



**NATIONAL INSTITUTE OF INDUSTRIAL ENGINEERING,
Vihar Lake, Mumbai 400087**

Website: <https://www.nitie.ac.in>

(Only Through Online e-Procurement Mode)

NITIE e-Procurement / e-Tendering Website: <https://www.tenderwizard.com/NITIE>

Notice Inviting e-Tender (NIT)

for

**Supply, Installation, Testing, Commissioning, Operation
& Maintenance of 100 CMD Pilot STP for EU-DST
Research Project as per Specifications**

(Tender Document, Instructions to Tenderer, General conditions of Contract and Special conditions of Contract)

National Institute of Industrial Engineering (NITIE), Mumbai

Ref. No: NITIE/Saraswati2/2021-22

Date: 12.11.2021

NOTICE INVITING e-TENDERS (NIT)

Name of the work: Director, NITIE invites online tender item rate basis under two bid system (Technical bid and Commercial Bid) for the work of “**Supply, Installation, Testing, Commissioning, Operation & Maintenance of 100 CMD Pilot STP for EU-DST Research Project as per Specifications at Bhandup Sewage Pumping Station, Mumbai**”.

Details of Tender fee, EMD, submission of tender and other details are elaborated in the tender document. (Pay through e-Payment mode online on portal, e- Payment facility is available on website for making the payment through Debit / Credit Card / Net Banking).

Tender Document: Tender document will not be issued in person. For Downloading of tender documents, please visit on <https://tenderwizard.com/NITIE> or <https://eprocure.gov.in> or NITIE website <https://www.nitie.ac.in>. Tenders downloaded from the website must be accompanied by requisite tender fee failing which tender will not be considered.

	Cost of Tender document & ITI Ltd Tender Wizard e-Tender Processing Fees	Rs. 2,000.00 (Rupees Two Thousand): (Pay through e-Payment mode online on portal, e-Payment facility are available on website for making the payment through Debit / Credit Card / Net Banking (Non-Refundable).
2.	Download of Tender Document Online	13.11.2021: 1500 Hours to 05.12.2021: 1500 Hours
3.	Last date for receipt of Tender Online	06.12.2021 - 1100 hours
4.	Opening of the Tenders (Part-1) Online	06.12.2021 - 1130 hours

Opening of Technical Bid Part 1 of the bid Online: Only Technical Bid Part 1 will be opened in the presence of tenderers or their authorized representatives, who are present. Late and delayed tenders will not be opened and such tenders will stand summarily rejected.

Opening of Commercial Bid Part 2 of the bid Online: After verification of Technical Bid Part 1, Commercial Bid of only those tenderers who satisfy all the eligibility criteria laid down in this notification will be opened.

In case any document(s) produced in support of eligibility criteria or any other document(s) turns out to be fraudulent, following will be the course of action:

[a] **Before award of work:** The work will not be awarded, EMD will stand automatically forfeited, and the tenderer will be liable for further action as may be deemed fit; OR

[b] **After award of work:** The award of work will be cancelled, EMD and Security Deposit, Performance guarantee will stand forfeited, and the contractor will be liable for action as deemed fit.

Evaluation of tender: In case two or more tenders are found equal in commercial bids, work will be awarded to the contractor who has executed satisfactorily contracts of higher values based on the certificate of experience submitted along with tender papers assessment carried out by the Institute.

The Director, NITIE, Mumbai reserves the right to: a) reject any or all the tenders without assigning any reason whatsoever; b) not binding himself/herself to accept the lowest or any tender; and c) accept the whole or any part of the tender and the tenderer shall be bound to perform the same at the rates quoted. Canvassing in connection with tender/quotation is strictly prohibited. Tender details can be viewed on the website <https://www.tenderwizard.com/NITIE> & www.nitie.ac.in & <https://eprocure.gov.in> . Tenders downloaded from the website must be accompanied by requisite tender fee failing which tender will not be considered.

Principal Investigator, NITIE

1.1 INTRODUCTION

National Institute of Industrial Engineering (NITIE), hereinafter called NITIE, invites sealed tenders from the eligible contractors for “Supply, Installation, Testing, Commissioning, Operation & Maintenance of 100 CMD Pilot STP for EU-DST Research Project as per Specifications”. The work comprises of Supply & erection of Prefabricated STP for research purpose including associated Civil/Electrical/Mechanical works. Particulars of the project are following.

1.2 PARTICULARS

1.2.1 NIT Number	NITIE/Saraswati2/01/2021-22; dated:12-11-2021
1.2.2 Name of Work	“Supply, Installation, Testing, Commissioning, Operation & Maintenance of 100 CMD Pilot STP for EU-DST Research Project as per Specifications”.
1.2.3 Location of Work	Bhandup sewage pumping station, Mumbai, Maharashtra 400042
1.2.4 Estimated Cost (excluding GST)	INR 59.90 Lac
1.2.5 Earnest Money Deposit	INR 1,19,000
1.2.6 Time Limit for Completion	60 days for Construction & Commissioning & 2 year for Operation & maintenance.
1.2.7 Tender Fee	INR 2000/- (Non-refundable) (Pay through e-Payment mode online on portal, e-Payment facility is available on website for making the payment through Debit / Credit Card / Net Banking)
1.2.8 Tender Basis and Mode	Supply, Installation, Testing, Commissioning, Operation & Maintenance.
1.2.9 Mode of Payment to NITIE	Pay through e-Payment mode online on portal, e-Payment facility is available on website for making the payment through Debit / Credit Card / Net Banking.
1.2.10 Closing Date & Time for Receipt of bids	6 th December 2021 up to 11:00 hrs.
1.2.11 Date & Time for Opening of Technical Bid	6 th December 2021 at 11:30 hrs.
1.2.12 Date & Time for Opening of Price Bid	To be intimated to the eligible bidders subsequently.
1.2.13 Principal Investigator name and contact details.	Dr. Anju Singh Tel: +91-22-2857-6611, email: anjusingh@nitie.ac.in
1.2.14 Address for tender issue, submission and opening	Office of Registrar, 1 st floor admin building, NITIE, Powai, Mumbai, 400087
1.2.15 Website for full and updated information	https://tenderwizard.com/NITIE or https://eprocure.gov.in or NITIE Website https://www.nitie.ac.in

1.3 ELIGIBILITY CRITERIA

- 1.3.1 The bidder must have done at least 1 (ONE) similar work of value of 80% of the estimated cost or 2 (TWO) similar works for projects each of value 60% of the estimated cost or 3 (THREE) similar work for projects each of value 40% of the estimated cost in last 7 years.
- 1.3.2 **Note:**
- a. The estimated cost is mentioned in Para 1.2.4.
 - b. The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum; calculated from the date of completion to the last date of receipt of applications for tender.
- 1.3.3 Similar works shall mean construction, Operation & maintenance of Wastewater Treatment Plant of capacity 10 to 5000 CMD.
- 1.3.4 The specialized agency the bidder intends to associate with must have GST registration certificate and Permanent Account Number of income tax.
- 1.3.5 The contractor or the specialized electrical agency must have electrical license & electrical supervisor license wherever required.
- 1.3.6 The validity of the registrations and licenses should be valid as on the date of tender submission.
- 1.3.7 Average annual turnover of the bidder as per ITCC or profit & loss statement shall not be less than 30% of the estimated cost, not having incurred loss in more than two years, during last 5 years ending 31 Mar 2021.
- 1.3.8 Bidder must hold solvency certificate from any scheduled banks for a minimum value of 40% of the estimated cost, issued not earlier than 6 (six) months from the last date of submission.

Principal Investigator

On behalf of the Director, National Institute of Industrial Engineering

2. INFORMATION TO BIDDER

2.1 DEFINITIONS

- 2.1.1 The Contract means the documents forming the tender and acceptance thereof and the formal agreement executed between the competent authority on behalf of the Director, NITIE Mumbai and the Contractor, together with the documents referred to therein including these conditions, the specifications, designs, drawings and instructions issued from time to time by the Principal Investigator and all these documents taken together, shall be deemed to form one contract and shall be complementary to one another.
- 2.1.2 In the contract, the following expressions shall, unless the context otherwise requires, have the meanings, hereby respectively assigned to them:
- (i) The expression works or work shall, unless there be something either in the subject or context repugnant to such construction, be construed and taken to mean the works by or by virtue of the contract contracted to be executed whether temporary or permanent, and whether original, altered, substituted or additional.
 - (ii) The Site shall mean the land/or other places on, into or through which work is to be executed under the contract or any adjacent land, path or street through which work is to be executed under the contract or any adjacent land, path or street which may be allotted or used for the purpose of carrying out the contract.
 - (iii) The Contractor shall mean the individual, firm or company, whether incorporated or not, undertaking the works and shall include the legal personal representative of such individual or the persons composing such firm or company, or the successors of such firm or company and the permitted assignees of such individual, firm or company.
 - (iv) The Principal Investigator means the Principal Investigator of the EU-DST SARASWATI-2.0 Research Project who shall supervise and be in charge of the work and who shall sign the contract on behalf of the Director, NITIE.
 - (v) Market Rate shall be the rate as decided by the Principal Investigator on the basis of the cost of materials and labour at the site where the work is to be executed plus all overheads and profits.
 - (vi) Department means any department of Government of India which invites tenders on behalf of Director, NITIE.
 - (vii) Tendered value means the value of the entire work as stipulated in the letter of award.
 - (viii) Schedule of Quantities means Bill of Quantities enclosed with the tender document.

2.2 GENERAL INSTRUCTIONS

- 2.2.1 Bidding documents are to be obtained electronically through websites: <https://tenderwizard.com/NITIE> or <https://eprocure.gov.in> or NITIE Website <https://www.nitie.ac.in>. The tender fee in the prescribed mode must accompany the tender documents issued electronically at the time of submission.
- 2.2.2 This bid document shall form an integral part of the contract agreement.
- 2.2.3 The bidder shall visit and inspect the site and obtain all information on his own responsibility and at own cost, which may be necessary for the purpose of quoting and submitting the tender. No excuse or ignorance as to site conditions and local information shall be accepted after awarding of the contract. Access to the site will be granted by the Principal Investigator on all working days within working hours.

- 2.2.4 NITIE shall not provide any space at site for labour hutments.
- 2.2.5 All clarifications about the tender shall be sought by bidder on or before bidding. Intending bidder(s) may also send their queries or suggestion, if any, through e-mail to the Principal Investigator on anjusingh@nitie.ac.in on or before 06th December 2021. No queries shall be entertained after notification of replies to noteworthy queries received till the date of bid submission.
- 2.2.6 Completion certificate issued by Competent Authority will only be considered as credential. If the Completion certificate issued by Competent Authority does not reflect the type of work, then Final bill / Schedule of Quantity of the qualifying works also to be attached along with the Completion certificates.
- 2.2.7 The tender document (consisting of specifications, the schedule of quantities of various types of items to be executed, the set of terms and conditions of the contract and other documents / drawings, if any), Corrigenda, Clarifications to Pre-bid queries can be downloaded from the websites: <https://tenderwizard.com/NITIE> or <https://eprocure.gov.in> Or NITIE Website <https://www.nitie.ac.in>. Corrigenda, if any shall be published only on these websites. The institute shall not be responsible for any delay / difficulties / inaccessibility of downloading facility for any reason whatsoever.
- 2.2.8 All costs, charges & expenses that may be incurred in connection with the preparation of his tender shall be borne by him and the Institute accepts no liability whatsoever therefore.
- 2.2.9 Rates quoted by the bidders shall be inclusive of all applicable taxes if any. Income Tax and all other statutory deductions like labour cess etc. will be deducted from the bill as per prevailing rules.
- 2.2.10 Exemption to NITIE, Mumbai against any tax/ duty/ fee/ surcharge/ charge/ cost, if any, found applicable or sought later from NITIE, Mumbai after award shall be passed on to NITIE, Mumbai by the contractor without dispute.
- 2.2.11 NITIE, Mumbai reserves the right to reject any or all of the bids without assigning any reason.
- 2.2.12 Bid Validity: Bid shall remain valid for 120 days from the date of submission.
- 2.2.13 Firm Price: Bidder's quoted Rates/Prices for executing the activities under the Contract shall remain firm till completion of the entire work & shall not attract any escalation under any circumstances whatsoever.
- 2.2.14 If any information furnished by the bidder is found as false / fabricated, then his bid will be rejected and treated as cancelled. Even if the such manipulation is detected at any stage after signing of the contract, it would lead to termination of the contract besides forfeiture of Earnest Money Deposit and liabilities towards prosecution. In such cases the bidder will be debarred from participation in future tendering process in NITIE, Mumbai for next 05 (Five) years.
- 2.2.15 ~~Earnest Money Deposit (EMD) of requisite amount and that in prescribed mode or proof of payment thereof shall be enclosed with the Technical Bid explained in following section.~~ Tender Fee should be a separate Demand Draft and should not be combined with EMD. Upload the Online e-Payment Receipt. (Pay through e-Payment mode online on portal, e-Payment facility is available on website for making the payment through Debit / Credit Card / NetBanking)
- 2.2.16 Refund / Conversion of Earnest Money Deposit: The Earnest Money received shall be refunded to the unsuccessful bidders without any interest upon executing the Contract Agreement by successful bidder. The Earnest Money Deposit of successful bidder shall be retained and converted into part of Security Deposit.
- 2.2.17 Forfeiture of Earnest Money Deposit: Earnest Money Deposit will be forfeited in any of the following cases:
- The bidder withdraws / modifies his tender during the period of Bid Validity.
 - The bidder, in case of tie between lowest bids, refuse to submit revised offer.
 - The bidder does not accept the correction of arithmetical errors of his tender.

- d. The bidder fails to deposit Performance Guarantee and information as per ANNEXURE-I within the stipulated time period before award of the work.

2.3 SUBMISSION OF TENDER

2.3.1 This notice is also available on website NITIE e-Tender & on NITIE website: <https://www.tenderwizard.com/NITIE> & www.nitie.ac.in for downloading of tender documents.

The Tender document can be downloaded from NITIE e-Procurement Website i.e., <https://www.tenderwizard.com/NITIE> or from NITIE Official website. The tender should be submitted through online mode only.

NITIE reserves the right to reject any or all tenders without assigning any reason thereof. This notice & tender document is also available on web-site: <https://www.tenderwizard.com/NITIE> , www.nitie.ac.in & CPP Portal for downloading of tender documents.

2.3.2 Standard e-Tender Terms & Conditions for NITIE e-Procurement.

NITIE e-Procurement Website is: <https://www.tenderwizard.com/NITIE> .

1. The details of tender notification can be downloaded from www.tenderwizard.com/NITIE under "Tender of NITIE" link in the homepage.

Vendors should obtain the USER ID and PASSWORD from www.tenderwizard.com/NITIE by clicking on "Enrolment" link in the homepage. The Vendor registration fees has to be paid to ITI Ltd for Rs. 2360/-. Using the e-Payment link provided at the time of registration, and the mode of payments are Credit Card, Debit Card and Internet Banking. Vendor Registration is Valid for 1year.

2. For further details on e-Tender participation, please contact ITI Help desk on:

- Telephone: 080-40482100 (Bangalore) & Sanjay KC - Mumbai & Maharashtra (09665721619)
Email: sanjay.kc@etenderwizard.com
- Email: harishkumar.kb@etenderwizard.com, ambasa@etenderwizard.com.

2.3.3 Tenders should be submitted only through e-Tender portal and obtain the Tender Acknowledgement copy as a proof of successful submission.

Special Conditions & instructions for using online Electronic Tendering System:

e-Tenders through portal (website) <http://www.tenderwizard.com/NITIE> adopted by NITIE, Mumbai. Vendor Registration Fees Rs. 2,000/-+ 18% (GST) through e-Payment Gateway on NITIE e-Procurement Portal i.e., <https://www.tenderwizard.com/NITIE>

Note: The e-Payment Gateway is available on e-Procurement Portal for making the Online Vendor Registration Payment.

Bidders are required to Enroll for Vendor Registration on the NITIE e-Procurement Tender Wizard Portal (URL: <https://www.tenderwizard.com/NITIE> by clicking on the link "Enrolment" on the home page of e- Portal which is chargeable. (Rs.2000/- + GST (18%) (Non-Refundable) to be paid online by e-payment gateway).

The bidders are required to submit online only on the NITIE Tender Wizard e-Procurement Portal, using valid Class III Digital Signature Certificates. The step by step instructions about e-Tender Process are given in "Vendor Help Manual " .

Class III Digital Signature Certificate are mandatory for e-Tender /e-Procurement. For Digital Signature Certificate Contact to above number of Mr. Sanjay Chandak (Mumbai, Pune & Maharashtra)

Note: Information about e-Procurement Portal.

More information useful for submitting online bids on the NIA e-Procurement Tender Wizard Portal may be obtained at: <https://www.tenderwizard.com/NITIE> . N.B: Bidders can download the Vendor's manual by visiting on home page of NITIE e-Procurement Website: <https://www.tenderwizard.com/NITIE>

KEY INSTRUCTIONS for BIDDERS by clicking on "Latest Circulars/Formats/Help Manuals/Faq". The complete Step by Step "Vendors Help Manual for e-Procurement / e- Tendering Process, Vendors Registration Process, System Settings Requirements & JAVA Settings Manuals, e-Payment Guidelines" & "Digital Signature Certificate Process" these details are available on NITIE e-Procurement Website for e-Tenders.

Note: Online Support / Web Support / E-Mail Support / Phone Support are also available for Bidders as well as Department Officials. Online support through "Team viewer", "Ammy Admin "Or "Any Desk" Remote software only. For Downloading this software, the downloading software links are available on home page of NITIE e-Procurement Website.

1. Technical & Financial Bid to be submitted online within the due date.
2. Tenders should be submitted only through e-Tender portal and obtain the Tender Acknowledgement copy as a proof of successful submission.
3. All prospective bidders are requested to visit our NITIE E-PROCUREMENT WEBSITE regularly for any such updates / corrigendum.

2.3.4. N.A

2.3.5 Tender without payment of Earnest Money Deposit would be summarily rejected.

2.3.6 **PART - 1 (Technical Bid):** All the Technical Documents Scan copies should be uploaded online

This section will contain following scanned documents:

- I. Tender fee receipt.
- II. EMD payment detail.
- III. Covering letter of the offer signed by firm's authorized signatory.
- IV. Documents establishing the identity and authenticity of the bidder/ bidding firm (PAN, EPF ESIC and GST Registration)
- V. Self-certified copies of all the documents in support of eligibility of bidder.
- VI. Self-certified copies of all the documents in support of eligibility of proposed agencies for specialized services.
- VII. Technical Proposal with Typical details like Drawings, Design Standards, Specifications, Operation and maintenance details of the Sewage Treatment Plant (STP) including details requested in technical schedule.

2.3.7 Part - 2 (Financial Bid): - to be submitted online.

2.3.8 Applicable for Item Rate Tender

2.3.9 The rate(s) must be quoted in decimal coinage. Amounts must be quoted in full rupees by ignoring fifty paise and considering more than fifty paise as rupee one.

2.3.10 In case the lowest tendered amount (worked out on the basis of quoted rate of Individual items) of two or more contractors is same, then such lowest contractors may be asked to submit sealed revised offer quoting rate of each item of the schedule of quantity, but the revised quoted rate of

each item of schedule of quantity should not be higher than their respective original rate quoted already at the time of submission of tender. The lowest tender shall be decided on the basis of revised offer.

2.3.11 Tender must be submitted with the rates for all the items of work involved and any incomplete tender will not be considered. The items for which the rates are not quoted will be considered as 'Zero' & the agency shall complete that item of work without any claim.

2.3.12 The Bids with conditions or conditional rebates shall be summarily rejected.

2.3.13 Submission of bids in any mode other than that stipulated above shall not be accepted.

2.4 EVALUATION OF BIDS AND AWARD OF WORK

2.4.1 The Bid of bidder will be opened on the specified date and time of opening at the Registrar office, NITIE.

2.4.2 Date, time and place of opening of Financial Bid will be informed after evaluation of Technical Bid to the Technically Qualified Bidders.

2.4.3 Bids shall, first, be checked for payment of Tender Fee and Earnest Money Deposit. Only those bids found to have duly paid/ submitted Tender Fee and Earnest Money Deposit shall be considered for evaluation.

2.4.4 Evaluation of Technical Bid: The bids received will then be assessed on the eligibility criteria mentioned at para 1.3 of NOTICE INVITING TENDER. Bids found not meeting the eligibility criteria shall be considered non-responsive and shall be rejected summarily.

2.4.5 NITIE retains the right to revert back to individual bidders (meeting the eligible criteria at para 1.3) with further clarifications / queries on the Technical Proposal. The bidder has to submit a written reply to the queries within the specified time mentioned in the covering letter.

2.4.6 Technical Evaluation Score: The technical offer of the bidder shall be evaluated on following parameters against the maximum marks as shown against each:

S.N.	Parameter	Marking System	Total Marks
Supply, Commissioning and Installation			
1	Bidder track record	Upto 3 works - 2 3 to 5 works - 3 More than 6 works - 5	5
2	Understanding of the project, Construction drawing, design details and Methodology	Understanding the project - 5 Construction drawing - 15 Design & Methodology - 5	25
3	Disinfection unit details for 4 technologies	Each technology - 5	20
4	Automation	Automation - 15	15
Operation & Maintenance			
1.	Monitoring and Operation & Maintenance Procedure	Monitoring - 5 O & M Procedure - 10	15
2.	Specific compliance to the research experimentation	Variation in Rotation speed - 4 Aeration systems - 4 Change in secondary and filtration medias - 4 Change in Settler velocity - 4 Change in flow - 4	20
Total Marks			100

The bidder shall provide above information as described in the technical schedule for technical evaluation of the bid.

The bidder shall respond to all the evaluation points stated above and shall score minimum 70 marks in technical evaluation, failing to which the bid will be rejected.

2.4.7 The eligible bidders qualifying the criteria mentioned at Para 1.3 of NOTICE INVITING TENDER can have the option to submit the Financial Bid within the date & time specified.

2.4.8 On the date & time specified for opening of Financial Bid, the Revised Financial Bids (if submitted by qualified bidder) else the Original Bid in case no Revised Financial Bid has been submitted (of the qualified bidder) will be opened on specified date. The date & time to open the price bid shall be intimated to the bidders and in such a case, one representative of the bidder shall be allowed to attend. NITIE decision in this regard shall be final & binding.

2.4.9 EVALUATION OF Financial Bids: The Financial Bid should contain the complete bid document with duly filled in Schedule of Financial Quote after taking into account para 2.2.9 by the bidder. The Financial bid shall be inclusive of all expenditures incurred / likely to be incurred by the bidder on all activities required for commencement / completion / occupation of the building as per the stated scope in this document.

2.4.10 SELECTION ON THE BASIS OF QCBS (QUALITY cum COST BASED SELECTION) MODE

Financial Score(SS_{ff}): Lowest financial bid (FF_{mm}) shall be given a financial score of 100 points. The financial score (SS_{ff}) of the other financial bids (FF_{oo}) shall be computed as follows:

$$SS_{ff} = 100 \times \frac{FF_{mm}}{FF_{oo}}$$

Technical Score(SS_{tt}): Highest marks in the technical proposal (TT_{mm}) shall be given a technical score of 100 points. The technical score (SS_{tt}) of the other bidder (TT_o) shall be computed as follows:

$$SS_{tt} = 100 \times \frac{TT_o}{TT_{mm}}$$

Final Score (S): Proposals shall finally be ranked according to their combined technical(SS_{tt}) and Financial (SS_{ff}) scores using the weightage (T= the weightage given to the technical proposal at 70 %; F=the weightage given to the financial proposal at 30 %;) indicated below:

$$SS = SS_{ff} \times FF + SS_{tt} \times TT$$

$$SS = SS_{ff} \times 0.30 + SS_{tt} \times 0.70$$

The bidder with highest Final Score shall be considered successful to be offered the work.

2.4.11 The successful bidder shall be issued Letter of Acceptance (LOA) of the bid, and be required to furnish a Performance Guarantee (refer 3.1), Program Schedule with specific milestones (Table 3.3.2) to be achieved as to complete the work within the stipulated time limit within 10 days from the issue of the Letter of Acceptance (LOA), failing which offer would stand cancelled and the Earnest Money Deposit shall be forfeited.

2.4.12 Letter of Award (Work Order) shall be issued to the successful bidder after receipt of the Performance Guarantee.

2.4.13 Agreement (Contract) consisting of complete tender document including conditions, bill of quantities, technical proposal and specialized services, drawings, if any, and acceptance thereof together with any correspondence leading thereto, shall be drawn and signed with the awardee within 10 days of the Letter of Award.

2.4.14 Date of start of work shall be reckoned from the 7th day of the issue of the Work Order.

3. GENERAL CONDITIONS OF CONTRACT

3.1 PERFORMANCE GUARANTEE

- 3.1.1 The contractor shall submit an irrevocable Performance Guarantee of 5% (Five percent) of the tendered amount in addition to other deposits mentioned elsewhere in the contract for his/her proper performance of the contract agreement, (not withstanding and/or without prejudice to any other provisions in the contract) within period as specified below:
- The time allowed for submission of performance guarantee without penalty shall be 15 days of receiving of "Letter of Acceptance". This period can be further extended as written request of the successful bidder by the Principal Investigator for a maximum period of 15 days beyond the initial period of 15 days (without penalty period) with a late fee of @1.00% per day of Performance Guarantee Amount. If the successful bidder still fails to submit the performance guarantee, then the bid shall be rejected and treated as cancelled and the entire EMD shall be forfeited.
 - This guarantee shall be in the form of Deposit at Call receipt of any scheduled bank/Banker's Cheque of any scheduled bank/Demand Draft of any scheduled bank/Pay Order of any scheduled bank (in case guarantee amount is less than Rs. 1,00,000/-) or Fixed Deposit Receipts or Guarantee Bonds of any Scheduled Bank in accordance with the Format (ANNEXURE-1). In case a fixed deposit receipt of any Bank is furnished by the contractor to the Government as part of the performance guarantee and the Bank is unable to make payment against the said fixed deposit receipt, the loss caused thereby shall fall on the contractor and the contractor shall forthwith on demand furnish additional security to the Government to make good the deficit.
- 3.1.2 The Performance Guarantee shall be initially valid up to the stipulated date of completion plus 60 days beyond that. In case the time for completion of work gets enlarged, the contractor shall get the validity of Performance Guarantee extended to cover such enlarged time for completion of work. After recording of the completion certificate for the work by the competent authority, the performance guarantee shall be returned to the contractor, without any interest. However, in case of contracts involving maintenance of building and services/any other work after construction of same building and services/other work, then 50% of Performance Guarantee shall be retained as Security Deposit. The same shall be returned year wise proportionately.
- 3.1.3 The Principal Investigator shall not make a claim under the performance guarantee except for amounts to which the NITIE is entitled under the contract (not withstanding and/or without prejudice to any other provisions in the contract agreement) in the event of:
- a. Failure by the contractor to extend the validity of the Performance Guarantee as described herein above, in which event the Principal Investigator may claim the full amount of the Performance Guarantee.
 - b. Failure by the contractor to pay President of India any amount due, either as agreed by the contractor or determined under any of the Clauses/Conditions of the agreement, within 30 days of the service of notice to this effect by Principal Investigator.
- 3.1.4 In the event of the contract being determined or rescinded under provision of any of the Clause/Condition of the agreement, the performance guarantee shall stand forfeited in full and shall be absolutely at the disposal of the President of India.

3.2 SECURITY DEPOSIT

- 3.2.1 The bidder, whose tender is accepted, will also be required to furnish by way of Security Deposit for fulfillment of his contract, an amount equal to 5% of the tendered value of the work. Earnest Money deposited at the time of tenders will be treated as part of the Security Deposit.

- 3.2.2 The successful bidder shall permit NITIE at the time of making any payment to him for work done under the contract to deduct a sum at the rate of 5% of the gross amount of each running bill till the sum along with the sum already deposited as earnest money, will amount to security deposit of 5% of the tendered value of the work. Such deductions will be made and held by NITIE by way of Security Deposit unless he has / they have deposited the amount of Security at the rate mentioned above in cash or in the form of Fixed Deposit Receipts. In case a fixed deposit receipt of any bank is furnished by the contractor to NITIE as part of the security deposit and the bank is unable to make payment against the said fixed deposit receipt, the loss caused thereby shall fall on the contractor and the contractor shall forthwith on demand furnish additional security to NITIE to make good the deficit.
- 3.2.3 All compensation or the other sums of money payable by the contractor under the terms of this contract may be deducted from, or paid by the sale of a sufficient part of his security deposit or from the interest arising there from, or from any sums which may be due to or may become due to the contractor by NITIE or any account whatsoever and in the event of his Security Deposit being reduced by reason of any such deductions or sale as aforesaid, the contractor shall within 10 days make good in cash or fixed deposit receipt tendered by the State Bank of India or by scheduled banks (if deposited for more than 12 months) endorsed in favour of the Registrar, NITIE, any sum or sums which may have been deducted from, or raised by sale of his security deposit or any part thereof.
- 3.2.4 Security Deposit as deducted above can be released against Bank Guarantee issued by a Scheduled Bank on its accumulation to a minimum of Rs. 5 Lakhs subject to the condition that amount of such Bank Guarantee, except last one, shall not be less than Rs. 5 Lakhs. Bank Guarantee should be submitted which will be valid up to the expiry of defect liability period.

3.3 COMPENSATION FOR DELAY

- 3.3.1 If the contractor fails to maintain the required progress in terms of contract or to complete the work and clear the site on or before the stipulated or extended date of completion, he shall, without prejudice to any other right or remedy available under the Law to the NITIE on account of such breach, pay as agreed compensation the amount calculated at 10% per month of delay to be computed on per day basis on the amount of tendered value of the work for every completed day / month (as applicable) that the progress remains below that specified or that the work remains incomplete. Provided always that the total amount of compensation for delay to be paid under this condition shall not exceed 10% of the agreed value of work or of the agreed value of the item or group of items of work for which a separate period of completion is given, over and above the Performance Guarantee and Security Deposit.
- 3.3.2 In case, the contractor does not achieve a particular milestone mentioned as given below (Table 3.3.2) or the re-scheduled milestone(s), payment @0.25% of Original Contract Value per week shall be withheld against that milestone, to be adjusted against the compensation levied at the final grant of Extension of Time. Withholding of this amount on failure to achieve a milestone, shall be automatic without any notice to the contractor. However, if the contractor makes up the progress on the subsequent milestone(s), the withheld amount shall be released. In case the contractor fails to make up for the delay in subsequent milestone(s), amount mentioned against each milestone missed subsequently also shall be withheld. No interest, whatsoever, shall be payable on such withheld amount. MILESTONE (Table 3.3.2)

S. N.	Milestone	Period
1	Approval of Design & Detail Drawings for STP including Foundation, Flooring, Electrical & Mechanical Equipment	D + 7 days
2	Procurement and inspection of material/ equipment	D + 20 days
3	Fabrication/ manufacturing and inspection of the plant components	D + 45 days

4	Transportation and delivery of the plant at site	D + 52 days
5	Erection, Testing & Commissioning of the plant	D + 60 days
6	Operation and Maintenance of the plant	2 Years from the date of commissioning

Note: "D" is the date for award of work or handover of site whichever is later

3.4 DETERMINATION OF CONTRACT

3.4.1 Subject to other provisions contained in this clause, the Principal Investigator may, without prejudice to his any other right or remedy against the contractor in respect of any delay, inferior workmanship, any claim for damages and /or any other provisions of this contract or otherwise, and whether the date for completion has or has not elapsed, by notice in writing absolutely determine the contract in any of the following cases:

- i. If the contractor having been given by the Principal Investigator a notice in writing to rectify, reconstruct or replace any defective work or that the work is being performed in an inefficient or otherwise improper or unworkman like manner shall omit to comply with the requirements of such notice for a period of 7 days thereafter.
- ii. if the contractor has, without reasonable cause, suspended the progress of the work or has failed to proceed with the work with due diligence so that in the opinion of the Principal Investigator (which shall be final and binding) he will be unable to secure completion of the work by the date for completion and continue to do so after a notice in writing of 7 days from the Principal Investigator.
- iii. If the contractor fails to complete the work within the stipulated date or items of work with individual date of completion, if any stipulated, on or before such date(s) of completion and does not complete them within the period specified in a notice given in writing in that behalf by the Principal Investigator.
- iv. If the contractor persistently neglects to carry out his obligations under the contract and / or commits default in complying with any of the terms and conditions of the contract and does not remedy it or take effective steps to remedy it within 7 days after a notice in writing is given to him in that behalf by the Principal Investigator
- iv. If the contractor offers or gives or agrees to give to any person in NITIE or to any other person on his behalf any gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of this or any other contract for NITIE. If the contractor obtains a contract elsewhere as a result of wrong tendering or other non-bonafide methods of competitive tendering.
- v. If the contractor being an individual, or if a firm, any partner thereof shall at any time be adjudged insolvent or have a receiving order or order for administration of his estate made against him or shall take any proceedings for liquidation or composition (other than a voluntary liquidation for the purpose of amalgamation or reconstruction) under any Insolvency Act for the time being in force or make any conveyance or assignment of his effects or composition or arrangement for the benefit of his creditors or purport so to do, or if any application be made under any Insolvency Act for the time being in force for the sequestration of his estate or if a trust deed be executed by him for benefit of his creditors.
- vi. If the contractor being a company shall pass a resolution or the court shall make an order that the company shall be wound up or if a receiver or a manager on behalf of a creditor shall be appointed or if circumstances shall arise which entitle the court or the creditor to appoint a receiver or a manager or which entitle the court to make a winding up order.
- vii. if the contractor assigns, transfers, sublets (engagement of labour on a piece-work basis or of labour with materials not to be incorporated in the work, shall not be deemed to be subletting) or

otherwise parts with or attempts to assign, transfer, sublet or otherwise parts with the entire works or any portion thereof without the prior written approval of the Principal Investigator.

- viii. If the work is not started by the contractor within 1/8th of the stipulated time
- ix. When the contractor has made himself liable for action under any of the cases aforesaid, the Principal Investigator on behalf of the Director, NITIE shall have powers:
- a. To determine the contract as aforesaid (of which termination notice in writing to the contractor under the hand of the Principal Investigator shall be conclusive evidence). Upon such determination, the Earnest Money Deposit, Security Deposit already recovered and Performance Guarantee under the contract, shall be liable to be forfeited, and shall be absolutely at the disposal of NITIE.
 - b. After giving notice to the contractor to measure up the work of the contractor and to take such whole, or the balance or part thereof, as shall be unexecuted out of his hands and to give it to another contractor to complete the work. The contractor, whose contract is determined as above, shall not be allowed to participate in the tendering process for the balance work.
- 3.4.2 In the event of above courses being adopted by the Principal Investigator, the contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any engagements or made any advances on account or with a view to the execution of the work or the performance of the contract. And in case action is taken under any of the provisions aforesaid, the contractor shall not be entitled to recover or be paid any sum for any work thereof or actually performed under this contract unless and until the Principal Investigator has certified in writing the performance of such work and the value payable in respect thereof and he shall only be entitled to be paid the value so certified.
- 3.4.3 In case, the work cannot be started due to reasons not within the control of the contractor within 1/8th of the stipulated time for completion of work or one month whichever is higher, either party may close the contract. In case contractor wants to close the contract, he shall give notice to the department stating the failure on the part of department. In such eventuality, the Performance Guarantee of the contractor shall be refunded within 30 days from the date of notice from contractor. If Performance Guarantee is not released within prescribed time limit, then a simple interest 0.25% per month shall be payable on Performance Guarantee amount to the contractor from the date of expiry of prescribed time limit. A compensation for such eventuality, on account of damages etc. shall be payable @ 0.25% of tendered amount subject to maximum limit of Rs. 5 lacs.
- 3.4.4 Contractor is liable to pay compensation even if contract is not determined. In any case in which any of the powers conferred upon the Principal Investigator under the contract, shall have become exercisable and the same are not exercised, the non-exercise thereof shall not constitute a waiver of any of the conditions hereof and such powers shall notwithstanding be exercisable in the event of any future case of default by the contractor and the liability of the contractor for compensation shall remain unaffected. In the event of the Principal Investigator putting in force all or any of the powers vested in him under the preceding clause he may, if he so desires after giving a notice in writing to the contractor, take possession of (or at the sole discretion of the Principal Investigator which shall be final and binding on the contractor), use as on hire (the amount of the hire money being also in the final determination of the Principal Investigator) all or any tools, plant, materials and stores, in or upon the works, or the site thereof, belonging to the contractor, or procured by the contractor and intended to be used for the execution of the work / or any part thereof, paying or allowing for the same in account at the contract rates, or, in the case of these not being applicable, at current market rates to be certified by the Principal Investigator, whose certificate thereof shall be final and binding on the contractor, his clerk of the works, foreman or other authorized agent to remove such tools, plant, materials, or stores from the premises (within a time to be specified in such notice); in the event of the contractor failing to comply with any such requisition, the Principal Investigator may remove them at the contractor's expense or sell them by auction or private sale on account of the contractor and at his risk in all respects and the certificate of the Principal Investigator as to the

expenses of any such removal and the amount of the proceeds and expenses of any such sale shall be final and conclusive against the contractor.

3.5 TIME EXTENSION FOR DELAY

- 3.5.1 The time allowed for execution of the works as stipulated in the contract or the extended time in accordance with these conditions shall be the essence of the Contract. The execution of the works shall commence from such time period as mentioned in contract. If the Contractor commits default in commencing the execution of the work as aforesaid, NITIE shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the earnest money & performance guarantee absolutely.
- 3.5.2 As soon as possible after the Contract is signed, the Contractor shall submit a Time and Progress Chart for each mile stone and get it accepted by the Department. The Chart shall be prepared in direct relation to the time stated in the Contract documents for completion of items of the works. It shall indicate the forecast of the dates of commencement and completion of various trades of sections of the work and may be amended as necessary by agreement between the Principal Investigator and the Contractor within the limitations of time imposed in the Contract documents, and further to ensure good progress during the execution of the work, the contractor shall in all cases in which the time allowed for any work, exceeds one month (save for special jobs for which a separate program has been agreed upon) complete the work as per the mile stones given.
- 3.5.3 If the work(s) be delayed by:
- i. Force majeure, or
 - ii. Abnormally bad weather, or
 - iii. Serious loss or damage by fire, or
 - iv. Civil commotion, local commotion of workmen, strike or lockout, affecting any of the trades employed on the work, or
 - v. Delay on the part of other contractors or tradesmen engaged by Principal Investigator in executing work not forming part of the Contract, or
 - vi. Non-availability of stores, which are the responsibility of NITIE to supply or
 - vii. Non-availability or break down of tools and plant to be supplied or supplied by NITIE or
 - viii. Any other cause which, in the absolute discretion of the Principal Investigator is beyond the Contractor's control, then upon the happening of any such event causing delay, the Contractor shall immediately give notice thereof in writing to the Principal Investigator but shall nevertheless use constantly his best endeavors to prevent or make good the delay and shall do all that may be reasonably required to the satisfaction of the Principal Investigator to proceed with the works.
- 3.5.4 Request for rescheduling of Mile stones and extension of time, to be eligible for consideration, shall be made by the Contractor in writing within 14 days of the happening of the event causing delay on the prescribed form. The Contractor may also, if practicable, indicate in such a request the period for which extension is desired. In any such case the Principal Investigator may give a fair and reasonable extension of time and reschedule the mile stones for completion of work. Such extension shall be communicated to the Contractor by the Principal Investigator in writing, within 1 months of the date of receipt of such request. Non application by the contractor for extension of time shall not be a bar for giving a fair and reasonable extension by the Principal Investigator and this shall be binding on the contractor.

3.6 MEASUREMENTS OF WORK DONE

3.6.1 Payment shall be released to the successful bidder as per the following schedule:

S.N.	Major Work Activities	Payment (in % of Quoted Price of the Item)
1.	After Procurement of material at site	20%
2.	After fabrication, Inspection and receipt of the plant at site	50%
3.	After Installation, testing / commissioning of total plant & successful operation of plant.	30%
Total		100%
Operation & Maintenance		
1.	On Quarterly basis	100%

3.6.2 Principal Investigator shall, except as otherwise provided, ascertain and determine by measurement, the value in accordance with the contract of work done. All measurement of all items having financial value shall be entered in Measurement Book and/or level field book so that a complete record is obtained of all works performed under the contract. All measurements and levels shall be taken jointly by the Principal Investigator or his authorized representative and by the contractor or his authorized representative from time to time during the progress of the work and such measurements shall be signed and dated by the Principal Investigator and the contractor or their representatives in token of their acceptance. If the contractor objects to any of the measurements recorded, a note shall be made to that effect with reason and signed by both the parties. If for any reason the contractor or his authorized representative is not available and the work of recording measurements is suspended by the Principal Investigator or his representative, the Principal Investigator and the Department shall not entertain any claim from contractor for any loss or damages on this account. If the contractor or his authorized representative does not remain present at the time of such measurements after the contractor or his authorized representative has been given a notice in writing three (3) days in advance or fails to countersign or to record objection within a week from the date of the measurement, then such measurements recorded in his absence by the Principal Investigator or his representative shall be deemed to be accepted by the Contractor.

3.6.3 The contractor shall, without extra charge, provide all assistance with every appliance, labour and other things necessary for measurements and recording levels. Except where any general or detailed description of the work expressly shows to the contrary, measurements shall be taken in accordance with the procedure set forth in the specifications notwithstanding any provision in the relevant Standard Method of measurement or any general or local custom. In the case of items which are not covered by specifications, measurements shall be taken in accordance with the relevant standard method of measurement issued by the Bureau of Indian Standards and if for any item no such standard is available, then a mutually agreed method shall be followed.

3.6.4 The contractor shall give, not less than 7 day notice to the Principal Investigator or his authorized representative in-charge of the work, before covering up or otherwise placing beyond the reach of measurement any work in order that the same may be measured and correct dimensions thereof be taken before the same is covered up or placed beyond the reach of measurement and shall not cover up and place beyond reach of measurement any work without consent in writing of the Principal Investigator or his authorized representative in-charge of the work who shall within the aforesaid period of seven days inspect the work, and if any work shall be covered up or placed beyond the reach of measurements without such notice having been given or the Principal Investigator's consent being obtained in writing, the same shall be uncovered at the Contractor's expense, or in default thereof no payment or allowance shall be made for such work or the materials with which the same was executed.

- 3.6.5 Principal Investigator or his authorized representative may cause either themselves or through another officer of the department to check the measurements recorded jointly or otherwise as aforesaid and all provisions stipulated herein above shall be applicable to such checking of measurements or levels. It is also a term of this contract that recording of measurements of any item of work in the measurement book and/or its payment in the interim, on account or final bill shall not be considered as conclusive evidence as to the sufficiency of any work or material to which it relates nor shall it relieve the contractor from liabilities from any over measurement or defects noticed till completion of the defect liability period.

3.7 COMPLETION CERTIFICATE, CLEANED SITE AND COMPLETION PLANS

- 3.7.1 Within ten days of the completion of the work, the contractor shall give notice of such completion to the Principal Investigator and within fifteen days of the receipt of such notice, the Principal Investigator shall inspect the work, and if there is no defect in the work, shall furnish the contractor with a certificate of completion, otherwise a provisional certificate of physical completion indicating defects (a) to be rectified by the contractor and / or (b) for which payment will be made at reduced rates, shall be issued. But no final certificate of completion shall be issued, nor shall the work be considered to be complete until the contractor shall have removed from the premises on which the work shall be executed, all scaffolding, surplus materials, debris, rubbish, unserviceable material and all huts and sanitary arrangements, required for his/their work people on the site in connection with the execution of the works as shall have been erected or constructed by the contractor(s) and cleaned off the dirt from all wood work, doors, windows, walls, floors or other parts the building, in, upon, or about which the work is to be executed or of which he may have had possession for the purpose of the execution thereof, and not until the work shall have been measured by the Principal Investigator.
- 3.7.2 The contractor shall submit completion plans required as per Specifications within 30 days of the completion of the work.
- 3.7.3 In case, the contractor fails to comply as aforesaid, the department will get it done through other agency at his cost and actual expenses incurred plus Rs. 50,000/-for the same shall be recovered from the contractor and the contractor shall have no claim in respect of such cost thereof.

3.8 PAYMENT OF FINAL BILL

The final bill shall be submitted by the contractor in the same manner as specified in interim bills within three months of physical completion of the work or within one month of the date of the final certificate of completion furnished by the Principal Investigator whichever is earlier. No further claims shall be made by the contractor after submission of the final bill and these shall be deemed to have been waived and extinguished. Payments of those items of the bill in respect of which there is no dispute and of items in dispute, for quantities and rates as approved by Principal Investigator, will, as far as possible be made within 3 (three) months from the date of receipt of the bill by the Principal Investigator or his authorised representative, complete with account of materials issued by the Department and dismantled materials.

3.9 MATERIALS TO BE PROVIDED BY THE CONTRACTOR

- 3.9.1 The contractor shall, at his own expense, provide all materials, required for the works other than those specified otherwise. The contractor shall, at his own expense and without delay, supply to the Principal Investigator samples of materials to be used on the work and shall get these approved in advance. All such materials to be provided by the Contractor shall be in conformity with the specifications laid down or referred to in the contract. The contractor shall, if requested by the Principal Investigator furnish proof, to the satisfaction of the Principal Investigator that the materials so comply. The Principal Investigator shall within thirty days of supply of samples or within such further period as he may require intimate to the Contractor in writing whether samples are approved by him or not. If samples are not approved, the Contractor shall forthwith arrange to

supply to the Principal Investigator for his approval, fresh samples complying with the specifications laid down in the contract. When materials are required to be tested in accordance with specifications, approval of the Principal Investigator shall be issued after the test results are received.

- 3.9.2 The Contractor shall at his risk and cost submit the samples of materials to be tested or analysed and shall not make use of or incorporate in the work any materials represented by the samples until the required tests or analysis have been made and materials finally accepted by the Principal Investigator. The Contractor shall not be eligible for any claim or compensation either arising out of any delay in the work or due to any corrective measures required to be taken on account of and as a result of testing of materials.
- 3.9.3 The contractor shall, at his risk and cost, make all arrangements and shall provide all facilities as the Principal Investigator may require for collecting, and preparing the required number of samples for such tests at such time and to such place or places as may be directed by the Principal Investigator and bear all charges and cost of testing unless specifically provided for otherwise elsewhere in the contract or specifications. The Principal Investigator or his authorized representative shall at all times have access to the works and to all workshops and places where work is being prepared or from where materials, manufactured articles or machinery are being obtained for the works and the contractor shall afford every facility and every assistance in obtaining the right to such access.
- 3.9.4 The Principal Investigator shall have full powers to require the removal from the premises of all materials which in his opinion are not in accordance with the specifications and in case of default, the Principal Investigator shall be at liberty to employ at the expense of the contractor, other persons to remove the same without being answerable or accountable for any loss or damage that may happen or arise to such materials. The Principal Investigator shall also have full powers to require other proper materials to be substituted thereof and in case of default, the Principal Investigator may cause the same to be supplied and all costs which may attend such removal and substitution shall be borne by the Contractor.
- 3.9.5 The contractor shall at his own expense, provide a material testing lab at the site for conducting routine field tests if applicable. The lab shall be equipped at least with the testing equipment as specified in the contract.
- 3.9.6 No Price Escalation shall be considered on the tendered rates for stipulated or extended period of contract.
- 3.9.7 Secured advance on non-perishable materials: The contractor, on signing an indenture in the form to be specified by the Principal Investigator, shall be entitled to be paid during the progress of the execution of the work up to 75% of the assessed value of any materials which are in the opinion of the Principal Investigator nonperishable, non-fragile and non-combustible and are in accordance with the contract and which have been brought on the site in connection therewith and are adequately stored and/or protected against damage by weather or other causes but which have not at the time of advance been incorporated in the works. When materials on account of which an advance has been made under this sub-clause are incorporated in the work, the amount of such advance shall be recovered / deducted from the next payment made under any of the clause or clauses of this contract. Such secured advance shall also be payable on other items of perishable nature, fragile and combustible with the approval of Principal Investigator provided the contractor provides a comprehensive insurance cover for the full cost of such materials. The decision of the Principal Investigator shall be final and binding on the contractor in this matter. No secured advance, shall however, be paid on perishable or high-risk materials such as ordinary glass, sand, petrol, diesel etc.
- 3.9.8 Excavated / dismantled material will be NITIE's property. The contractor shall treat all materials obtained during dismantling of a structure, excavation of the site for a work etc. as NITIE's property and such materials shall be disposed of to the best advantage of NITIE according to the instructions in writing issued by the Principal Investigator.

3.10. INFORMATION

3.10.1 The contractor shall execute the whole and every part of the work in the most substantial and workman like manner both as regards materials and otherwise in every respect in strict accordance with the specifications. The contractor shall also conform exactly, fully and faithfully to the designs, drawings and instructions in writing in respect of the work signed by the Principal Investigator. The several documents forming the Contact are to be taken as mutually explanatory of one another, detailed drawings being followed in preference to small scale drawing and figured dimensions in preference to scale. The following order of preference shall be observed:

- a) Description of Bill of Quantities.
- b) Particular Specifications and Special Conditions or Clauses, if any.
- c) Drawings.
- d) C.P.W.D. Specifications.
- e) Indian Standard Specifications of B.I.S.
- f) Manufacturer's specifications

3.10.2 The contractor shall comply with the provisions of the contract and with the care and diligence execute and maintain the works and provide all labour and materials, tools and plants including for measurements and supervision of all works, structural plans and other things of temporary or permanent nature required for such execution and maintenance in so far as the necessity for providing these, is specified or is reasonably inferred from the contract. The Contractor shall take full responsibility for adequacy, suitability and safety of all the works and methods of construction. The contractor shall comply with the provisions of the contract and with the care and diligence execute and maintain the works and provide all labour and materials, tools and plants including for measurements and supervision of all works, structural plans and other things of temporary or permanent nature required for such execution and maintenance in so far as the necessity for providing these, is specified or is reasonably inferred from the contract.

3.10.3 The Contractor shall take full responsibility for adequacy, suitability and safety of all the works and methods of construction.

3.10.4 Contractor shall use the items of approved makes as per ANNEXURE-II.

3.11. DEVIATIONS / VARIATIONS, EXTENT AND PRICING

3.11.1 The Principal Investigator shall have power (i) to make alteration in, omissions from, additions to, or substitutions for the original specifications, drawings, designs and instructions that may appear to him to be necessary or advisable during the progress of the work, and (ii) to omit a part of the works in case of non-availability of a portion of the site or for any other reasons and the contractor shall be bound to carry out the works in accordance with any instructions given to him in writing signed by the Principal Investigator and such alterations, omissions, additions or substitutions shall form part of the contract as if originally provided therein and any altered, additional or substituted work which the contractor may be directed to do in the manner specified above as part of the works, shall be carried out by the contractor on the same conditions in all respects including price on which he agreed to do the main work except as hereafter provided.

3.11.2 Deviation and Time Extension: The time for completion of the works shall, in the event of any deviations resulting in additional cost over the tendered value sum being ordered, will be extended, if requested by the contractor, as follows:

- i. In the proportion which the additional cost of the altered, additional or substituted work, bears to the original tendered value, plus
- ii. 25% of the time calculated in (i) above or such further additional time as may be considered reasonable by the Principal Investigator.

3.11.3 Extra Items and Pricing

- a. In the case of Extra Item(s) being the schedule items, these shall be paid as per the schedule rate plus cost index.
- b. In the case of substituted items (items that are taken up with partial substitution or in lieu of items of work in the contract), the rate for the agreement item (to be substituted) and substituted item shall also be determined in the manner as mentioned in the following para:
 - i. If the market rate for the substituted item so determined is more than the market rate of the agreement item (to be substituted), the rate payable to the contractor for the substituted item shall be the rate for the agreement item (to be substituted) so increased to the extent of the difference between the market rates of substituted item and the agreement item (to be substituted).
 - ii. If the market rate for the substituted item so determined is less than the market rate of the agreement item (to be substituted), the rate payable to the contractor for the substituted item shall be the rate for the agreement item (to be substituted) so decreased to the extent of the difference between the market rates of substituted item and the agreement item (to be substituted).
- c. In the case of extra item(s)(items that are completely new, not found in either Schedule of Rates of CPWD or in tender's schedule of quantities, and are in addition to the items contained in the contract), the contractor may within fifteen days of receipt of order or occurrence of the item(s), claim rates, supported by proper analysis, for the work and the Principal Investigator shall within one month of the receipt of the claims supported by analysis, after giving consideration to the analysis of the rates submitted by the contractor, determine the rates on the basis of the market rates and the contractor shall be paid in accordance with the rates so determined.

3.11.4 Deviated Quantities and Pricing

- a. In the case of contract items, substituted items, contract cum substituted items, which exceed the limits of 30% for new construction works of plinth and above, 100% for foundation work and 50% for maintenance repairs work, the contractor may within 15 days of receipt of order or occurrence of the excess, claim revision of the rates, supported by proper analysis, for the work in excess of the above mentioned limits, provided that if the rates so claimed are in excess of the rates specified in the schedule of quantities, the Principal Investigator shall within one month of receipt of the claims supported by analysis, after giving consideration to the analysis of the rates submitted by the contractor, determine the rates on the basis of the market rates and the contractor shall be paid in accordance with the rates so determined.
- b. The provisions of the preceding paragraph shall also apply to the decrease in the rates of items for the work in excess of the aforesaid limits, and the Principal Investigator shall after giving notice to the contractor within one month of occurrence of the excess and after taking into consideration any reply received from him within 15 days of the receipt of the notice, revise the rates for the work in question within one month of the expiry of the said period of 15 days having regard to the market rates.
- c. The contractor shall send to the Principal Investigator once every month an upto date account giving complete details of all claims for additional payments to which the contractor may consider himself entitled and of all additional work ordered by the Principal Investigator, which he has executed during the preceding quarter, failing which the contractor shall be deemed to have waived his right and the rates determined by the Principal Investigator shall be deemed accepted by the contractor.
- d. For the purpose of operation of this clause the following works shall be treated as works relating to foundation.
 - i. For buildings, compound walls: Plinth level or 1.2 metres (4 feet) above ground level, whichever is lower, excluding items of flooring and D.P.C. but including base concrete below the floors.

- ii. For abutments, piers, retaining walls of culverts and bridges, walls of water reservoirs: The bed of floor level.
 - iii. For retaining walls where floor level is not determinate: 1.2 metres above the average ground level or bed level.
 - iv. For roads: All items of excavations and filling including treatment of sub-base and soling work.
 - v. For water supply lines, sewer lines, underground SWD & similar works: All items of work below ground level except items of piping work. vi. For open storm water drains: All items of work except lining of drains.
- e. Any operation incidental to or necessarily has to be in contemplation of tenderer while filing, tender, or necessary for proper execution of the item included in the Schedule of quantities or in the schedule of rates mentioned above, whether or not, specifically indicated in the description of the item and the relevant specifications, shall be deemed to be included in the rates quoted by the tenderer or the rate given in the said schedule of rates, as the case may be. Nothing extra shall be admissible for such operations.

3.12 FORECLOSURE OF CONTRACT DUE TO ABANDONMENT OR REDUCTION IN SCOPE OF WORK

- 3.12.1 If at any time after acceptance of the tender, NITIE shall decide to abandon or reduce the scope of the works for any reason whatsoever and hence not require the whole or any part of the works to be carried out, the Principal Investigator shall give notice in writing to that effect to the contractor and the contractor shall act accordingly in the matter. The contractor shall have no claim to any payment of compensation or otherwise whatsoever, on account of any profit or advantage which he might have derived from the execution of the works in full but which he did not derive in consequence of the foreclosure of the whole or part of the works.
- 3.12.2 The contractor shall be paid at contract rates full amount for works executed at site and in addition, a reasonable amount as certified by the Principal Investigator for the items hereunder mentioned which could not be utilised on the work to the full extent in view of the foreclosure.
- i. Any expenditure incurred on preliminary site work, e.g temporary access roads, temporary labour huts, staff quarters and site office, storage accommodation and water storage tanks.
 - ii. NITIE shall have the option to take over contractor's materials or any part thereof either brought to site or of which the contractor is legally bound to accept delivery from suppliers (for incorporation in or incidental to the work) provided however, NITIE shall be bound to take over the materials or such portions thereof as the contractor does not desire to retain. For materials taken over or to be taken over by NITIE, cost of such materials as detailed by Principal Investigator shall be paid. The cost shall, however, take into account purchase price, cost of transportation and deterioration or damage which may have been caused to materials whilst in the custody of the contractor.
 - iii. If any materials supplied by NITIE are rendered surplus, the same except normal wastage shall be returned by the contractor to NITIE at rates not exceeding those at which these were originally issued less allowance for any deterioration or damage which may have been caused whilst the materials were in the custody of the contractor. In addition, cost of transporting such materials from site to NITIE stores, if so required by NITIE, shall be paid.
 - iv. Reasonable compensation for transfer of T & P from site to contractor's permanent stores or to his other works, whichever is less. If T & P are not transported to either of the said places, no cost of transportation shall be payable.
 - v. Reasonable compensation for repatriation of contractor's site staff and imported labour to the extent necessary.

- 3.12.3. The contractor shall, if required by the Principal Investigator furnish to him books of account, wage books, time sheets and other relevant documents and evidence as may be necessary to enable him to certify the reasonable amount payable under this condition.
- 3.12.4 The reasonable amount of items on (i), (iv) and (v) above shall not be in excess of 2% of the cost of the work remaining incomplete on the date of closure, i.e. total stipulated cost of the work as per accepted tender less the cost of work actually executed under the contract and less the cost of contractor's materials at site taken over by NITIE as per item (ii) above `Provided always that against any payments due to the contractor on this account or otherwise, the Principal Investigator shall be entitled to recover or be credited with any outstanding balances due from the contractor for advance paid in respect of any tool, plants and materials and any other sums which at the date of termination were recoverable by NITIE from the contractor under the terms of the contract.
- 3.12.5 A compensation for such eventuality, on account of damages etc. shall be payable @0.5% of cost of work remaining incomplete on date of closure i.e. total stipulated cost of the work less the cost of work actually executed under the contract shall be payable

3.13. CARRYING OUT PART WORK AT RISK & COST OF CONTRACTOR

3.13.1 If contractor:

- (i) At any time makes default during currency of work or does not execute any part of the work with due diligence and continues to do so even after a notice in writing of 7 days in this respect from the Principal Investigator; or
- (ii) Commits default in complying with any of the terms and conditions of the contract and does not remedy it or takes effective steps to remedy it within 7 days even after a notice in writing is given in that behalf by the Principal Investigator; or Fails to complete the work(s) or items of work with individual dates of completion, on or before the date(s) so determined, and does not complete them within the period specified in the notice given in writing in that behalf by the Principal Investigator.

3.13.2 The Principal Investigator without invoking action under clause 3 may, without prejudice to any other right or remedy against the contractor which have either accrued or accrue thereafter to Government, by a notice in writing to take the part work / part incomplete work of any item(s) out of his hands and shall have powers to:

- (a) Take possession of the site and any materials, constructional plant, implements, stores, etc., thereon; and/or
- (b) Carry out the part work / part incomplete work of any item(s) by any means at the risk and cost of the contractor.

3.13.3 The Principal Investigator shall determine the amount, if any, is recoverable from the contractor for completion of the part work/ part incomplete work of any item(s) taken out of his hands and execute at the risk and cost of the contractor, the liability of contractor on account of loss or damage suffered by NITIE because of action under this clause shall not exceed 10% of the tendered value of the work.

3.13.4 In determining the amount, credit shall be given to the contractor with the value of work done in all respect in the same manner and at the same rate as if it had been carried out by the original contractor under the terms of his contract, the value of contractor's materials taken over and incorporated in the work and use of plant and machinery belonging to the contractor. The certificate of the Principal Investigator as to the value of work done shall be final and conclusive against the contractor provided always that action under this clause shall only be taken after giving notice in writing to the contractor. Provided also that if the expenses incurred by the department are less than the amount payable to the contractor at his agreement rates, the difference shall not be payable to the contractor.

- 3.13.5 Any excess expenditure incurred or to be incurred by NITIE in completing the part work/ part incomplete work of any item(s) or the excess loss of damages suffered or may be suffered by Government as aforesaid after allowing such credit shall without prejudice to any other right or remedy available to Government in law or per as agreement be recovered for many money due to the contractor on any account, and if such money is insufficient, the contractor shall be called upon in writing and shall be liable to pay the same within 30 days.
- 3.13.6 If the contractor fails to pay the required sum within the aforesaid period of 30 days, the Principal Investigator shall have the right to sell any or all of the contractors' unused materials, constructional plant, implements, temporary building at site etc. and adjust the proceeds of sale thereof towards the dues recoverable from the contractor under the contract and if thereafter there remains any balance outstanding, it shall be recovered in accordance with the provisions of the contract.
- 3.13.7 In the event of above course being adopted by the Principal Investigator, the contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any engagements or made any advance on any account or with a view to the execution of the work or the performance of the contract.

3.14 SUSPENSION OF WORK

3.14.1 The contractor shall, on receipt of the order in writing of the Principal Investigator, (whose decision shall be final and binding on the contractor) suspend the progress of the works or any part thereof for such time and in such manner as the Principal Investigator may consider necessary so as not to cause any damage or injury to the work already done or endanger the safety thereof for any of the following reasons:

- a. on account of any default on the part of the contractor or;
- b. for proper execution of the works or part thereof for reasons other than the default of the contractor; or
- c. for safety of the works or part thereof.

The contractor shall, during such suspension, properly protect and secure the works to the extent necessary and carry out the instructions given in that behalf by the Principal Investigator.

3.14.2 If the suspension is ordered for reasons (b) and (c) in sub-para (i) above:

- a. the contractor shall be entitled to an extension of time equal to the period of every such suspension plus 25%, for completion of the item or group of items of work for which a separate period of completion is specified in the contract and of which the suspended work forms a part, and;
- b. If the total period of all such suspensions in respect of an item or group of items or work for which a separate period of completion is specified in the contract exceeds thirty days, the contractor shall, in addition, be entitled to such compensation as the Principal Investigator may consider reasonable in respect of salaries and/or wages paid by the contractor to his employees and labour at site, remaining idle during the period of suspension, adding thereto 2% to cover indirect expenses of the contractor provided the contractor submits his claim supported by details to the Principal Investigator within fifteen days of the expiry of the period of 30 days.

3.14.3 If the works or part thereof is suspended on the orders of the Principal Investigator for more than three months at a time, except when suspension is ordered for reason (a) in sub-para (i) above, the contractor may after receipt of such order serve a written notice on the Principal Investigator requiring permission within fifteen days from receipt by the Principal Investigator of the said notice, to proceed with the work or part thereof in regard to which progress has been suspended and if such permission is not granted within that time, the contractor, if he intends to treat the suspension, where it affects only a part of the works as an omission of such part by NITIE or where it affects whole of the works, as an abandonment of the works by NITIE, shall within ten days of expiry

of such period of 15 days give notice in writing of his intention to the Principal Investigator. In the event of the contractor treating the suspension as an abandonment of the contract by NITIE, he shall have no claim to payment of any compensation on account of any profit or advantage which he might have derived from the execution of the work in full but which he could not derive in consequence of the abandonment. He shall, however, be entitled to such compensation, as the Principal Investigator may consider reasonable, in respect of salaries and/or wages paid by him to his employees and labour at site, remaining idle in consequence adding to the total thereof 2% to cover indirect expenses of the contractor provided the contractor submits his claim supported by details to the Principal Investigator within 30 days of the expiry of the period of 3 months.

3.15 ACTION IN CASE OF WORK NOT DONE AS PER SPECIFICATIONS

- 3.15.1 All works under or in course of execution or executed in pursuance of the contract, shall at all times be open and accessible to the inspection and supervision of the Principal Investigator, his authorised subordinates in charge of the work and all the superior officers of the Department or any organization engaged by the Department for Quality Assurance and of the Chief Technical Examiner's Office, and the contractor shall, at all times, during the usual working hours and at all other times at which reasonable notice of the visit of such officers has been given to the contractor, either himself be present to receive orders and instructions or have a responsible agent duly accredited in writing, present for that purpose. Orders given to the Contractor's agent shall be considered to have the same force as if they had been given to the contractor himself.
- 3.15.2 If it shall appear to the Principal Investigator or his authorised subordinates in-charge of the work or his subordinate officers or the officers of the organization engaged by the Department for Quality Assurance or to the Chief Technical Examiner or his subordinate officers, that any work has been executed with unsound, imperfect, or unskillful workmanship, or with materials or articles provided by him for the execution of the work which are unsound or of a quality inferior to that contracted or otherwise not in accordance with the contract, the contractor shall, on demand in writing which shall be made within twelve months (six months in the case of work costing Rs. 10 Lakh and below except road work) of the completion of the work from the Principal Investigator specifying the work, materials or articles complained of notwithstanding that the same may have been passed, certified and paid for forthwith rectify, or remove and reconstruct the work so specified in whole or in part, as the case may require or as the case may be, remove the materials or articles so specified and provide other proper and suitable materials or articles at his own charge and cost. In the event of the failing to do so within a period specified by the Principal Investigator in his demand aforesaid, then the contractor shall be liable to pay compensation at the same rate as under para3.3of the contract (for non-completion of the work in time) for this default.
- 3.15.3 In such case the Principal Investigator may not accept the item of work at the rates applicable under the contract but may accept such items at reduced rates he may consider reasonable during the preparation of on account bills or final bill if the items is so acceptable without detriment to the safety and utility of the item and the structure, or he may reject the work outright without any payment and/or get it and other connected and incidental items rectified, or removed and re-executed at the risk and cost of the contractor. Decision of the Principal Investigator to be conveyed in writing in respect of the same will be final and binding on the contractor.

3.16. CONTRACTOR LIABLE FOR DAMAGES, DEFECTS DURING MAINTENANCE

If the contractor or his working people or servants shall break, deface, injure or destroy any part of building in which they may be working, or any building, road, road kerb, fence, enclosure, water pipe, cables, drains, electric or telephone post or wires, trees, grass or grassland, or cultivated ground contiguous to the premises on which the work or any part of it is being executed, or if any damage shall happen to the work while in progress, from any cause whatever or if any defect, shrinkage or other faults appear in the work within 12 months (6 months in the case of work costing Rs. 10,00,000/- and below except road work) after a certificate final or otherwise of its completion shall have been given by the Principal Investigator as aforesaid arising out of defective or improper

materials or workmanship, the contractor shall upon receipt of a notice in writing on that behalf make the same good at his own expense, or in default, the Principal Investigator cause the same to be made good by other workmen and deduct the expense from any sums that may be due, or at any time thereafter may become due to the contractor, or from his security deposit, or the proceed of sale thereof or of a sufficient portion thereof. The security deposit of the contractor shall not be refunded before the expiry of 24 months or completion of work whichever is earlier (6 months in the case of work costing Rs. 10,00,000/- and below except road work) after the issue of the certificate final or otherwise, of completion of work, or till the final bill has been prepared and passed whichever is later. Provided that in the case of road work, if in the opinion of the Principal Investigator, half of the security deposit is sufficient to meet all the liabilities of the contractor under this contract, half of the security deposit will be refundable after 6 months and the remaining half after 12 months of the issue of the said certificate of completion or till the final bill has been prepared and passed whichever is later. Performance Security shall be refunded to the contractor after completion of the work and recording the completion certificate.

3.17 CONTRACTOR TO SUPPLY TOOLS & PLANTS, WORKMEN ETC.

- 3.17.1 The contractor shall provide at his own cost all materials (except such special materials, if any, as may in accordance with the contract be supplied from the Principal Investigator's stores), machinery, tools & plants. in addition to this, appliances, implements, other plants, ladders, cordage, tackle, scaffoldings and temporary works required for the proper execution of the work, whether original, altered or substituted and whether included in the specification or other documents forming part of the contract or referred to in these conditions or not, or which may be necessary for the purpose of satisfying or complying with the requirements of the Principal Investigator as to any matter as to which under these conditions he is entitled to be satisfied, or which he is entitled to require together with carriage therefore to and from the work. The contractor shall also supply without charge the requisite number of persons with the means and materials, necessary for the purpose of setting out works, and counting, weighing and assisting in the measurement or examination at any time and from time to time of the work or materials. Failing his so doing, the same may be provided by the Principal Investigator at the expense of the contractor and the expenses may be deducted, from any money due to the contractor, under the contract and/or from his security deposit or the proceeds of sale thereof, or of a sufficient portion thereof.
- 3.17.2 Recovery of compensation paid to workmen: In every case in which by virtue of the provisions of section 12 sub-section (1) of the Workmen's Compensation Act. 1923, NITIE is obliged to pay compensation to a workman employed by the contractor, in execution of the works, NITIE will recover from the contractor the amount of the compensation so paid; and, without prejudice to the rights of NITIE under Section 12, sub-section (2) of the said Act, NITIE shall be at liberty to recover such amount or any part thereof by deducting it from the security deposit or from any sum due by NITIE to the contractor whether under this contract or otherwise. NITIE shall not be bound to contest any claim made against it under section 12, sub-section (1) of the said Act, except on the written request of the contractor and upon his giving to NITIE full security for all costs for which NITIE might become liable in consequence of contesting such claim.
- 3.17.3 Ensuring payment and amenities to workers if contractor fails: In every case in which by virtue of the provisions of the Contract Labour (Regulation and Abolition) Act, 1970 and of the contract labour (Regulation and Abolition) Central Rules, 1971, NITIE is obliged to pay any amounts of wages to a workman employed by the contractor in execution of the works, or to incur any expenditure in providing welfare and health amenities required to be provided under the above said Act and the Rules, under Clause 19 H or under the DAE Contractor's Labour Regulations, or under the rules framed by Government from time to time for the protection of health and sanitary arrangements for workers employed by Department of Atomic Energy contractors, NITIE will recover from the contractor the amount of wages so paid or the amount of expenditure so incurred; and without prejudice to the rights of NITIE under Section 20, sub-section (2) and Section 21, sub-section (4) of

the contract labour (Regulation and Abolition) Act, 1970, NITIE shall be at liberty to recover such amount or any part thereof by deducting it from the security deposit or from any sum due by NITIE to the contractor whether under this agreement or otherwise. NITIE shall not be bound to contest any claim made against it under Section 20, subsection (1) and section 21, sub-section (4) of the said Act, except on the written request of the contractor and upon his giving to NITIE full security for all costs for which NITIE might become liable in contesting such claim.

3.18 LABOUR LAWS TO BE COMPLIED BY THE CONTRACTOR

3.18.1 The contractor shall obtain a valid license under the Contract Labour (R & A) Act, 1970 and the Contract Labour (Regulation and Abolition) Central Rules, 1971, before the commencement of the work, and continue to have a valid license until the completion of the work. The contractor shall also abide by the provision of the Child Labour Prohibition & Regulation) Act-1998. The contractor shall also comply with the provisions of the building and other Construction Workers (Regulation of Employment & Conditions of Service) Act, 1996 and the building and other Construction Workers Welfare Cess Act, 1996. Any failure to fulfill these requirements shall attract the penal provisions of this contract arising out of the resultant non execution of the work.

3.18.2 No Labour below the age of fourteen years shall be employed on the work.

3.18.3 Minimum wages act to be compiled with The contractor shall comply with all the provisions of the Minimum Wages Act, 1948, Contract Labour (Regulation and Abolition) Act, 1970 and rules framed thereunder and other labour laws affecting contract labour that may be brought into force from time to time.

3.19 APPRENTICE ACT PROVISIONS TO BE COMPLIED WITH

The contractor shall comply with the provisions of the Apprentices Act, 1961 and the rules and orders issued thereunder from time to time. If he fails to do so, his failure will be a breach of the contract and the Principal Investigators may, in his discretion, cancel the contract. The contractor shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions of the said Act.

3.20 CONFIDENTIAL INFORMATION

The drawings, specifications, proto-type, samples and such other information furnished to the contractor relating to the supply / work, sub-systems / equipment etc. are to be treated as confidential which shall be held by the contractor in confidence and shall not be divulged to any third party without the prior written consent of the Department. The contractor, therefore, binds himself, his successors, heirs, executors, administrators, employees and the permitted assignees or such other persons or agents directly or indirectly concerned with the work / supply to the confidential nature of the drawings, specifications, proto-type samples etc. It is a further condition of the contract that the contractor shall not, without prior written permission from the Department, transmit, transfer, exchange, gift or communicate any such confidential information, and also the component, sub assembly, products, byproducts etc. pursuant to the fabrication under taken by the contractor, to any third party.

Note: Subject work being research project, all the drawings, designs, data generated during the research project and out of the contract is intellectual property and sole ownership of the NITIE. The contractor shall not use the same in future for any purpose, if used shall be prosecuted under the law.

3.21 SCAFFOLDING, MOBILE ELEVATED PLATFORM AND SAFETY

3.21.1 Every scaffold or mobile elevated platform and its supporting members, railings, Tee-boards, ropes should be designed to support given load, with a safety factor of at least four. No alterations should

be made that might impair the strength of such structures, no improvised, make-shift or substandard scaffold should be permitted even for the most temporary use. All work in connection with such structures, including construction, operation, maintenance, alteration and removal should be carefully done under the direction and supervision of persons with specialized experience in such works. A safe and convenient means of access should be provided to the platform or scaffold. Means of access may be a portable ladder, fixed ladder, ramp or it may be a stairway. The use of cross braces or frame work as means of access to the working surface shall not be permitted.

3.21.2 Contractor shall provide safe access to any part of the structure or building for Principal Investigator or his/ her representative or officials of the department for inspection of the works at any point of time.

3.21.3 All parts of the construction exposed to fall of a person more than 60cm height shall be kept safe and protected by way guarded railing or barrier.

3.21.4 All parts of the construction shall be kept well-lit and ventilated by natural or artificial means.

3.21.5 Every worker shall be made to work wearing safety helmet, florescent shirt, safety harness, and safety shoes.

3.21.6 Construction site shall be kept out of bounds for layman by steel barricades of minimum height 1.8m suitably designed for safety and stability against self-weight, incidental loads and imposed loads.

3.21.7 Contractor shall designate a safety in-charge for the work before start of the work.

3.21.8 Non-compliance to above shall invite a penal recovery of 0.5% of the tendered amount per month without prejudice to any other conditions in the contract.

3.22 WATER

3.22.1 Water if available may be supplied to the contractor by the MCGM subject to the following conditions:

- a) The contractor(s) shall make his/their own arrangement of water connection and laying of pipelines from existing main of source of supply.
- b) MCGM do not guarantee to maintain uninterrupted supply of water and it will be incumbent on the contractor(s) to make alternative arrangements for water at his/ their own cost in the event of any temporary break down in the Department water main so that the progress of his/their work is not held up for want of water. No claim of damage or refund of water charges will be entertained on account of such break down.

3.22.2 Where there is no piped water supply arrangement and the water is taken by the contractor from the wells or hand pump constructed by NITIE, no charge shall be recovered from the contractor on that account. The contractor shall, however, draw water at such hours of the day that it does not interfere with the normal use for which the hand pumps and wells are intended. He will also be responsible for all damage and abnormal repairs arising out of his use, the cost of which shall be recoverable from him. The Principal Investigator shall be the final authority to determine the cost recoverable from the contractor on this account and his decision shall be binding on the contractor.

3.23 ELECTRICITY

3.23.1 Electricity during construction & prior to commissioning shall not be provided by MCGM/NITIE.

3.23.2 The connection shall be given against specific work order. The contractor with multiple work orders shall take separate connection for each contract.

3.23.3 Principal Investigator, before forwarding any bill of the contractor for payment shall ensure that the latest electricity bills have duly been paid by the contractor and the receipt is enclosed with the bill claimed.

3.23.4 Electricity during operation phase shall be provided free of cost.

3.24 FORCE MAJEURE

If at any time, during the continuance of this contract, the performance in whole or in part by either party of any obligation under this contract is prevented or delayed by reason of any war, hostility, acts of public enemy, civil commotion, sabotage, serious loss or damage by fire, explosions, epidemics, strikes, lockouts or acts of God (hereinafter, referred to events') provided, notice of the happening of any such event is given by either party to the other within 10 days from the date of occurrence thereof, neither party shall by reason of such event, be entitled to terminate this contract nor shall either party have any claim for damages against the other in respect of such non-performance or delay in performance, and works under the contract shall be resumed as soon as practicable after such event has come to an end or ceased to exist, and the decision of NITIE Mumbai as to whether the works have been so resumed or not shall be final and conclusive, provided further that if the performance in whole or in part of any obligation under this contract is prevented or delayed by reason of any such event for a period exceeding 90 days, either party may at its option terminate the contract by giving notice to the other party.

3.25 ARBITRATION

3.25.1 In the case of dispute arising upon or in relation to or in connection with the contract between the parties, which has not been settled amicably, any party can refer the dispute for Arbitration under (Indian) Arbitration and Conciliation Act, 1996. Such disputes shall be referred to an Arbitral Tribunal consisting of 3 (three) arbitrators, one each to be appointed by NITIE and Successful Bidder, the third arbitrator shall be chosen by the two arbitrators so appointed by the parties and shall act as Presiding Arbitrator. In case of failure of the two arbitrators appointed by the parties to reach a consensus regarding the appointment of the third arbitrator within a period of 30 days from the date of appointment of the two arbitrators, the Presiding arbitrator shall be appointed by the Secretary of the Ministry / Department. The Arbitration and Conciliation Act, 1996 and any statutory modification or reenactment thereof, shall apply to these arbitration proceedings.

3.25.2 Arbitration proceedings shall be held in Mumbai and the language of the arbitration proceeding and that of all documents and communications between the parties shall be English.

The decision of the majority of arbitrators shall be final and binding upon both parties. The expenses of the arbitrators as determined by the arbitrators shall be shared equally by the parties. However, the expenses incurred by each party in connection with the preparation, presentation shall be borne by the party itself. All arbitration awards shall be in writing and shall state the reasons for the award.

4. SPECIFICATIONS

4.1 PROCESS DESIGN & CONSTRUCTION

4.1.1 Preamble

National Institute of Industrial Engineering (NITIE) in collaboration with MCGM has taken up Research Project Saraswati 2.0 under EU-DST Funding. The aim of SARASWATI 2.0 Project is to identify best available and affordable technologies for decentralized wastewater treatment with scope of resource/energy recovery and reuse in urban and rural areas. Further, it addresses the challenge of real time monitoring and automation. Thereby it will build on previous EU India projects, in particular on the Saraswati project that was implemented from 2012 to 2017. The SARASWATI project proposed to adopt the principle of BAT (best available technologies) in a more flexible way, adapting the definition of BAT to the local context, based on complementing the treatment efficiency with the costs of the treatment technology and affordability, and local context in the location of application.

The project was awarded for 4 years with 2.5 years remaining as of August 2021. Under this project it is proposed to install a Pilot Sewage Treatment Plant near the Municipal Sewage Source. The proposed plant is based on Rotating Media Biological Contactor (RMBC) having secondary and tertiary treatment. A post treatment train for safe water reuse will be implemented composed of a disinfection unit. Raw sewage and treated water samples will be analyzed on a frequent basis to determine the working efficiency of the pilot installed so as to develop efficient treatment process.

It is therefore proposed to construct pilot sewage treatment plant in the premises of sewage pumping station & study the performance of the plant as envisaged in the research project.

4.1.2 Scope of Work

The tender has been invited for Supply, Installation, Testing, Commissioning, Operation & Maintenance of 100 CMD Pilot STP for EU-DST Research Project with suitable make electromechanical equipment required for safe operation including civil works, wiring, control panels, plumbing etc. as per Specifications.

The main objective of the tender is to setup a pilot treatment plant for research purpose which will focus on development of efficient treatment process for recycle and reuse of wastewater for non-potable purposes like gardening, toilet flushing etc.

The STP shall be fabricated in such a way so as to vary constructional and operational parameters for studying the performance of the plant. The plant shall be pre-fabricated with its unit separately transportable and can be easily installed at site. The process shall be automated to minimize manpower and skilled labour. The manufacturer has to carry out operation & maintenance of the plant for 02 years from the commissioning of the plant.

Contractor shall design the plant including all units / accessories mentioned in the specification and as per the guidelines. The contractor shall visit NITIE and confirm the details before submitting the proposal.

4.1.3 Site Details

Bhandup sewage pumping station premises, near eastern express highway, Bhandup east, Mumbai- 400042.

4.1.4 Obligation of the Tenderer

These specifications are intended for general description of site conditions, scope of work and requirements, products, execution, quality of workmanship and finished work. These are not intended to cover minute details. The work shall be executed in accordance with best modern practices and using special techniques.

The specifications mentioned hereunder are with respect to treatment technology, process and specific requirements of treated water quality. The Contractor shall read this Technical Specification in conjunction with the standard specification for Sewerage Works and other documents and technical manual, papers,

guidelines, standards and specification etc. referred to in the specification. For Civil, Mechanical & Electrical works, CPWD respective standard specifications shall be applicable during execution of the project. Bidders are requested to get acquainted with the same before bidding.

The project / project facilities shall confirm to the minimum design requirements. The contractor shall submit only one proposal for the subject work as per the mentioned scope and objectives of the tender. No alternative proposals / technology shall be entertained / evaluated.

4.1.5 Design Basis

The STP shall be designed with Rotating Media Biological Contactor (RMBC) technology. The plant shall consist 100 CMD primary & secondary treatment, 50 CMD tertiary treatment and 4 disinfection units of chlorination, UV-disinfection, ultrasound and electrochemical technology (ultrasound will be provided by NITIE) of capacity 10-15 CMD each. The treated water from STP is desired to be used for the applications like gardening, toilet flushing, car washing, sewer cleaning, construction works, etc. For these applications STP shall be designed in accordance with CPHEEO manual guidelines.

4.1.6 Design Data

The STP shall be designed for the following inlet sewage data:

- a. Flow - 100 CMD
- b. Raw Sewage Quality

S. No.	Parameters/Pollutant	Values
1.	Biochemical Oxygen Demand (BOD5)	100 to 150 mg/l
2.	Chemical Oxygen Demand	200 to 300 mg/l
3.	Total Suspended Solids	100 to 160 mg/l
4.	Free Ammonia	9-13 mg/l
5.	DO	Below Detection Level
6.	Temperature	28-31 °C
7.	Chlorides	150 to 700 mg/l
8.	pH	6.5 -7.5
9.	Oil & Grease	15-25 mg/l

Note: - The above values are based on sewage sample analysis data available. The other parameters of raw sewage required for design of STP & not mentioned above may be considered according to general Indian conditions and CPHEEO guidelines.

4.1.7 Desired outlet quality of Treated Sewage

The desired treated water quality is as below: -

S. No.	Parameters / Pollutant	Values
1.	Biochemical Oxygen Demand (BOD)	≤ 10 mg/l
2.	Total Suspended Solids	Nil
3.	pH	6.5 - 8.3
4.	Nitrogen as Ammonia	≤ 10 mg/l
5.	Fecal Coliforms in 100 ml	Nil
6.	DO	Not less than 2 mg/l
7.	Color	Colorless
8.	Odor	Odorless
9.	Helminth eggs/ litre	AA

10.	Turbidity	<2 NTU
-----	-----------	--------

Note: AA- as arising when other parameters are satisfied

4.1.8 Site Survey, Site preparation, Submission & Approval of Process Design.

- i) After receiving the work order, the tenderer shall, undertake the site survey in accordance with foundation requirement of the STP and inlet / outlet / bypass connections to the STP.
- ii) After completion of survey contractor shall, at his own cost, charges and expenses, prepare final Design & Drawings in accordance with the scope, Specification, Standards and directions of NITIE and submit three copies each of detailed engineering drawings including Mechanical, Electrical, Process Instrumentation for 100 CMD Pilot STP and all design calculations as per scope of the work.
- iii) The drawings will be approved and contractor shall manufacture the plant accordingly.
- iv) Drawings and designs shall be in metric units and drawings shall be on minimum A-3 size paper.
- v) If during the scrutiny of detailed design calculations and working drawings, any changes therein which are found necessary in the opinion of principal investigator shall be incorporated without altering the lump-sum quotations.
- vi) Before submitting the final bill, the contractor shall furnish NITIE three copies of "as built" Drawings duly verified by the Engineer reflecting entire new commissioned plant, details of all units, layout, RCC & Design details, Process/flow diagram, Pump / machinery / Equipments & Automation / Instrumentation details Project as actually designed, engineered and constructed.
- vii) The Tenderer shall be responsible for ensuring that any existing utility on, under or above the Project Site is kept in continuous satisfactory use if necessary, by the use of suitable temporary or permanent diversions.
- viii) The contractor shall provide necessary foundation for the stable installation of the STP plant units and complying hydraulic flow requirement.
- ix) The contractor shall provide cctv surveillance system for monitoring of the plant as the plant is located in isolated area. The system shall provide 24X7 online view facility from remote access.
- x) The contractor shall provide protective grill/net fencing of MS with epoxy coating to the STP plant so as to isolate and restrict the entry of public to the plant.
- xi) All debris derived from site activities shall be disposed off by the contractor at his own cost. The cost of this work shall be part of the quoted offer and no separate payment shall be made on this account.
- xii) All existing machineries, installations, accessories shall be the property of the corporation.

4.1.9 Unit Design Specifications

All the units of STP shall be designed in accordance with CPHEEO manual guidelines and shall be modified as per directions of NITIE considering specific research requirements. The approximate volume and details of the treatment unit are indicated below:

S.N.	Unit Description	Unit Details
1	Screen Chamber	0.5m X 0.5m prefabricated
2	Primary Settling Tank	1.2m X 1.5m X 2m prefabricated
3	Rotating Media Biological Contactor Drum	2.5m, 1.2m Diameter prefabricated
4	Rotating Media Biological Contactor Tank	3.0m, 1.5m Diameter prefabricated

5	Settling Tank/ Secondary Clarifier	3.0m X 1.5m X 2.0 m prefabricated
6	Filter Feed Tank	1.5m X 0.5m X 2.0 m prefabricated
7	Pressure Sand Filter	1.5m X 0.6m Diameter prefabricated
8	Treated Water Tank	2 CMD FRP Standard tank prefabricated
9	Disinfection Units	chlorination, UV-disinfection, ultrasound and electrochemical units (10-15 CMD each) Ultrasound will be provided

4.1.10 Raw Sewage Pumping Arrangement

The contractor shall make arrangement to tap the flow from the wet well/screen chamber of sewage pumping station by installing submersible pump sets of suitable capacity & quantity as per approved design to cater designed flows with 1 working + 1 standby capacity. The Depth of Wet Well is around 12mtr. The contractor shall make arrangement for installation of pumps in wet well/ screen chamber and connection of the discharge line to inlet chamber of STP. Lifting & maintenance arrangement like provision of hoist, etc. shall be made by the contractor.

Raw Sewage Pumps operation shall be in auto mode as per the designed flow and quality. The pumps shall have necessary protections for dry run, overload, short circuit etc.

4.1.11 Screen Chamber Unit

The incoming flow to existing pumping station is screened through coarse screen of size 65 mm. Further, mechanical fine screens shall be provided to screen particles of size greater than 6 mm.

4.1.12 Secondary/Tertiary Treatment Unit

The Secondary treatment unit shall be designed based on attached growth process technology (Rotating Media Biological Contactor). The treatment process shall include Screen Chamber, Primary Settling Tank, Rotating Media Biological Contactor Drum, Rotating Media Biological Contactor Tank, Settling Tank/ Secondary Clarifier, Filter Feed Tank, Pressure Sand Filter, Treated Water Tank, Disinfection Units.

Performance of the secondary treatment in the reactor is to be monitored at 3 stages. Hence Rotating Media Biological Contactor Drum shall have 3 separate compartments in which media can be loaded separately. There shall be arrangement for each section of drum to load and unload media. Similarly, in Rotating Media Biological Contactor Tank there shall be 3 sections separated by partitions to avoid short circuiting of the flow. The Settling Tank shall be designed as chevron tube settler. There shall be provision for varying the velocity of the sewage in the settler. Pressure Sand Filter shall have provision for changing the media for testing the treatment performance.

For secondary treatment, in addition to natural aeration, contractor shall provide forced aeration and diffused aeration system by making necessary arrangement of fan, blowers, compressor, piping etc.

The Unit shall include all respective Mechanical and Electrical equipments like gates / valves, piping, equipments etc. of required quantity for successful O & M. of the plant.

The system shall work on a continuous gravity influent condition. No influent / effluent equalization tanks or flash is required

4.1.13 Disinfection Unit

The treated water is proposed to be used for purposes like gardening, car washing etc. hence disinfection process is much imperative. Hence it is envisaged in the research project to compare 4 disinfection methods simultaneously and identify the most efficient method for disinfection. The contractor shall install only two units i.e. UV radiation and chlorination disinfection unit of 10-15 CMD and remaining two disinfection units i.e. electrochemical and ultrasound disinfection unit will be provided to the contactor during operation and maintenance period so contactor shall make arrangement for these system and

carry out operation. The contractor shall submit the details of the disinfection units for approval of the principal investigator and shall modify the unit as per the directions of Principal Investigator.

Sufficiency & safety of all the instruments involved in the proposed method of disinfection shall be maintained as per the design & operation requirement.

4.1.14 Sludge Collection & Treatment Unit

There shall be system for sludge collection and disposal after treatment.

The sludge shall be collected in the sludge container. There shall be sludge thickening/ dewatering arrangement for further easy handling and transportation of the sludge.

4.1.15 Treated Water Collection Tank

Contractor shall provide 2 CMD capacity GRP/FRP water tank for treated water collection.

4.1.16 MCC / PCC Units & Other Electrical Units

The contractor shall provide MCC / PCC Units for various machinery of STP and metering Kiosk in the space provided by the corporation. The provision of necessary lighting at site including earthing etc. shall be made by the contractor. Contractor shall install panel along with VFD for controlling power requirements as per the research experimentation.

The electricity required for O & M of STP shall be provided by MCGM from existing connection of sewage pumping station. However, the contractor shall make arrangement for tapping connection from the existing meter room including all required switchgears, cables, separate energy meter for STP, etc.

4.1.17 Automation & Control System

The STP shall have PLC/SCADA based automation system with application software to control all pumps, valves, limit switches and probes as per tenderer's design including I/Os spares, power supplies and other accessories. The plant shall be capable of auto operation with a provision of manual operation/override. Provision shall be made for each facility to operate process unit manually, if for any reason the need arises. The control system shall be selectable to either "Off", "Manual" or "Automatic" modes.

Online quality & operation monitoring system with installation of flow meters, DO meter, pump control units, etc. shall be provided at suitable location to transmit the data to central system. Necessary hardware (PCs), internet connections, etc. compatible with proposed software shall be provided by the contractor. The computer shall be branded with latest configuration & installed windows operating system. The software shall give various information like details of pump operation, breakdown details, flow details, power consumed, efficiency chart, historical trends, and treated water quality, etc. The system shall have sufficient data store and backup facility.

All major units shall be provided with alarms for control of important parameters. The automation system of STP shall have alarm facility for failure of major units like pump, aeration system, disinfection system, etc. and communication of the same through suitable means like sms / mail / etc. to the concerned person.

4.1.18 Erection and Commissioning

The contractor shall carry out Erection / testing / commissioning of plant with all civil, mechanical, electrical & automation units to meet the desired and ultimate goal of the tender including obtaining of various approvals required for operation of the plant.

The contractor shall remove promptly from the site all surplus construction machinery and materials, waste materials, rubbish and other debris and shall keep the Site in a neat and clean condition and in conformity with the Applicable Laws and Permits.

4.1.19 Research experimentation

As mentioned in the scope of work, the pilot STP is to be installed for research purpose. The research program involves change in various operational parameters weekly and monitors the change in

performance of the plant through quality/operational parameter analysis. Comparative study of four disinfection techniques i.e. UV radiation, chlorination, electrochemical and ultrasound is to be conducted by installing the equipments in parallel after the tertiary treatment. The research plan for the project shall comprise of variation in Rotation speed, Aeration, media, Settler velocity, filtration media, flow etc.

4.2 OPERATION & MAINTENANCE

4.2.1 General

The preventive and routine maintenance shall include all repairs and provision of spares material and tools required for these repairs. The labour, tools and plant spares shall be arranged by the Contractor. The Contractor shall carry out preventive, routine maintenance and break down maintenance Operations as per approved schedule and in accordance with good operating practices.

The NITIE shall supervise the Contractor's Operations at all times and notify the Contractor of any defects that are found. Such checking shall not affect the Contractor's responsibilities. The plant shall be operated for designed flow.

4.2.2 O & M Period & Cost

Contractor shall carry out O&M of the STP installed for the period of **24 Months** from successful commissioning of the plant comprising of all units installed and commissioned through BOQ items including necessary Manpower, Material, Spares, Tools and chemicals etc. with comprehensive maintenance. In case of completion of research experiment before 24 months, the Principal Investigator shall foreclose the O&M contract and the contractor shall not have any claim for the payment of balance O&M period.

The cost quoted for O&M of plant and facilities for 24 months shall not be less than 15% of the total cost quoted. In case of violation of proportion, the Principal Investigator shall adjust the prices in BOQ & payment shall be made accordingly.

4.2.3 Electricity charges

The electricity required for O & M of STP shall be provided by MCGM.

4.2.4 Daily Operations

The Contractor shall carry out operations in accordance with Good Operating Practices. The operations shall include, but not be limited to the following.

- i) Operating Sewage Treatment Plant as per the research plan provided by the Principal Investigator from time to time.
- ii) Continuous measurement of flow and other parameters as per approved schedule.
- iii) To maintain daily records of operational parameters as directed by the Principal Investigator.
- iv) Collection of samples at various stages of the plant as directed by Principal Investigator.
- v) Sludge Treatment as approved & sludge disposal.
- vi) Removal & disposal of screenings at suitable place.
- vii) Sweeping & Cleaning of STP premises.

4.2.5 Routine Maintenance

The routine and preventive maintenance shall be carried out as per schedule and monthly inspection report shall be submitted for the status and performance of all major mechanical & electrical equipment and their operations in the format approved by NITIE.

4.2.6 Reporting

The daily/weekly reporting shall include, but not be limited to the following

- i) Hours of operation of pumps & other equipment
- ii) Quantity of sewage pumped
- iii) Energy consumed

- iv) Quantity of sludge generated
- v) Quality parameters

Principal Investigator may instruct to maintain additional records as per the research requirement during operation and maintenance period which contractor shall comply.

4.2.7 Contractors Responsibilities

The Contractor shall provide adequate engineering equipment, maintenance staff, inventories plant and machinery and all other things whether of a temporary or permanent nature required for carrying out operations under the Contract.

The Contractor shall be responsible for the safety of all activities on the site and shall be absolutely and solely responsible for any and all kinds of injuries or damages to persons and property.

4.2.8 Staff & Labour

The Contractor shall employ skilled, semi-skilled and unskilled labour as required for successful operation and maintenance of the STP. There shall be minimum 1 skilled/semiskilled operator in general shift who shall take care of daily activities like housekeeping, reporting, chemicals, sampling, etc. and coordinate with representative of NITIE and assist him in sampling, monitoring etc. Contractor shall make arrangement of technicians like fitter, electrician for operational parameter variations as per research plan and as and when directed by Principal Investigator. Cost of manpower required for the Operation of STP shall be borne by the contractor.

The NITIE shall visit and supervise the Contractor's Operations at all times. During their visit if the staff employed for O&M shall found not as per the contract, the contractor shall be penalized for the same.

4.2.9 Liquidated Damages and Penalties for O/M works

The Contractor shall be subject to the following liquidated damages and penalties for its failure to carry out its operations as indicated below:

Basis of Penalty	Penalty Benchmark	Penalty Value
Failure to execute the activities mentioned in daily operation, routine maintenance, reporting and responsibilities as per the contract	Up to 2 occurrences / month	Nil
	After 2 occurrences / month	Rs. 2,000/- per occurrence

4.2.10 Taking Over

At the end of the contract period the contractor shall hand over all documents and supplies for which the Contractor has received payment and provide adequate training to ensure complete transfer of technology of entire operation & maintenance of systems/automation etc. to the successor contractor / NITIE to the satisfaction of the Principal Investigator.

4.3 SPECIFIC REQUIREMENT

4.3.1 Transport of materials

Transport of the materials of construction to the site shall be total responsibility of the contractor and the contractor's rates/prices shall include for all related costs.

4.3.2 Standards and Manuals

In case no particular specification is given for any work to be done under the contract, the relevant specifications, where exists, of the Indian Standard Institutions shall apply.

4.3.3 Assistance for the Principal Investigator Staff

The Contractor shall provide all necessary assistance to the Principal Investigator Representative and his staff in carrying out their duties of checking the setting-out, inspecting and measuring the works.

The Contractor shall provide all the safety equipment for the use of Principal Investigator Representative for routine site work and inspections. All necessary safety precautions and arrangements shall be taken care of at all times on site by the contractor.

4.3.4 Payment of Items on Lump Sum Basis

Contractor shall submit the break-up of the lump sum item for payment purpose for consent of the Principal Investigator.

4.3.5 Production of Vouchers, etc.

The Contractor shall as and when required by the Principal Investigator, produce all quotations, invoices, vouchers and accounts or receipts in connection with expenditure in respect of contingencies.

4.3.6 Existing Service

The Contractor shall take all due care and necessary precautionary measures to ensure that no damage occurs to any existing pumping station units/structures, sewer, storm water drain, water or gas mains, electricity or telephone cables, signal cables, culverts and any other existing services. Any damage arising out of the Contractor's work in such respect will be met with entirely by the Contractor and no claim to the contrary will be entertained by the NITIE.

4.3.7 Continuous Working

If, in the opinion of the Principal Investigator, it is deemed necessary, by reason of the safety of the works, or for the restoration of interrupted services, or for any other reason whatever, the Contractor shall, when so ordered, carry out the Works or any portion thereof continuously by day and by night without any extra charge to Employer.

4.3.8 Anti-pollution and Mosquito Control

The site and working areas shall be maintained at the Contractor's expense in accordance with regulations governing anti-pollution and mosquito control and environmental laws.

4.3.9 Demolition and Making Good

The Contractor shall take care that while demolishing or cutting away existing work, no adjacent work is unnecessarily damaged in any way. Any work so damaged will be made good entirely at the expense of the Contractor.

Old materials may not be re-used in the new work, except where so specified or as directed by the Principal Investigator.

4.3.10 Inspection and Replacement of Defective Work

Wherever in the opinion of the Principal Investigator the work done is inadequate or of poor workmanship or inferior materials or in any way sub-standard such works will be demolished, cut out and removed from the Works immediately and replaced with new materials of the required standard and quality.

4.3.11 Reinstatement of Surface

The Contractor's work shall include the reinstatement of the foundation and surfaces of roads, kerbs, footways and grass areas disturbed by the excavation work both within and without the actual trench area. The reinstatement of all such surfaces being entirely the responsibility of the Contractor.

The reinstatement must comply with all the requirements of the concerned department of NITIE.

4.4 Notes on Pricing

4.4.1 Documents

The Bill of Quantities shall be read in conjunction with the Instructions to Bidders, General and Special Conditions of Contract, Technical Specifications, Drawings, Appendix and Addendum, etc.

4.4.2 Item description

- i) The item descriptions in the Bill of Quantities are only basic to enable the Contractor to identify the actual work described in the Specification and shown on the Drawings. General directions and description of the work and materials are not necessarily repeated nor summarized in the Bill of Quantities. References to the relevant sections of the contract documents shall be made before entering prices against each item in the Bill of Quantities.
- ii) Unless the description of the item in the Bill of Quantities makes a specific promise of payment of the work described, no payment shall be made in respect of any work described in the contract or for any action which is required to be carried out during execution of work, for which apparently no corresponding item is included in the Bill of Quantities.

4.4.3 Rates to be inclusive

- i) Notwithstanding any limits which may be implied by the wording of the individual items and the explanations in this Preamble, the prices entered in the Bill of Quantities ("the Contract Rates") shall, except as may be otherwise expressly provided in the Contract, be deemed to cover all incidental and contingent expenses, contractor's liabilities and obligations and all matters and things necessary for the proper construction and completion of the Works and maintenance of Permanent Works as specified or reasonably to be inferred from the Contract.
- ii) The whole cost of complying with the provisions of the Contract shall be included in the Items provided in the priced Bills of Quantities, and where no Items are provided, the cost shall be deemed to be covered or distributed among the rates and prices entered for the related Items of Work.
- iii) The rates and prices bid in the priced Bill of Quantities shall, except insofar as it is otherwise provided under the Contract, include, but not limited to, cover all site costs, site supervision and overhead charges and all costs, charges and expenditure whatsoever including but not by way of limitation, for all constructional plant, labour, supervision, materials, wastage of materials, storage, packing, carriage and cartage, hoisting, scaffolding, plank trestles, battens erection, maintenance, insurance and maintenance (other than as included in the Bills of Quantity), profit, taxes and duties, together with all general risks, liabilities, and obligations set out or implied in the Contract.
- iv) The quantities for work and materials stated in the Bill of Quantities are not to be considered as limiting or extending the amount of work to be done or material to be supplied by the Contractor.
- v) The Contractor shall include in his rates for restricted and constricted working space he may be encountering at the locations of the Works and affording reasonable facilities to other Contractors working on the same site or along the routes of the pipelines and sewers and for any interference with his work from these Contract operations.
- vi) BOQ is prepared on the basis of research experiment derived and restricted to attached growth process (Rotating Media Biological Contactor) technology, hence bidders are requested to quote for all required civil, mechanical, electrical & instrumentation works which are required for the specified result.
- vii) No extra / excess items will be treated being the tender is on turnkey basis.

4.4.4 Breakdown of Rates

Before the award of the contract and during the Contract Period the Contractor shall furnish breakdown of rates for all items of composite units of work in the Bills of Quantities into their component elements to the Principal Investigator, as may be required.

4.4.5 Covering up and protecting

The rates and prices entered in the priced Bill of Quantities shall include for covering up and protecting work against damage for all following operations, making good of damage, if any, to completed and uncompleted Work due to any cause whatsoever, for shifting, altering and adapting such protection as may be required and for clearing away at completion.

4.4.6 The Quantities

- i) The work under consideration is of construction of STP on turnkey basis and the BOQ is prepared on lump sum basis. The bidders are required to estimate their quantities for materials and works for the specified technology and quote the same in the BOQ so as to include all the quantities in given BOQ.
- ii) No extra / excess items will be treated being the tender is on turnkey basis.
- iii) The payment shall be made for the quantities with respect to the technology and design approved by the Principal Investigator.

4.4.7 Method of Measurement

All the measurements shall be taken jointly by the Contractor and authorised representative of the Principal Investigator. All the necessary help required to carry out measurements shall be provided by the contractor to the representative of the Principal Investigator. The Contractor shall maintain records of all the activities related to the work and obtain signature of the representative of Principal Investigator in the daily progress register.

4.4.8 Currency

All rates shall be stated in Indian Rupees (INR). All rates shall be quoted to the nearest Rupee.

Lakh(s) means 1,00,000 (one hundred thousand)

Crore(s) means 100,00,000 (hundred lakhs or ten million)

5. UNDERTAKING BY THE BIDDER

UNDERTAKING

I / We have read and examined the Tender document including terms & conditions, specifications, bill of quantities, drawings and designs, general rules & directions, General Conditions of Contract, Special Conditions of Contract and all relevant other documents, publications and rules referred to in the Conditions of Contract and all other contents in the tender documents for the work.

I / We, hereby tender for execution of the work specified for the National Institute of Industrial Engineering, Mumbai within the time specified and in accordance in all respects with the specifications, designs, drawings and instructions in writing.

We agree to keep the tender open for 120 days from the last date of its submission and not to make any modifications in its terms and conditions. A sum of Rs. _____ has been deposited in cash / receipt treasury challan / deposit at call receipt of scheduled bank / fixed deposit receipt of scheduled bank / demand draft of a scheduled bank / Bank Guarantee issued by a Scheduled Bank as earnest money. If I / we, fail to furnish the prescribed performance guarantee within prescribed period, I / we agree that the said Director, NITIE Mumbai or his authorized officer shall without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money absolutely. Further, if I / we fail to commence work as specified, I / we agree that the Director, NITIE Mumbai shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the said earnest money and the performance guarantee absolutely, otherwise the said earnest money shall be retained by him towards security deposit to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to therein.

Further, I / We agree that in case of forfeiture of earnest money or both Earnest Money & Performance Guarantee as aforesaid, I / We shall be debarred for participation in the re-tendering process of the work.

I / We hereby declare that I / We shall treat the tender documents, drawings and other records connected with the work as secret / confidential documents and shall not communicate information derived there-from to any person other than a person to whom I / We am / are authorised to communicate the same or use the information in any manner prejudicial to the safety of the State.

Seal & Signature of Contractor

Postal Address

Dated

Witness

Address

Occupation

6. ANNEXURES

ANNEXURE-I

(Refer para 3.1)

FORM OF PERFORMANCE GUARANTEE (BY BANK GUARANTEE)

In consideration of the Director, NITIE having agreed under the terms and conditions of Letter of Intent / Agreement No..... dated..... made betweenand..... (hereinafter called "the said Contractor{s} "). for the work (hereinafter called "the said Letter of Intent / Agreement") having agreed to production of an irrevocable bank Guarantee for Rs. (Rupeesonly), as a security / guarantee from the contractor(s) for compliance of his obligations in accordance with the terms and conditions in the said agreement, we.....(Indicate the name of the Bank) (hereinafter referred to as "the Bank") hereby undertake to pay to NITIE an amount not exceeding Rs..... (Rs..... only) on demand by NITIE.

We (indicate the name of Bank) do hereby undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from NITIE stating that the amount claimed is required to meet the recoveries due or likely to be due from the said Contractor(s). Any such demand made on the bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs..... (Rupees.....only).

We, the said bank, further undertake to pay to NITIE any money so demanded notwithstanding any dispute or disputes raised by the Contractor(s) in any suit or proceeding pending before any Court or Tribunal relating thereto, our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment thereunder and the Contractor(s) shall have no claim against us for making such payment.

We..... (indicate the name of Bank) further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Agreement and that it shall continue to be enforceable till all the dues of NITIE under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till Principal Investigator on behalf of the NITIE certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the said Contractor(s) and accordingly discharges this guarantee.

We (indicate the name of Bank) further agree with NITIE that NITIE shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Agreement or to extend time of performance by the said Contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by NITIE against the said Contractor(s) and to forbear or enforce any of the terms and conditions relating to the said Agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor(s) or for any forbearance, act of omission on the part of NITIE or any indulgence by NITIE to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor(s).

We, (indicate the name of Bank) lastly undertake not to revoke this guarantee except with the previous consent of NITIE in writing.

This guarantee shall be valid up to, unless extended on demand. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs. (Rupees..... only) and unless a claim in writing is lodged with us within six months of the date of expiry or the extended date of expiry of this guarantee, all our liabilities under this guarantee shall stand discharged.

Signed and sealed

Dated the day of for (indicate the name of Bank)

(Note: The Letter of Intent shall form part of the Agreement)

ANNEXURE-II

(Refer para 3.10.5)

LIST OF APPROVED MAKE / SPECIFICATIONS OF EQUIPMENTS

S.N	Equipment	Specification	Make
1	Bar Screen Chamber	MOC: Mild Steel Epoxy Coated Thickness: 5mm minimum Min. Size: 500mm Length X 500mm Width X 500mm Height	MS : Tata/Jindal
2	Primary Tube Settler	MOC: Mild Steel Epoxy Coated Thickness: 5mm minimum Min. Size: 1200mm Length X 1500mm Width X 2500mm Height	MS : Tata/Jindal
3	RMBC Container	MOC: Mild Steel Epoxy Coated Thickness: 5mm minimum Min. Size: 3000mm Length X Dia 1500mm	MS : Tata/Jindal
4	RMBC Drum	MOC: Mild Steel Epoxy Coated thickness: 3 mm minimum Min. Size: 2500mm Length X Dia 1200mm	MS : Tata/Jindal
5	RMBC Cover	MOC: Fibre Reinforced Plastic Thickness: 3 mm minimum Min. Size: 3000mm Length X Dia 1500mm	Vendor Fabricated
6	Secondary Tube Settler	MOC: Mild Steel Epoxy Coated Thickness: 5mm minimum Min. Size: 3000mm Length X 1500mm Width X 2300mm Height	MS : Tata/Jindal
7	Filter Feed Tank	MOC: Mild Steel Epoxy Coated Thickness: 5mm minimum Min. Size: 500mm Length X 1500mm Width X 2300mm Height	MS : Tata/Jindal
8	Dosing & Treated water tank	MOC: HDPE/LLDPE	Reno/Sintex
9	Pumps	MOC: CI Impeller, CI Casing & CS Shaft	Kirloskar/Grundfos/Xylem
10	Air Blower	Twin Lobe Type, MOC: CI	Kay/Beta/Everest/Usha
11	Aeration Media	PP	Techpro/MMAqua/Cooldeck
12	Tube Settler Media	PVC	Techpro/MMAqua/Cooldeck
13	Filter Vessel	MOC: FRP	Pentair/Aventura
14	Multiport Valve	MOC: PP/PVC	initiative/Equivalent
15	Dosing Pump	MOC: PP	E-Dose/Positive/Milton roy
16	UV	Contact Part MOC:SS316	Oxybee/Venus lab/Alfa
17	Electrochemical disinfection	ECA Technology	Oxybee Solutions/Kunal Enterprises/ Klengen water
18	Piping	uPVC SCH40	Astral/Prince/Finolex
19	Sludge Dewatering bag System	Casing: SS, Filter Bag:PP	Vendor Fabricated
20	Pressure Gauge	SS	H-guru/Wika/Baumer
21	Electromagnetic flowmeter	Full bore, CI	Aster/Forbesmarshall/E&H
22	DO, pH, TDS, Turbidity meter	MOC: Suitable for STP water (Anti-corrosive)	Hatch/Venuslab/Equivalent
23	Electrical Panel	Switchgear & components: L&T/Siemens/Schnieder	Vendor Fabricated
24	Electrical Cables	Copper Armoured	Polycab/Finolex/Havells
25	CCTV Camera	-	VenusLab/Hikvision/Equivalent
26	PLC		ABB/Delta
27	SCADA		Seimens/lab View/Equivalent

Note: For items not covered in the above list or in case of non-availability of preferred make of any item listed above, the make / brand to be used in the work, should have prior approval from the Principal Investigator.

TECHNICAL SCHEDULE - 1

Bidder's Track Record

The bidder shall submit the data of similar experience in the format given below. The data submitted shall be of the STPs with capacities between 10 - 1000 CMD.

The data submitted shall be of wastewater treatment plant.

S. No.	Name of the Employer	Capacity of the Plant	Technology details	Date of completion	Duration of O&M
1					
2					
...					

TECHNICAL SCHEDULE - 2

Understanding of the project, Construction drawing, details and Methodology

As per technical evaluation requirement bidder shall submit following details: -

- Note on understanding of the project.
- Design calculations
- GA Drawings,
- Equipment layout,
- Hydraulic flow diagrams,
- Process instrumentation diagrams
- Construction and installation methodology

TECHNICAL SCHEDULE - 3

Disinfection unit details

Bidder shall submit the details of three disinfection units i.e. chlorination, UV-disinfection (10-15 CMD capacity each) along with their equipment detail, working principle, chemicals used, instrument catalogues etc.

Additional disinfection unit of ultrasound technology will be provided to the contactor during operation and maintenance period.

TECHNICAL SCHEDULE - 4

Automation, monitoring system, operation & maintenance procedure

Bidder shall submit the details of automation system to be installed for operation control of STP. The system shall include details of automation for control system, SCADA system, alarm facility, process operation, quality parameters monitoring. Details of hardware, software, mobile application to be installed etc.

Bidder shall also submit the details of manpower to be provided for operation and maintenance, sludge management, preventive maintenance schedule, daily operation record.

TECHNICAL SCHEDULE - 5

Specific compliance to the research experimentation

Bidder shall submit the methodology for compliance to the research experimentation. The details shall include methodology of following: -

- Altering Rotation speed of the RMBC drum
- Arrangement for natural, forced, diffused and combination Aeration system to the bioreactor
- Variation in surface area of biological filter media of secondary treatment unit
- Variation in velocity in settling tank
- Variation in tertiary unit filtration media
- Variation in inflow to check optimum capacity of STP

National Institute of Industrial Engineering, Mumbai

Annexure - III

Schedule of Quantities

National Institute of Industrial Engineering, Mumbai

Subject : Supply, Installation, Testing, Commissioning, Operation & Maintenance of 100 CMD Pilot STP for EU-DST Research Project as per Specifications.

Schedule of Quantities & Rates

S. N.	Description of items	Unit	Qty.	Rate	Amount
1	Construction of STP Supply installation, testing, commissioning of 100 CMD STP including Site Preparation, submission and approval of process design, calculations & detailed engineering drawings, fabrication, supply, installation & commissioning of all respective Mechanical and Electrical Equipment's, etc. Automation system, disinfection units etc. of quantity as per approved design/drawings, tender specifications, term & conditions complete in all respect with all proposed units to achieve desired Research Experimentation as specified in the Tender.	Lump Sum	1		
2	Operation & Maintenance Operation & Maintenance of the total Plant & Facilities after successful commissioning of the plant including all the structures, equipment, instruments and all other accessories of the plant.	month	24		

Note:

- Prices for all the items to be filled online in respective cells of item data of the tender on NITIE portal.

Bidders are requested to include the cost of all the activities required for successful completion of the work as mentioned in the scope of the tender. No extra item will be considered on the basis of missing item or for whatsoever reason.