm, test, accept, reset push buttons etc. 1 Set

g) Start / Stop Push Button for Motor Feeders - 3 Nos.

h) Open – Close – Off Push Button for valve actuators - 4 Sets

i) Clustered type indicating lamps for the following indication

i) AC Supply ON - 1 No.

ii) ON – OFF – Trip (for incomer of M.V. Switchboard cum MCC and Motor feeders) - 4Sets

iv) ON – OFF for capacitor - 3 Sets

v) ı – Valve Full Close – Valve ɛr OFF - 4 Sets

j) Test – Accept – Reset Push Button - 3 Nos.

k) Voltmeter Selector Switch - 1 No.

l) Ammeter Selector Switch - 4 Nos.

The annunciator shall be complete with all accessories as required to detect the fault signal of different parameters of the system.

All fault indication shall be on translucent plastic windows and these shall be clearly visible when the indicating LEDs are lighted.

The annunciator shall be provided with the following engraved facia :

i) LT Incomer Trip for over current & earth fault (for incomer of M.V. Switchboard)

ii) Motor feeder trip (motors I, II, III, IV)

iii) Sump Level low (alarm)

iv) Sump Level low (trip)

v) Sump Level high (alarm)

vi) AC failure

Apart from above annunciation windows, atleast 4 nos. spare windows to be provided in the annunciator

CHECK LIST FOR EACH OF THE 415V, MULITPANEL M.V. SWITCHBOARD

i)	Make	:
ii)	Rating (Rated Voltage/Rated Current)	:
iii)	Type of Construction/Mounting	:
iv)	Short circuit current (r.m.s.) withstand capacity (in KA)	:
v)	Sheet steel thickness	:
vi)	Type of sheet steel treatment	:
vii)	Finish paint shade	:
viii)	Type finish paint	:
ix)	Degree of Protection	:
x)	Bus bar materials	:
xi)	Bus bar rating (continuous)	:
xii)	Temperature Rise of bus bars	:
xiii)	Size of Base Frame	:
xiv)	Bus bars are provided with colour coded sleeves:	
xv)	Breaking capacity of ACB	:

xvi) Breaking capacity of MCCB / MCB :

xvii) Duty category of MCCB :

xviii) Duty category of Contactors :

xix) Size and type of control wires :

xx) Type no. & make of protective relays :

xxi) Reference standard followed :

Checklist for Power Factor Improving Capacitor

i) Make :

ii) Rating :

iii) Whether the capacitor is capable to improve the power factor of the motor at present phase load condition to 0.97 : Yes / No

iv) Rated Voltage :

v) No. of units :

vi) Type of internal connection :

vii) Type of connection with motor :

viii) Rated Current :

ix) Cooling system :

x) Dielectric :

xi) Type of installation :

xii) Whether discharging resistance have been provided :

xiii) Standard to which it conform :

5.00 CABLE:

All M.V. power cables shall be of XLPE insulation, aluminium conductor and armoured

5.01 M.V. Cables and Jointings

All M.V. Cables should be 1.1 KV grade XLPEinsulatedand armoured Al. / Cu. Conductor
3 core / 3½ / 4 core as required. The core shall be stranded and the installation shall be suitable for the working condition. The cable should be laid in underground trenches 500 mm width x 750 mm average depth [From Sub-Station to pump House] or with cable tray arrangement where necessary and in suitable size cable tray in the pump floor. Where cable is laid in masonary trench/metal trays, the cable trenches (when applicable) shall be filled up with sand or covered with chequered plate/RCC slab according to the direction of Engineer-in-Charge. Where necessary cables shall be supported on clamps of approved type and shall be properly protected with G.I. conduit or other protective covering as per direction of Engineer-in-Charge.

All Jointings should be of 'dry type' to be done with hydraulic crimping machine where applicable & done in accordance with the provision of I.E. rules. All joining materials, compound other accessories should be included in the tender price.

5.02 Control & Screen cable and jointing

All Control & Screen cables shall be XLPE insulated of 1100 volts grade multi strand copper conductor and armoured of suitable size. The control cable should be terminated with proper sockets, glands etc.

Name of the manufacturer, details of insulation, armouring, overall size of the cable, gross weight of cable per hundred meter run of each core should be mentioned in the tender as per Data Sheet, as follows:

5.03 Data Sheet

<u>M.V. Cables</u>

i) Makes

ii) Voltage grade & type

iii) Size

<u>Control cable</u>

i) Makes

ii) Voltage grade & type

iii) Size

Co-axial sheilded cable/signal cable

i) Make

ii) Voltage grade & type

iii) Size

6.0 **Battery & Battery Charging Equipment**

There shall be one battery bank along with float and boost charger. The battery bank shall be Exide make 110 V Sealed Maintenance free VRLA battery with UPST type 55 nos. 2 volt 100 Ah cells.

Inter row connectors / inter tier connectors shall be provided where necessary. Suitable battery stand complete with cell number plate shall be provided

The three phase float and boost battery charger with integral DCDB shall be housed in a floor mounting type steel enclosure with adequate ventilation for natural air cooling. The broad specification of the float and boost charger with DCDB is as under :

Battery: 110 V, 80 AH SMF VRLA (2 V x 55 Nos.)

Load : 10 A DC, Boost: 12 A DC

6.1 A.C. Input

a)	Voltage		415 V, ± 10%
b)	Phase		3 Phase, 4 Wire
c)	Frequency		50 Hz ± 6%
d)	Combined voltage & frequency variation	within	± 10%

e) System earthing Solidly earthed

6.2 Float and Boost Battery Charger

6.2.1 Charger – I (Float Charger – SCR Control)

a) Output Voltage 110 – 125 V DC [steplesslyadjustable]

b) Output current 10 A D.C. + trickle charging current

c) Rectifier Configuration Full wave fully controlled SCR bridge

d) Control mode Constant voltage current limiting

e) Regulation ± 1%

f) Ripple voltage 1% RMS

6.2.2 Charger – II (Boost cum Float Charger – SCR Control)

a) Output Voltage Boost : 110 – 127 V DC [steplessly adjustable]

Em. Float: 110 V – 125 V DC [steplessly adjustable]

b) Output current Boost: 12 A D.C.

Em. Float: 10 A DC + Trickle charging current

c) Rectifier Configuration Full wave fully controlled SCR bridge

d) Control mode Constant voltage current limiting

e) Regulation ± 1%

f) Ripple voltage 1% RMS

g) Commencement & termination Automatic / Manual

of boost charging

6.3 Protection

a) Snubber across each device

b) Phase failure / sequence reversal

c) Soft start with current limiting (intrinsic feature of trigger PCB)

6.4 Annunciation

a) Mains fail
b) Phase fail & sequence reversal
c) Float under voltage
d) Float over voltage
e) Battery fuse blown
f) Battery under voltage

6.5 Indicating LEDs / Lamps

a)	AC supply healthy	-	3 Nos.
b)	Float Charger ON	-	1 No.
c)	Boost charger ON in Auto mode	-	1 No.
d)	Boost charger ON in Manual mode	-	1 No.
e)	Boost charger ON in Em. Float mode	-	1 No.

6.6 Metering

a) AC Voltmeter with Selector Switch at input

b) DC Voltmeter with Selector Switch at output

c) DC Ammeter at output

d) Centre zero Ammeter at battery path

6.7 DCDB Outgoing Feeder

a)	2 P, 16 A DC MCB	-	6 Nos.

6.8 Enclosure

a)	Material	-	Mild Steel Sheet (2 mm thick)
b)	Painting	-	Powder coated (Shade RAL7032)
c)	Doors	-	Front – 1, Rear – 2
d)	Cable entry	-	From Bottom
d)	Ventilation	-	Air natural through louvers backed by find wire mesh

7.0 **Earthing ofequipments installed within the sub-station & Pump House including MV Panel, HT Board, Transformer, Motorsetc.**

The total installation shall be effectively earthed by providing a ring earthing. Each earthing set shall consist of G.I. pipe of not less than 2" dia of sufficient length. The electrode shall be buried deep, the ground upto the depth of moist earth which shall not be less than 10'-0" from ground level and must be 6'-0" away from the building structure. The bottom portion of the electrodes shall be properly perforated and shall be filled up with black smith dust. One cast iron cap properly screwed of approved type and design and shall be fitted on the top of the electrode. After fixing and drawing out of the earth leads, the top portion of the earth, electrode upto 1 ft. shall be properly brick pitched and shall be fitted with water proof bituminous compound. The connecting lead shall be 75 x 8 mm GI flat and shall be laid at a depth of not less than 2'-0" from ground level and

shall be properly covered. The leads shall be connected to earth bus bar inside the substation by direct welding. The nos. of individual earthing connected to the Earth bus should such that after installation the earth resistance of the system must be well below one ohm.

All metallic cover frames, equipments, installation etc. shall be earthed to the full satisfaction of Engineer-in-charge and the Govt. Electrical Inspector.

The earthing and bonding shall be according to the I.E. Rules 1956 with ammendment of 1990. All non current carrying metal parts associated with H.V. installation shall be effectively earthed to a grounding mat which will:

Limit the touch and step potential to tolerable values.

Limit the ground potential rise to tolerable values so as to prevent danger due to transfer of potential through ground, earth wires, cable sheath fences, pipe lines etc.

Maintain the resistance of the earth connection to such a value as to make operation of the protective device effective.

The same must be approved by the Govt. Electrical Inspector and shall pass the statutory tests.

The successful tenderer shall have to submit the detailed and fully dimensioned drawing of the whole electrical system showing the proper earthing duly approved by the Govt. Electrical Inspector before commencement of the actual installation work.

The distance between each individual Earth pits should not be less than 3 meters.

8.0 **Mechanical Bar Screen :**There shall be two number of mechanical bar screen at the inlet screen chamber. The mechanicallyoperated coarse bar screen shall be capable to screen out various garbagecarrying with the storm,/drainage water, to be installed in the screen chamber for prevention of clogging of the pumps as per technical specification & direction of EIC. The tender has to design the size of the bar screen as per the prevailing norms and the same has to be submitted to the EIC for approval.

9.00 **VALVES AND SPECIALS**

9.01 **Delivery side of pumps**

The delivery side of each pump shall be provided with 1 no. Electrical Actuator operated Sluice valve, 1 no. non-return valve with external damping arrangement, 1 no. metal dismantling joint& short pieces wherever required. The diameter of the valves and joints shall as per technical offer. On the common delivery manifold there shall be one number actuator operated B/F valve and metal dismantling joint.

9.02 **Non Return Valve**

The non return valve as mentioned here in before shall be manufactured conforming to IS: 5312 (Part-I) / equivalent international standard. The valves will be used for handling clear water to maintain the flow unidirectional. The valve shall be maintenance free, leak proof and shall have low life cycle cost. The PN rating of valves shall be 1.0.

The non return valve shall be single door and double flanged. The body, door, cover shall be of either closed grain grey cast iron (FG 260). The seat and body shall withstand fluid pressure of 10kg / cm^2 and 15 kg / cm^2 respectively. The body seat, door face rings, bearing block, disc shaft, hinge pin, plug and fasteners shall be of Stainless Steel. The bearings shall be suitable for maximum thrust imposed by the shaft during testing and in service.

The end connection shall be drilled flanged type as per IS or BS or equivalent standard. The non return valve shall have features for quick closing (up to 85%) and slow closing from 85 to 100%. It shall have by pass valve with cock. The valve shall be marked to indicate the direction of flow.

The design and construction of the non return valve shall be non slam type and thedisc shall be so balanced that the it will not bump against the valve body while the pump is in operation.

The surface protection of the valve shall be done by either epoxy powder coating or epoxy painting (min. paint thickness - 250 micron) for both inside and outside.

All bolts and nuts for flange connection(s) of entire pipe line (suction / delivery / common header) where applicable shall be of carbon steel having tensile strength 300 N/ mm².

The valves are subject to satisfactory hydrostatic test at manufacture's works and in presence of the department's representative for acceptance.

NON – RETURN VALVE DATA SHEET

1.01	Make	:
1.02	Size	:
1.03	Quantity offered	:
1.04	Type	:
1.05	Test standard, test pressure & duration of test	:
1.05.1	Body	:
1.05.2	Seat	:
1.06	Surface protection	:
1.07	Whether damping arrangement provided or not	:
1.08	Whether by pass arrangement provided or not	:
1.09	Face to face distance	:
2.00	Material of Construction	:
2.01	Body	:
2.02	Seat	:
2.03	Disc	:
2.04	Door Face Ring	:
2.05	Bearing Block	:
2.06	Disk shaft	:

2.07	Disk Seat	:
2.08	Hinge pin, plug, fasteners	:

9.04 **SLUICE VALVES**

The sluice valves shall be manufactured from closed grain grey cast iron (FG 260) conforming to IS-14846 of the year 2000. Flange ends as per IS 1538 or as per other standards to match with other flanges. The body seat shall be of S.S. AISI-410 stem shall be of S.S. AISI-410 & the stem nut shall be of 9% Al-Bronze conforming to I.S. 305:1981/BS 2874. Body shall be of Cl I.S. 210 FG 260. Other details are to be submitted for approval.

The seat pressure shall be 10 kg/cm2 and body pressure shall be 15 kg/cm2. The valves should pass through hydrostatics test for duration of 5 minutes. Materials of construction test certificates shall be provided during supplies. The sluice valves shall be rising spindle type with gearing arrangement / hand wheel for easy manual operation.

9.03 **Butterfly Valve**

1. The butterfly valves shall be CIDF, PN 1.0, conforming to IS 13095 of 1996 / BS 5155. The seat pressure shall be 10 kg/cm2 and body pressure shall be 15 kg/cm2. The valve shall operate smoothly & steadily in both direction, free from flow induced vibrations. The butterfly valve shall be double flanged, double eccentric design. The body, disc materials shall be of cast iron (FG 260). It should provide tight shut off closures & shall be suitable for frequent operation as well as from throttled duty conditions. The valve disk should rotate 90º from full open to full close. The valve disk shall be solid streamlined slab design, and to have minimum head loss. The seat ring shall be of stainless steel (SS) with micro finished nickel / Monel overlay. The seating shall preferably be integral. The disc seal shall be of elastomeric EPDM. The EPDM seal on the disc must be of easy replaceable type with the facility of replacement at site. The shaft bearings shall be medium free, steel backed PTFE / bronze and suitable for maximum axial thrust imposed by the shaft during testing and in service. The fasteners shall be of SS 304.. The valve shall have suitable and adequate capacity of gear box actuator with hand wheel and indicating pointer. The gear box actuator unit shall be of so sealed type with necessary attachments such that external water do not enter the gear box housing to spoil the mechanism. The gear box shall be directly coupled to electrical actuators. The electrical actuators shall be complete with reversing control gear mechanism &mechanical indication showing the amount of valve opening and shall have the following components.

   a) 415V ± 12.5% 3 phase, 50 Hz, AC motor.
   b) Reduction gearing arrangement.
   c) Torque & limit switch mechanism.
   d) Valve position indicator.
   e) Arrangements for pick up signals for displaying the % opening of the valves in the suitable meters to be placed on control desk.

f) The hand wheel with clutch mechanism for manual operation. The manual operation shall be automatically declutched when actuator motors in operation.

g) Motors shall be of outdoor construction, IP67 protection group.

The motors and gearing arrangement shall be of adequate to open and close the valve under full unbalance pressure and to overcome the seating torque. The torque switch should function as a full proof design by tripping the motor in case of over torque condition.

The valve should pass through a hydrostatic test for 10 minutes.

MOTORISE BUTTERFLY VALVE DATA SHEET

1.1	Make	:
1.2	Size	:
1.3	Quantity offered	:
1.4	Type	:
1.5	Test pressure & duration of test	:
1.6	Material of Construction	
1.6.1	Body	:
1.6.2	Body seat	:
1.6.3	Seat Ring	:
1.6.4	Disk	:
1.6.5	Bonnet	:
1.6.6	Spindle	:
1.6.7	Disc nut	:
1.6.8	Gasket	:
1.6.9	Bolts & Nuts	:

1.6.10 Gland packing :

1.6.11 Gland :

1.6.12 Spindle Nut :

1.6.13 Handle wheel :

1.6.14 Thrust plate :

1.6.15 Cover :

1.6.16 Face Rings :

1.6.17 Yoke :

1.7 Face to Face Distance :

ELECTRICAL ACTUATOR

1. The actuator motor for the Sluice Valves & BFV shall be suitable for use on 415 ± 10% Volts, 3 phase, 50 HZ power supply and shall have high torque and low inertia squirrel cage motor having minimum class F insulated, 15 minutes rated and shall be with temperature sensing protection by a thermostat / thermistor directly embedded in all phases of the stator winding.

2. The actuator motor shall be provided with complete environmental protection during prolong period of inactivity to prevent condensation and must have IP 67(for 250, 350 valve) / IP 68 (for 600 mm dia valve) degree of protection.

3. The actuator motor must have high starting torque and it shall be suitable for 60 Starts / hour. The actuator gear box assembly shall be of the totally enclosed oil bath lubricated type and shall be suitable for operation at any angle.

4 The actuator assembly shall have a mechanically independent hand wheel drive for emergency manual operation of the valve by declutching the actuator motor drive by integral lever or otherwise. The drive shall be restored to power drive mechanism automatically on starting of the actuator motor.

5 The actuator assembly shall be provided with following limit switches

i. torque limit switches for ‘open’ and ‘close’
ii. Position limit switches

All switches shall have contact ratings of 10 amps at 250 volts AC inductive.

6 The actuator assembly shall have local control facilities and terminals for remote control and indication circuit at remote end. The starter shall be both mechanically and electrically interlocked and shall have adequately rated contactors to suit the actuator motor rating. The motor shall positively be protected from any earth leakage and single phasing. The electrical circuit shall be mounted on a readily accessible printed circuit board to facilitate withdrawal of starter assembly without any electrical disconnection. Local control shall comprise of one pad lockable three position L/R selector switch and push button switches for open, close and stop. All external wire connections shall be within the scope of the contractor.

7 The actuator assembly shall have facilities to indicate the position of the valve in remote control desk (percentage opening of the valve). The actuator assembly shall have one mechanical dial indicator to indicate the position of the valve. In addition, end of travel indication shall be illuminated with red indicating valve open and green indicating valve closed. The valves and actuators are subject to satisfactory shop test at manufacture’s works and PG test at site in presence of the department’s representative for acceptance.

The electrical actuators shall have the following components.

a) 415V ± 12.5% 3 phase, 50 Hz, AC motor.

b) Reduction gearing arrangement.

c) Torque & limit switch mechanism.

d) Valve position indicator.

e) Arrangements for pick up signals for displaying the % opening of the valves in the suitable meters to be placed on control desk.

f) Remote operation facility with selector switch and local control console.

g) The hand wheel with clutch mechanism for manual operation. The manual operation shall be automatically declutched when actuator motors in operation.

h) Motors shall be of outdoor construction, IP 67 protection group suitable for temperature submergence.

The motors and gearing arrangement shall be of adequate to open and close the valve under full unbalance pressure and to overcome the seating torque. The torque

switch should function as a full proof design by tripping the motor in case of over torque condition.

DATA SHEET

1.1 Make

1.2 Type

1.3 Rating of Motors

1.4 Whether provided with limit & Torque Switches, if so, torque limit

1.5 Protection Group (IP)

1.6 Whether suitable for outdoor & temporary submergence duty/indoor type

1.7 Whether equipped with suitable component & termination arrangement for transmitting signals for displaying valve opening % indicating in the valve opening indication meters.

1.8 I.S. Standard to which it conforms

M.S. DISMANTLING JOINT ASSEMBLY

One each M. S. dismantling joint of required diameter is to be fixed along with the pump delivery side sluice valve & NRV for the ease of dismantling andfitting of valves during maintenance and to relieve the pipe line stresses. In the common delivery manifold there shall be another M. S. dismantling joint of required diameter, to be fixed along with the pump common delivery line butterfly valve. The expansionrange for each of the dismantling joint shall be minimum 40 – 50 mm. The M. S. dismantling joint shall be complete with short & long stud (SS 304) holding arrangements with split flange matching with the site requirement. The hydrostatic test pressure of the DJ shall be 10 kg/cm².

The datasheet for the same is as follows-

DATA SHEET

I. Joint Size

II. Pipe thickness

III. Maximum length

IV. Minimum length

V. O.D.

VI. P.C.D.

VII. Thickness

VIII. Flange size

IX. Flange thickness

X. Stud Nos.

XI. Stud dia.

XII. Rubber Gasket

M.S. PUDDLE COLLAR / PLATE

1.1 Collar size

1.2 O.D.

1.3 I.D.

1.4 Thickness of the Collar

1.5 Number of Hooks

10.0 **PUMP DELIVERY SIDE PIPING AND COMMON DELIVERY MANIFOLD**

The pump individual delivery side piping, valves and joints shall be of such diameter as per Technical offer.

The pipes shall be made up of M.S. 8mm thick plates for individual delivery line & 10 mm thick plate for Common Delivery manifold, painted both inside and outside by anticorrosive epoxy paints. The pipes shall be of welded joints and shall consist of necessary companion flanges so as to connect the piping with the DJ, NRV, SV's of the individual pump delivery branch. The pump individual delivery side piping shall

be connected to be common delivery manifold as per the layout. Necessary gaskets of suitable thickness shall have to be provided to all flange joints complete with all necessary nuts, bolts, washers etc. The length shall be ascertained from the layout and from the dimensions of the valves/specials. The tenderer should also provide the necessary arrangements to encounter the horizontal back thrust if any and the details as per the pump manufacture's recommendation shall be clearly indicated in the layout drawing. One no. air release Valve (double throat) shall be provided on the common delivery manifold.

The common delivery manifold shall of such diameter as per the Technical offer. The manifold shall be fabricated from 10mm thick MS plates. The common manifold shall have blank flange / Dish end on one side with adequate stiffening and the other side would be extended from the centre line of the last pump to install one each Dismantling Joint, Butterfly valve, Air Release Valve and further as required to install one Full bore Electromagnetic flow meter. The length of the manifold must be extended at least one meter on one side after the interconnections with the delivery pipe lines from the pumps at the one extreme end and in the other end it will be extended up to the specified length.

The common delivery manifold shall be provided with one no. 100 mm dia air release valve (double throat) suitably placed. The pipe where ever laid underground shall be painted with anticorrosive paints at the inside and outside shall be wrapped and coated with anti corrosive tape of not less than 4mm thick so as to prevent the pipes from corrosion.

(Necessary surface finish for proper painting and wrapping coating shall be made by the contractor and careful laying shall be done so as to prevent damages during laying).

13.00 Mechanical TYPE LEVEL MONITORING SYSTEM

13.01 There shall be one number ball float type mechanical level indicator for the entire depth of the sump. The scale shall have to designed in such a manner that the entire range could be accommodated within the pump house.

15.00 **EARTHING**

The total installation shall be effectively earthed by providing a ring main earthing. Each earthing set shall consist of one G.I. pipe of not less than 2" dia and 10´ length. The electrode shall be buried below the ground upto the depth of moist earth which shall not be less than 8'-0" from ground level and must be 6'-0" away from any building structure. The bottom portion of the electrodes shall be properly perforated and one cast iron cap properly screwed of approved type and design and shall be fitted on the top of the electrode, connection leads to the earth bus inside the station. After fixing and drawing out of the earth leads, the top portion of the

earth, electrode upto 1 ft. shall be properly brick pitched and shall be fitted with water proof bituminous compound. The connecting lead shall be GI strip 65 x 6 mm and shall be laid at a depth of not less than 600 mm from ground level. The leads shall be connected to GI earth bus bar inside the pumping station by means of proper welds. The nos. of individual earthing connected to the Earth bus should such that after installation the earth resistance of the system must be well below one ohm.

One GI bus bar 65 mm wide and 6 mm thick shall be provided so that the frames of all electric motors, switch gears, transformers and other electrical accessories and installation shall be connected to this station earth bus by two separate GI strip of adequate dimension. All metallic cover frames, equipments, installation etc. shall be earthed to the full satisfaction of Engineer-in-charge and the Govt. Electrical Inspector.

The earthing and bonding shall be according to the I.E. Rules 1956 with amendment of 1990. All non current carrying metal parts associated with H.V. installation shall be effectively earthed to the grounding system to achieve:

a) Limit the touch and step potential to tolerable values;

b) Limit the ground potential rise to tolerable values so as to prevent danger due to transfer of potential through ground, earth wires, cable sheath etc.

c) Maintain the resistance of the earth connection to such a value as to make operation of the protective device effective.

The same must be approved by the Govt. Electrical Inspector and shall pass the statutory tests.

The successful tenderer shall have to submit the detailed and fully dimensioned drawing of the whole electrical system showing the proper earthing duly approved by the Govt. Electrical Inspector before commencement of the actual installation work.

The distance between each individual Earthing should not be less than 3 meters.

14.00 LIGHTING SYSTEM

14.01 Luminaries

The scope includes indoor & outdoor lighting of pump house and substation building and pump house area. Industrial Medium bay luminaries with Metal 250W / LED 150W lamps are to be provided from the pump house ceiling. Fluorescent lamps are

also to be fixed on the wall of the pump house floor, control room wall. The positions are to be fixed as per requirement. The illumination level would be 150 Lux.

The control room lighting should be provided with TLD 36 watt cool day light type fluorescent lamps with decorative type fixtures. Illumination level would be 200-250 Lux.

In the corridors, toilet, TMC 55 / 2 X 36 / 40 W fluorescent lamps are to be provided to generate adequate lighting.

All the entrance/exists of pump house may be provided with bulk head fittings with PL lamps of adequate wattage as per site condition.

14.02 **WIRING**

All wiring installation work must be as per relevant I.S. with proper distribution network, M.C.B. are to be used in distribution boxes and there must be colour segregation for power/netural/ground wires.

14.03 In strategic locations of the substation building / pump house, adequate number of 415 / 240 volt TPN / SPN MCB Distribution board shall be placed with multiple ways of different current rating (MCB) along with a incoming switch from where power to be fed to different switch board.

14.04. Individual switch board shall comprise of multiple number of switch (6/10 Amps rated) as the case may be, which shall be used for switching 'ON' and "OFF' operation of the lights / fans / receptacles etc. The individual switch board shall be double door design so as to cover up the switch / regulator etc i.e. switches / regulator etc shall be accessible on opening the door cover.

14.05 The above stated distribution board shall be fed from independent switch fuse unit / MCB located in the PDB.

14.06 440 volt, 15 Amps and 240 volts/15 Amps socket outlet shall be provided where ever required and power shall be taken from the individual way of the distribution board.

14.07 The minimum required size of the conductor for internal distribution point wiring shall be as follows:

Sl. No	Type of fitting /wiring	Minimum size of wire
1.	Fluorescent fitting	2 nos. 1 core -1.5 mm² copper & 1 no. Earth wire of 1.0 mm² copper

2. HPSV/ LED fitting — 2 nos. 1 core -1.5 mm² copper & 1 no. Earth wire of 1.0 mm² copper

3. Flood light fitting — 2 nos. 1 core -2.5 mm² copper & 1 no. Earth wire of 1.0 mm² copper

4. Receptacle-5A — 2 nos. 1 core -2.5 mm² copper & 1 no. Earth wire of 1.0 mm² copper

5. Receptacle-15A — 2 nos – 1 core-4 mm² copper & 1 no Earth wire of 1.0 mm² copper

15.0 Ventilation, Fire fighting& Air conditioning System:

15.01 Ventilation: The entire pump house including all electrical rooms and the Sub Station Rooms shall have proper ventilation arrangement. The scope shall include the supply and fixing of following equipments complete with GI conduit wiring including all other accessories as required.

a) 3 - phase 400 dia Exhaust fans including proper louvers, duct work, rain cowl and bird protection screen ----- As required for the Pump House

b) Single phase 300 dia Exhaust fans including proper louvers, duct work, rain cowl and bird protection screen ----- As required for all the rooms of Sub Station as per the direction of EIC.

c) Wall mounting type control panel for exhaust fan and others ----- 2 Sets each for pump House and sub station.

e) 18" Pedestal fan with regulator and all other accessories --- 2 Nos.

15.02 Fire fighting: The pump house and substation building shall be provided with the following:

a) ABC type Portable type fire extinguisher (2 Kg Capacity) consisting of welded cylinder, squeeze lever discharge valve, internal discharge tube, discharge nozzle suspension bracket, duly charged and pressurized with ISI marked.

b) ABC stored pressure type fire extinguisher 5 Kg capacity with discharge hoseand nozzle and consisting of welded cylinder, squeeze lever discharge valve,

internal discharge tube, discharge nozzle suspension bracket, duly charged and pressurized with ISI marked.

c) Dry type fire extinguisher 5 Kg capacity with discharge hoseand nozzle and consisting of welded cylinder, squeeze lever discharge valve, internal discharge tube, discharge nozzle suspension bracket, duly charged and pressurized with ISI marked.

d) Fire buckets (9 litre capacity) made from 24 SWG GI Sheetincluding wall mounting bracket and filling of sand.

15.3 Air conditioning:

a) One adequate capacity split / window air conditioning machine (2.0 ton capacity or 1 T per 100 sq ft whichever is higher) for designated room as decided by the department.

16.0 **Safety signage**

The safety signage shall be from best quality Flexyle and shall be with high grade self adhesive gumming. Detailed sizing of the signage shall be as follows.

SlNo	Sign	Size	Material	Quantity
1	Authorized Personnel only.	150 X400	Flexyle Sheet	1 No.
2	No Smoking	100X300	-do-	1No.
3	First Aid	250X200	-do-	1 No.
4	Fire equipment	150X 150	-do-	16 Nos.
5	Toilet	100X300	-do-	1 No.
6	Control Room	150X400	-do-	1 No.
7	CESC ROOM	150X400	-do-	1 No.
8	K.M.D.A.HT Switch Room	150X400	-do-	1 No.
9	Danger High Voltage	150X300	-do-	2 Nos.

17.00 **Pressure Gauge (Dial Type):**

18.01 The individual discharge line pressure gauge (6” dial) shall be of bourdon type.

The bourdon tube shall be of SS 316. The gauge shall have cast aluminium weather proof case and casing shall be black stove enameled. The accuracy shall be of ±1%.

The full scale range shall be from 0 -10 Kg / Sq.cm. The pressure gauge shall have 3 way cock and fitting.

19.0**OVERHEAD CRANE**

19.1 Manually Operated Travelling Crane

The H.O.T. Crane will be 3 M.T. capacity manually Operated Travelling Crane (H.O.T.) with 1T auxiliary hoist, suitable a lift from the operating floor level and to be mounted on a circular rail. The span of the crane would be according to the diameter of the pump house. Suitable type of Crain rails, girders and all other accessories as for Necessary Installation and

operation of the crane are to be designed & provided by the contractor within the lump

sum quoted amount.

The HOT Crane should be tested at manufacturer's works / site as per relevant IS. The same will be witnessed by the EIC. The Contractor has to arrange for such testing at his own cost. Test Certificate issued from the approved authority is to be submitted.

Section-E

Technical Specifications

1. Vertical Wet Pit Pumps

1.1. The pumps shall be of vertical wet pit type with mixed flow impeller. Pumps shall be placed vertically submerged within the river mounted on the jetty. The pump shall be self, service water lubricated type. Self lubricated type guide bearings are to be provided at suitable positions of the shafts and shall not be more than 1.5 M (approximately) apart. Since the service water will carry silica, sand, mud etc, the guide bearings shall have suitable passages within them to expel / pass the silica, sand etc by self working pressure, and the same will not stuck inside the bearings deteriorating them.

1.2. The pump battery shall contain 2 (two) no pump sets of each category out of which 2 (two) different or similar category of pump will operate in parallel operation shall deliver the designed flow discharge as per the requirement. Also solo operation of any one pump may be required to be carried out.

1.3. Pumps shall be vertically driven with shaft directly & flexibly coupled with 45 KW & 22 KW (Minimum), 4 poles, V1 SCIM. The pump rotational speed shall not be more than 1500 rpm.

1.4. The pumps shall be of non-pull out type. The individual pump discharge line shall run below the main operating floor and shall be connected with the main pump delivery header line. The pump discharge head/ motor stool/ sole plate shall be rigidly grouted on the pipe gallery floor. The foundation plan and foundation pockets required to be kept with the civil construction, and the successful bidder on receipt of the order shall furnish the

pump-motor foundation plan authenticated by the OEM. The said foundation will take care and encounter the horizontal back thrust as may generate during start/stop of the same (at shut off condition at highest tide level condition may be considered).

1.5. The pump impeller shall be securely held on the pump shaft as per provision of the pump manufacturer's design so as to prevent sliding of the impeller along the shaft during operation.

1.6. The pumps shall be of having a fairly steep H-Q curve. The tenderer shall furnish the evaluated specific speed of the pump at the specific trim at duty point. The pump H-Q characteristics curve shall be stable all throughout. There shall be a margin of at-least 25% in between the run-out flow and the duty point flow.

1.7. The pump efficiency shall be reasonably high. The head-discharge-efficiency-KW absorbed-NPSHR shall be guaranteed without any tolerances at the duty point working at mean river water level condition.

The tenderer shall have to confirm the maximum power absorbed by the pump on the entire range starting from the shut-off to run-out without any positive tolerance

1.8. The suspension length of the pump assembly shall be such that it can safely work at the lowest low river level condition considering worst of (i) the NPSHR of the offered pump at the maximum water discharge condition on the entire operating range & (ii) minimum submergence requirement. It shall have one suitable basket type strainer preventing entry of foreign particle and or any solid in the pump.

1.9. The vertical column pipe assembly shall be of 350-400 mm dia fabricated from 10 mm thick

MS plate, flanged type, and anti-corrosive epoxy painted both inside and outside.

1.10. The column piping shall be of individual length not more than 1.5 M each for effective and easy handling.

1.11 The total suspension length including the bottom basket strainer shall be fixed by the tenderer considering the minimum submergence requirement working at the lowest low river level, the required bottom clearance at the indicated sump invert level etc. The total suspension length, as has been considered in the offer backed by technical justification shall be placed with the Part-I offer.

1.12. The pump assembly should be provided with suitable anti-friction roller thrust bearing with a PT-100 probe so as to measure the pump bearing temperature, non-reverse ratchet assembly, bowl bearing, suction bell bearing, shafts sleeves including sleeve at gland packing point, seal ring / wearing ring, provision for impeller adjustment nut, double throat air-valve at column vent point and other important features as provided by

the manufacturer. Suitable motor stool, motor sole plate with facility of pulling out the column and bowl assembly through it, anchoring bolts, nuts, washers, fixing bolts all complete are to be provided. All fasteners used in the pump and column pipe assembly shall be of approved grade stainless steel.

1.13 The pump rotating assembly shall be statically and dynamically accurately balanced. The impeller balancing shall be within the grade G- 6.4 as per IS: 11723. No hole or any piece being welded / bolted on the pump impeller for balancing shall be allowed. The shaft should be ground all over and perfectly aligned. Special care should be taken that the entire pump assembly do not experience vibration beyond the permissible limit as per IS: 11724, of such class roto-dynamic unit while in operating even in worst operating condition at any combination.

1.14. The pump motor shall be considered as a single unit and the vibration limit should be within the limit specified in above IS.

1.15. The noise level shall be within the permissible limit of IS: 12065. The thrust bearing shall be designed in such a manner to be worked safely on any working condition even at the respective shut off.

1.16. The pump shall also withstand the condition of any back flow on it.

1.17. The static and dynamic loading of the pump motor assembly with other allied components shall be clearly indicated.

1.18. The pump shall be capable of continuous operation. The pump shaft, line shaft shall be accurately sized. Replaceable sleeves are to be provided at desired point. The
Stuffing box shall be self sealed design provided with packing ring and preferably with Split type gland.

1.19. The impeller of the offered pump shall not be either on the lowest trim or the highest trim of the same pump family offered.

1.20. The wetted portion of the pump shall have a proper finish. The pump shall have a minimum efficiency of 80% at duty point. Pumps offered with lesser efficiency at duty point shall not be accepted.

1.21. The pump shaft shall be accurately machined and ground all over. The portion of the pump that will come under the contact with pumped liquid shall be protected by replaceable sleeves. Suitable pump casing wearing ring and/or impeller neck ring as per the manufacturer's design shall be provided. Each pump shaft shall be adequately supported, both at driving and non-driving ends, on anti-friction type ball/roller bearings capable to withstand the worst thrust loading for the pump operation from shut-off to run-out.

1.22. The pump shall be suitable for valve open starting and also to take care of the condition of back water flow in it, if any. Grease injection nipples and grease collector at each bearing points shall be provided.

1.23. The overall noise level of the pump-motor unit shall be within the stipulations of the relevant BIS limit all round measured from a distance of 1.5 M.

1.24 The identical parts of the pumps shall be inter- changeable type.

1.25. The supply of the pump shall be completed by the pump manufacturer with the following components and accessories: -

Suitable motor stool, pump motor sole plate with facility of pulling out the column and bowl assembly through it, anchoring bolts, nuts, washers, fixing bolts all complete are to be provided. Base frame of the total pump-motor assembly, motor stool with all foundation bolts, nuts, washers, wedges, leveling shims and other erection materials as required. It may be noted that there shall be no other thrust encountering device on the pump discharge pipe branch and the common delivery header excepting the pump foundation bolts. The pump foundation bolts shall be adequate enough to withstand all the thrust that may occur during pump operation including start/stop.

Suitable flexible coupling with bolts, nuts, pins, keys etc. for coupling the drive and driven unit.

Air-vent cock, priming cock suitably placed.

Self sealed packing box provided with packing rings, lantern rings, split type glands, gland cooling water connection with cock, valves etc., all service pipes, valves, fittings, drain plug, lifting lugs etc. as required for safe operation of pumps.

Any other accessories & component considered by the manufacturer for safe, efficient operation of pumps.

1.26. The pumps shall be capable for continuous operation at any stated level condition.

1.27. The preferred material of construction of the pump is given below. If the tenderer feels that the MOC other than what have been stated will give better service and performance, he may offer the pumps with the MOC as per his choice, backed by technical justifications, but the same shall only be made as an alternative offer.

(a) Pump Casing : CI as per IS210, Grade FG 260

(b) Impeller : SS, CF8M

(c) Pump Shaft & Intermediate shaft : SS410

(d) Sleeves **:** SS410 hardened.

(e) Shaft Pins, Keys **:** SS 410

(f) Shaft Coupling **:** SS 410

(g) Bearing (Except thrust bearing) **:** Self lubricated type with cut-less nit riles rubber in SS shell having provision (straight grooves preferred) for expelling the sand, silica, mud etc. from them by self working pressure.

(h) Wearing ring/seal ring **:** Materials having at least 50 BHN hardness difference to the nearest component

(h) Impeller Nut **:** CI IS 210 GR. FG 260

(i) Base frame with drain tray **:** MS as per IS: 226

(j) All hardware used in total pump Assembly (nuts/bolts/fasteners etc.) **:** SS-410

(k) Column pipes **:** MS, fabricated from 10 mm thick steel plate with anti-corrosive epoxy painted both inside and outside after proper surface finish.

1.29. All materials, casting used for manufacture of the pumps with allied components & accessories shall be of best tested quality and the contractor has to submit the test certificate for the MOC at the time of shop test as well as with the supplies.

Ultrasonic test to the shafts are to be conducted and test certificate to be furnished.

The dynamic balancing of the rotating unit with coupling, key etc. is to be conducted and test certificate is to be submitted on shop test.

Dye-penetration test to the impeller are to be conducted and the test certificate are to be furnished with the supply.

Hydrostatic tests at a pressure not less than 1.5 times of the shut-off pressure for duration of 30 minutes are to be performed and test certificates to be furnished.

The pump performance test of all the pumps for head, efficiency, power consumed etc. versus discharge shall be conducted as per IS: 9137 in presence of the departmental representatives and in full load, full speed with the job motor and preferably with full column setting.

The duration of the performance test at shop shall be not less than 8 hours continuous operation and the temperature monitoring of both pump and motor shall be conducted.

The tenderer should indicate the maximum column setting, they can accommodate in their factory test bed.

The NPSHR test as per IS: 9137 to at least one pump as per choice of the department at various discharge conditions including duty point shall be conducted during the joint shop tests of pumps. The duration of the performance tests of all pumps shall be not less than 8 hours each, during which the temperature, noise, vibration shall be monitored and tested.

The minimum submergence test as per IS: 9137 shall be conducted to at least one pump as per choice of the department at various discharge conditions including at duty point during the joint shop test of the pumps.

Vibration analysis to all pump motor sets are to be made in all load conditions both during the shop-testing as well as at site after the pump sets have been fully commissioned.

After the performance tests, one pump as per choice of the department shall be stripped off and the internal components shall be checked

Apart from the stated shop tests all field tests including noise, temperature rise, and vibration analysis shall be conducted by the contractor.

1.30. The tenderer shall fill-up the guaranteed performance figure / data given in the separate section and submit with the part-I offer.

1.31 **Hydraulic test at shop**

1.32 All pressure parts shall be subject to hydraulic testing at a pressure of 150% of shut off head or 200% of rated head (effective head) whichever is higher, for a period not less than 30 minutes.

1.33 Performance test are to be conducted to cover the entire range of operation of the pumps. These shall be carried out to a span of at least 125% of rated capacity up to

pump shut off condition. A minimum of five combinations of head and capacity are to be achieved during testing to establish the performance curves including the design capacity points and the two extremities of the Range of operation specified. For range of operation, stipulation in relevant Clause may be followed.

1.34 Tests shall be conducted with actual drive motors at full load and full speed.

1.35 Reports and test certificates of the above tests shall be submitted to the Engineer-in-charge for approval of the employer.

1.36 All rotating components of the pumps shall be subjected to dynamic balancing tests, & to be specified in Data Sheets.

1.37 **Performance test at shop**

1.38 Each pump shall have to be tested to determine the performance curves of the pumps. These tests are to be conducted, in presence of Employer or his representative, as per the requirements of the Hydraulic Institute Standard/ASME Power Test Code PTE 8.2/BS-599/I.S.S., latest edition/ relevant universally accepted codes.

1.39 The Contractor shall conduct necessary arrangements for establishing such test with adequate size of sump, to establish the suitability of suction conditions , flow correcting devices for measurement of flow.

1.40 The Employer or his authorized representative shall be given full access to all tests. Prior to performance tests, the Contractor shall intimate the Owner allowing adequate time so that if the Employer so desires, his representatives can witness the test.

Chairman

Santipur Municipality

SECTION – F

Technical Specifications for Motors

1.1. The main drive motors shall be of squirrel cage TEFC induction motor, vertical axis, V1 (as per IS: 2253), continuous duty to suit the offered pumps and shall be capable to drive the pump in all declared working conditions. The motor shall be of high starting torque type suitable for 45KW & 22 KW, 415 V± 10%; 50 C/S ± 5%; combined variation ±10% AC; 3-phase supply,1500R.P.M.(Syn).

1.2. All the motors shall be rated for continuous duty (S 1) and shall have IP 55 degree of protection in accordance with IS: 4691.
However, due to operational need, the pump-motor set may demand for frequent start or stop operation, with a maximum time gap of 5-10 minutes from one stop after prolonged operation in rated load and may demand restarting of the same. The pump motor set shall be capable to take care of the stated situation.

1.3 All the motors shall be required to meet the requirement for IE 3+ efficiency class as stipulated in IS: 12615 amendment 2016. It shall have unchanged efficiency during rated output utilization.

1.4. All the motor ratings shall be of minimum 45 KW & 22 KW considering at least 15% margin over the maximum pump input at duty point or 10% margin over the maximum pump input in the worst case of the pump operation in the total range (from shut-off to run out), whichever is higher. The overall capacity of the motor shall be selected for continuous operation at the rated output for the voltage and frequency condition mentioned above in the worst case by allowing the temperature rise limited to that of class-B over the ambient temperature of 45° centigrade. But the class of insulation of the motors shall be Class F.

1.5. The motor characteristics shall match the requirements of the driven unit (pump) so that adequate starting torque, acceleration, pull up, break down and full load torque are available for the intended service. The motor shall be suitable to start the pumps in valve open condition. It shall also not be overloaded in case of back water flow occurs occasionally.

1.6. The motor shall be of 6-pole having rotational speed of 1500 RPM syn. The percentage slip of the motor at different load conditions shall match the pump speeds required then at the different load conditions. The tenderer shall clearly indicate the motor speed and slip at different load conditions.

1.7. The stator windings design shall be such that it shall have superior electrical, mechanical and thermal properties and shall achieve better heat transfer and higher dielectric strength.

1.8. The rotor of the motor should be sturdy in construction so as to ensure trouble free operation. Special care shall be taken to ensure better torque characteristics

1.9. All the motors shall be provided with a very efficient cooling system so that the temperature of the stator winding does not rise additionally. The method of cooling shall be at least IC 411 as per IS: 6362:1995. All the motors shall be provided with bi directional specially designed external cooling fan for low noise operation. Noise level shall be within the values as stipulated in IS: 12065.

1.10. The motor shall be suitable for Star- Delta starting. The Star- Delta starter for motor starting shall be in the MCC cum PDB described else where.

1.11. The motor shall deliver rated output and accelerate at full speed with 85% of rated voltage at the motor terminal. With 85% rated voltage at motor terminal, it shall be capable of working satisfactorily at full load for at least 10 minutes without injurious heating or stalling.

1.12. The motor locked rotor current shall be limited within 700% max of the motor rated current.

1.13. The locked rotor withstand time under hot condition at 110% rated voltage shall be more than motor starting time by at least 2.5 seconds. Hot thermal withstand curve shall have a margin of at least 10% over the full load current of the motor to permit relay setting using motor rated capacity.

1.14. The 45 KW motor stator shall be provided with six (6) embedded PT-100 type thermostat devices for alarm and trip. The leads shall be brought out to a separate terminal box.

Suitable wiring by signal cable shall be made to receive the signal from the field to the control desk and the circuitry for alarm and trip shall be arranged so as to give alarm and or trip the motor, as the case may be.

1.15. The rotor shall be dynamically balanced with all the fans and with half key in the shaft extension and to vibration severity grade as per IS: 12075. But the noise level of the pump and motor in combine shall not exceed the stipulations as mentioned in IS: 12065.

1.16. The motor shall be provided with anti-friction bearings, grease lubricated both at driving and non-driving ends.

The bearings shall be provided with seals to prevent leakage of lubricant or entrance of foreign matter like dirt, water etc. into the bearing area. Grease lubricated bearings shall be pre-lubricated and shall have provision for in-service positive lubrication with drains and grease collectors to guard against over lubrication.

1.17. The motor terminal box shall be of detachable type and rotate-able by 360º in steps of 90° in each position. The terminal box shall have I P 55 degree of protection. It shall be suitable for terminating 2 number 3-core, 1.1 KV grade, up to 70 sq. mm (For 45 KW) & 2 number 3-core, 1.1 KV grade, up to 50 sq. mm (For 22 KW), XLPE aluminum conductor armoured cables for the main motor feeding. Mounting of the terminal box shall match with the site requirement.

The terminal boxes shall be with removable cover /adopter pieces with access to connection. The motor terminal boxes shall be furnished with suitable cable lugs and double compression brass glands to match with the cable size.

1.18. The motor shall be equipped with built-in anti-condensation thermostatically controlled space heater of adequate rating suitable for operation in 230 AC supply. Separate terminal box(s) for the space heater connection is to be provided.

1.19. The frame of each motor shall be provided with two separate and distinct grounding pads suitable for accommodation of suitably sized grounding conductors. The main cable terminal boxes shall have separate grounding pads.

1.20. The rating plate of the motor should contain the minimum information as indicated in the relevant BIS standard and shall be made of stainless steel.

1.21. The tenderer should furnish with the offer the motor load-efficiency curve, torque-speed curve, load-power factor curve, thermal withstand curve (hot and cold), current-speed curve and current-time curve.

The dimensional drawing of the offered motor, terminal box drawings, load data, GD^2 value of the drive unit and the driven unit shall also be furnished with the offer.

1.22. The motor shall also be provided with suitable lifting lugs/eye bolts having adequate provision for lifting/ installation. Common base frame for the pump & motor as indicated earlier shall be used with suitable foundation bolts, Dowelling pin etc. shall also be provided.

1.23. The routine tests as per IS: 325 shall be conducted to each motor at Shop i.e. at manufacturer's works. Similarly, the type test (Heat Run Test) shall be conducted on at least one motor randomly selected during the tests. All necessary arrangements and costs thereof for the tests are to be made by the contractor and shall be included in the offered cost.

1.24. Apart from the technical offer, the tenderer should furnish the enclosed data sheet duly filled-in in the Part-I offer.

Chairman

Santipur Municipality

TERMS OF PAYMENT

A) Mechanical Equipment

i) 50% value of the equipment shall be payable on receipt of materials at site.

ii) The next 40% value of equipment shall be payable on successful completion of commissioning & trial run of equipment.

iii) Balance 10% value of the equipment shall be payable after successful completion of the operation and maintenance of the plant after Trial Run.

B) Electrical Equipments

i) 50% value of the equipment shall be payable on receipt of materials at site.

ii) The next 40% value of equipment shall be payable on successful completion of commissioning & trial run of equipment.

iii) Balance 10% value of the equipment shall be payable after successful completion of the operation and maintenance of the plant after Trial Run.

List of Vendors

Sl. No.	Equipment	Make
01.00	Pump	KBL/Mather & Platt / WPIL Ltd/ Flowmore.
02.00	Motor	Crompton / ABB / Marathon
04.00	Control Desk/ MV Switchboard / PDB	Siemens / Sellwin / Bhartiya Cutler Hammer / PCE Projects
05.00	ACB/MCCB	L&T / Siemens / ABB
06.00	Fuse Switch Unit	L&T / Siemens / ABB
06.01	Breaker control switch	Kaycee/ Recom / Alstom
07.00	Relays	Schneider / ABB/ ER
08.00	Contactor	L&T/ Siemens / ABB
09.00	Meters	AE/ IMP/ Secure / Schneider
10.00	Cable :	
10.01	HT &LT Cable	Gloster / Polycab / Havells / Crystal
10.02	Control Cable	Gloster / Polycab / Havells/ Crystal
11.00	Pressure Transmitters	Siemens / ABB / Honeywell
12.00	Digital Indicators	Micro System /Meco
13.00	Temperature Scanner	Pecon/ Micro System /Laxon / Chino / Masuka Instruments Pvt. Ltd.
14.00	Radar type Level Monitoring System	Siemens / Krohne / Rosemount
15.00	Flowmeter & Recorder Indicator, Totaliser	Krohne / Endress Hauser/ ABB
16.00	Control Fuses	GE/Siemens
17.00	Current Transformer	Kappa/JAWS / Schneider
18.00	Capacitor	Unistar / L&T /Epcos
19.00	Butterfly Valves& Non-Return Valve	Fouress/ VAG/ AVK/ IVC Nassik /SIGMAFLOW

20.00	Valve Actuators	Rotork / Auma
21.00	Pressure Gauges	Bell/Taylors/H. Guru
22.00	Fire Extinguishers	Surex / Minimax / Cease Fire / Fire Shield
23.00	Submersible Pump	KSB / Calama / SU / Kirloskar
24.00	Air Conditioner	Carrier / LG / Voltas
25.00	Lighting system	
26.01	Light Fitting	Philips / Crompton
26.02	Wire	Finolex / KDK/ Havells
26.03	Switches	Anchor / Havells / Cab
27.00	Ventilation System	P.N. Chakraborty & Co. / Universal Air System / PASCO
28.00	Exhaust Fan / Ventilation Fan	Alstom / EPC / Pasco / P.N. Chakraborty
29.00	Crane	Surekha / Pilcare / India Engineering & ImplementsCo.

APPENDIX - II

Data / Documents to be Furnished

LIST OF DATA / DOCUMENTS TO BE FURNISHED WITH THE OFFER (TECHNICAL BID)

1.0 Flow and Head calculation for Pump selection

2.0 Calculation for selection of size of valves and pipes

3.0 Basis of selection of no. of feeders for HT PDB cum MCC

4.0 Calculation for selection of Capacitor – Reactor rating

5.00 PUMP

1.01 Characteristic curve of the pump H-Q, Q-N, Q-P, Q-NPSHR, Min. Submergence requirement containing the logo of the pump manufacturer & signature of the authorised Signatory of the pump manufacturer and seal.

1.02 Copy of the printed familycurve of the pump manufacturer, with multiplication factor, if any, for the pump offered.

1.03 Pump H – Q curve duly superimposed on the system curve

1.04 Pump G.A. drawing with load datas.

1.05 Pump foundation details with due consideration of dynamic loading and vibration.

1.06 Arrangement details for pump pre lubrication, if required.

1.07 Pump Data Sheet / Check list

6.00 **MOTOR**

2.01 Motor Data Sheet / Check List

2.02 GA Drawing

7.00 Check List for HT PDB cum MCC, Transformer, 425 Volt MV Switchboard and PDB, Capacitor – Reactor

8.00 Check list for Butterfly Valve, Non – Return Valve, DMJ, Puddle Collar / Plate

APPENDIX - III

Data / Documents / Drawings to be Furnished

LIST OF DATA / DOCUMENT / DRAWINGS ETC. TO BE FURNISHED BY THE SUCCESSFUL TENDERER

1.01 Pump – Motor GA and sectional drawing with part no., Data Sheets

1.02 Pump house layout drawing with load data.

1.03 Single line diagram of the electrical system and earthing.

1.04 Cable schedule and termination chart.

1.05 GA details of H.T. PDB cum MCC, 415 Volt MV Switchboard & PDB, Control Desk & instrumentation panel.

1.06 GA &Sectional drawing with part nos. for Butterfly valves & Non – Return valve

1.07 Schematic power wiring drawings (both H.V. & M.V.), panelwise.

1.08 Schematic Control Wiring drawings panelwise.

1.09 Purchase order references of individual equipments.

1.10 List of authorised service centres of individual equipment.

1.11 List of special tools & tackles required for effective installation & maintenance, if any

1.12 As – Built drawing with Installation, operation, maintenance manuals for majorequipments.

1.13 Design calculation for earthing system and Earthing layout

1.14 Completion drawings(As built) for all electrical circuit diagrams, layout drawing.

1.15 Details/type of bearings of pump & motor.

1.16 P&I diagram of the system.

1.17 Calculations for selecting the final ratings of capacitors & reactors from approved Motor drawing

1.18 Back to Back Guarantee from individual manufacturers of Pumps, Motor, HT PDB cum MCC, MV Switchboard & PDB, Control Desk &Instrument Panel, Transformer&Valves regarding prompt and reliable supply of spare parts and assistance including commissioning assistances to KMDA or its representative as and when necessary.

APPENDIX - IV

DEVIATIONS

LIST OF DEVIATIONS

The tenderers are advised to fill up the list of deviations, they indicate/sought for in their offer, showing the details as per the tender specifications & the deviations wanted backed by all clarifications & justifications. If there is no deviation sought, the tenderer must indicate NIL in the list.

Sl. No.	Item	Details as per Tender specification	Details of the offer	Reason for which such deviation sought for with technical backup

APPENDIX - V

List of Spare Parts

1 **Pump**

i) One set complete rotating assembly for each category of Pump.

ii) Driving and Non-driving end bearing for each category of one pump.

2 **Motor**

i) Driving & Non-driving end Bearings for one motor of each category - 1 set.

3 **Vacuum Circuit Breaker**

i) Trip coil - 4 Nos.

ii) Closing coil - 2 nos.

iii) TNC Breaker Control Switch – 4 Nos.

iv) Indication Lamps – 12 Nos.

4 **M.V. Switchboard, PDB and Control Desk**

i) 400 A & 200 A MCCB - 1 No. each

ii) Indication lamps – 12 nos.

5 **Relays**

Type VAA 33 or equivalent - 1 no.

Type P111 or equivalent - 1 No.

Type VAJH-13 - 1 no.

Type VAX –31 - 1 no.

6 **Instruments**

Volt meter - 2 nos.

Ammeter - 2 nos.

7. **Miscellaneous Items**

i) One Steel Almirah of adequate size as directed by EIC

ii) One steel Table with 4 (four) numbers of steel chairs

ANNEXURE - E

CONTOUR MAP FOR SANTIPUR MUNICIPAL AREA

A Contour map For Santipur Municipal area is attached as ready reference as Annexure III. But the total design of the work should be done on the basis of profile survey conducted by agency under the control of Engineer-in-Charge.

Attached

Chairman
Santipur Municipality

ANNEXURE – II

YEARLY RAINFALL DATA

A Yearly rainfall data of Santipur Municipal area is attached herewith in the Bid as Annexure II.

ATTACHED

Chairman

Santipur Municipality.

ANNEXURE – III

WARD BOUNDARY AND EXISTING ROAD NETWORK WITHIN SANTIPUR MUNICIPAL AREA

A Survey of Map Santipur Municipal area is attached as ready reference as Annexure VII. But the total design of the work should be done on the basis of survey showing Ward boundary, road network etc conducted by agency under the control of Engineer-in-Charge.

Attached

Chairman

Santipur Municipality.

ANNEXURE – IV

Municipal "K-2911 " Form-Attached

Chairman

Santipur Municipality.

ANNEXURE – V

Location Map of 6nos Drain with Pumping station.

Attached

Chairman
Santipur Municipality.

Tentative layout for Drainage pumping station and sub station building.

Attached

Chairman

Santipur Municipality.

VENDOR LIST

A.	**CONSTRUCTION MATERIALS**		
1	Cement	-	ULTRATECH.ACC,AMBUJA of PPC(IS-1489-Part 1/PSC (IS-455) based.
2	Reinforcing Steel	-	SAIL / JINDAL / TATA
3	Plasticiser / Water Proofing Compound	-	SIKA / CICO / DR. FIX IT

4	Stone chips	-	PAKUR / CHANDIL / PANCHAMI

Chairman
Santipur Municipality