TENDER DOCUMENT

(e-Procurement)

Tender No: IISc/Tender-CIV-16/2023-24

For

"Annual Operation and Maintenance of Water Supply and distribution System at IISc., Bangalore"

Office of the Project Engineer cum Estate officer

Centre for Campus Management and Development Indian Institute of Science

Indian Institute of Science Bangalore – 560012

080-2293-2202/2008

Website : https://iisc.ac.in/all-tenders/

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1. **Tender Notification**

Tender No: IISc/Tender-CIV-16/2023-24

Name of work	**"Annual Operation and Maintenance of Water Supply and distribution System at IISc., Bangalore"**
Estimated Value of work	**Rs. 93,55,739.00**
Period of Work Completion	**12 Months**
Name of the Client	Indian Institute of Science, Bangalore
Address of the Client	The Registrar Indian Institute of Science Bangalore – 560 012 Tel No. 080-2293 2008/2202 e-mail: office.ccmd@iisc.ac.in
Submission of Tender Document	e-procurement portal- https://eprocure.gov.in/eprocure/app Helpline no: 0120-4001005
Earnest Money to be deposited with the Tender	**Rs.1,87,115.00** (2% of the Estimated Cost)
Last date and Time for online submission (uploading) of tender	**26.02.2024 at 1530Hrs**
Date and Time of opening of Tender (Technical Bid)	**27.02.2024 at 1530Hrs**
Date and Time of opening of Tender (Financial Bid)	Shall be intimated to technically qualified bidders thro' CPP portal.
Pre-bid meeting Date, Time & Venue	**12.02.2024 at 1530 Hrs** Pre bid meeting will be held on Teams App. The web link will be forwarded to the intending bidders. They are requested to send the request to the email id: office.ccmd@iisc.ac.in **Queries can be mailed in prior to the same mail.**

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Notice Inviting Tender

The Registrar, Indian Institute of Science invites tenders in two bids (Technical and Financial) system from eligible Bidders, for **"Annual Operation and Maintenance of Water Supply and distribution System at IISc., Bangalore"**

Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices issued by the Government of India or any State Government of Union of India. (Authorized signatory should provide an undertaking). Tenders from Joint ventures are not acceptable.

2.1 All Bidders shall provide the required information accurately and enough as per details in Section 4: Eligibility Criteria

2.2 The Tenderer shall upload the valid copies of the documents as mentioned in the Chapter-4 (Eligibility criteria) in technical bid**, failing which the tender will be rejected**. If necessary, bidder shall produce all the original documents for verification.

2.3 The work shall be carried out as per the directions of the Project Engineer cum Estate Officer.

2.4 Blacklisted contractors in State / Central Govt. Departments / BBMP / PSU/ Central PSUs/ Autonomous bodies / Institutions are not eligible to quote, if found such tenders will be rejected.

2.5 The successful Bidder shall execute an Agreement within 10 days from the date of Receipt of intimation from this office, The Tender Document will form the part and parcel of the agreement, failing which the tender will deem to be get cancelled.

2.6 The material shall be got approved by the Project Engineer cum Estate Officer, IISc before execution of the work.

2.7 Further details of the work can be obtained from this office.

2.8 The rates quoted should reflect all taxes. The bid evaluation will be done inclusive of all Taxes / Cess. / Royalty etc. The statutory levies as per Govt. guidelines will be deducted. The IISc reserves the right to accept / reject any or all the tenders without assigning any reasons.

2.9 The work shall be commenced with all manpower, material, machinery & requisite resources within 10 days from the date of work order, failing which it would be presumed that the successful tenderer is not interested in the work and action will be taken to get the work executed through alternate agency at the risk and cost of the former Tenderer.

2.10 Conditional tenders will not be accepted and is liable for rejection.

2.11 Bidders who meet the specified minimum qualifying criteria, shall be eligible.

2.12 Even though the Bidders meet the eligibility criteria mentioned in Section-4 they are subject to be disqualified if they have:

- Made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements; and/or
- Record of poor performance such as abandoning the works, not properly completed the contract, inordinate delays in completion, litigation history, or financial failures etc.

2.15 Site visit:

The Bidder at his own responsibility is encouraged to visit and examine the Site of Works and its surroundings and obtain all information that may be necessary for preparing the Tender and entering into a contract for the Works. The cost of visiting the Site shall be at the Bidder's own expense.

2.16 The Tender document can be downloaded from e-procurement website: https://eprocure.gov.in/eprocure/app. It may be noted that all subsequent notifications, changes and amendments on the project/document would be posted only on the same

website. The bidders are advised to visit e-procurement portal and get familiarized with the procedure for submission of the tenders.

2.17 **Content of Tender documents**

The bidders should go through the Tender Document and submit online response through e-procurement portal only.

2.18 Amendment of Tender documents

Before the deadline for submission of tenders, the IISc may modify the tender documents by issuing corrigendum / addendum.

Such corrigendum/ addendum thus issued shall be part of the tender documents and shall be published online in e-Procurement portal.

Prospective Bidders will be given reasonable time for submitting the bid by taking the corrigendum/ addendum into account.

2.19 Documents comprising the Tender

The Technical Bid submitted by the Bidder shall contain the documents as follows:

a) Earnest Money Deposit paid in the specified form as mentioned in the e-Procurement platform.

b) Qualification Information as per formats to comply the task created in the e-Procurement Portal under General Terms and Conditions and Technical parameters and Documents required from Bidder.

c) Any other documents / materials required to be completed and submitted by Bidders in accordance with these instructions. The required documents shall be filled in without exception.

The bidder shall submit the hard copies of the documents / credentials which are uploaded in the tender portal. The documents shall reach the designated office within 3 days from the tender opening date.

The Financial bid shall be submitted by the bidder through e-procurement portal only and no hard copy of financial bid should be attached or disclosed.

The contract shall be for category of works / whole works based on the priced Bill of Quantities submitted by the Bidder.

All prevailing duties, taxes, and other levies like CESS/Royalty payable by the contractor under the contract, or for any other cause, shall be included in the rates, prices and total Tender Price submitted by the Bidder.

2.20 Tender validity

Tenders shall remain valid for a period not less than **180 days** after the deadline date for tender submission. A tender valid for a shorter period shall be rejected by the IISc as non-responsive.

In exceptional circumstances, prior to expiry of the original time limit, the IISc. may request that the Bidders may extend the period of validity for a specified additional period. The request and the Bidders' responses shall be made in writing or by email. A Bidder may refuse the request without forfeiting his earnest money deposit. A Bidder agreeing to the request will not be required or permitted to modify his tender but will be required to extend the validity of his earnest money deposit for a period of the extension, and in compliance with Clause 2.18 and 2.22 in all respects.

2.21 Earnest money deposit:

The Bidder shall furnish, as part of his tender, earnest money deposit (EMD). The Bidder has to pay the Earnest Money Deposit (EMD) in the form of Demand draft drawn on “The Registrar, IISc” payable at “Bangalore”.

The bidder has to scan the demand draft and submit it with Technical Bid Documents for our reference. The original DDs has to be submitted along with the hard copies of all the

documents in a sealed cover as a pre-qualification bid (Technical bid) which were uploaded through e-procurement portal.

The EMD amount will have to be submitted by the bidder taking into account the following conditions:

a) The entire amount must be paid in a single transaction.
b) The earnest money deposit of unsuccessful Bidders will be returned after awarding the contract to the successful bidder.

The earnest money deposit may be forfeited:
a) If the Bidder withdraws the tender after tender opening during the period of tender validity,
b) If the Bidder fails within the specified time limit to
i) Sign the Agreement; or
ii) Furnish the required Security deposit

2.22 Provisions for Micro and Small Enterprises (MSE):

The MSE registered bidder should upload the registration certificate in the CPP portal along with the technical bid documents. The MSE registration to specify manufacturing / service of the tender item (s).

Policy is meant for procurement of only goods produced and services rendered by MSEs. However, traders are excluded from the purview of Public Procurement Policy.

Participating Micro and Small Enterprises quoting price within price band of L1+15%, will qualify to supply a portion of requirement by bringing down price to L1 price in a situation where L1 price is from someone other than a Micro and Small Enterprises.

2.23 Format and signing of Tender

Successful Bidder shall sign all the pages of the tender document as a token of acceptance of all the terms and conditions of the contract.

2.24 Submission of Tenders

Tenders must be submitted on-line in the e-Procurement portal by the Bidder before the notified date and time.

2.25 Deadline for submission of the Tenders

The Bidder shall submit a set of hard copies of all the documents in a sealed cover to IISc required as a pre-qualification bid (Technical bid) which were uploaded through e-procurement portal. In the event of any discrepancy between them, the original uploaded document in e-procurement shall govern.

The IISc may extend the deadline for submission of tenders by issuing an amendment, in which case all rights and obligations of the IISc and the Bidders previously subject to the original deadline will then be subject to the new deadline.

2.26 Late Tenders

In e-procurement system, Bidder shall not be able to submit the bid after the bid submission time and date as the icon or the task in the e-procurement portal will not be available. IISc will not be liable (or) responsible for any delay due to unavailability of the portal and the Internet link.

2.27 Modification and Withdrawal of Tenders

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

The Bidder may withdraw his tender before the notified last date and time of tender submission. No Tender may be modified after the deadline for submission of Tenders.

Withdrawal or modification of a Tender between the deadline for submission of Tenders and the expiration of the original period of Tender validity specified in Clause 2.21 above may result in the forfeiture of the earnest money deposit.

2.28 **Tender Opening:**

The IISc will open all the Tenders received through' online mode, in the presence of the Bidders or their representatives who choose to attend on the specified date, time and place specified. In the event of the specified date of Tender opening being declared a holiday for the IISc. The Tenders will be opened at the appointed time and location on the next working day.

The IISc will evaluate and determine whether each tender meets the minimum qualification eligibility criteria.

Bidder to submit all the Original Documents, which are submitted in e-procurement portal, to the IISc for verification at the time of opening of Tender. The IISc will record the Tender opening.

2.29 Process to be confidential.

Information relating to the examination, clarification, evaluation, and comparison of Tenders and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not officially concerned with such process until the award to the successful Bidder has been announced.

2.30 Clarification of Tenders

To assist in the examination, evaluation, the IISc may, at his discretion, ask any Bidder for clarification of his Tender. The request for clarification and the response shall be in writing or by e-mail along with the section number, page number and subject of clarification, but no change in the price or substance of the Tender shall be sought, offered, or permitted.

Subject to clause 2.31, no Bidder shall contact the IISc on any matter relating to its Tender from the time of the Tender opening to the time the contract is awarded. If the Bidder wishes to bring additional information to the notice of the IISc, he/she should do so in writing.

Any effort by the Bidder to influence the IISc in the Tender evaluation, or contract award decisions may result in the rejection of the Bidders' Tender.

2.31 **Examination of Tenders and determination of responsiveness**

Prior to the detailed evaluation of Tenders, the IISc will determine whether each Tender (a) meets the eligibility criteria (b) is accompanied by the required earnest money deposit and; (c) is substantially responsive to the requirements of the Tender documents.

A substantially responsive Tender is one which conforms to all the terms, conditions, and specifications of the Tender documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality, or performance of the Works; (b) which limits in any substantial way, inconsistent with the Tender documents, the IISc's rights or the Bidder's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other Bidders presenting substantially responsive Tenders.

If a Tender is not substantially responsive, it will be rejected by the IISc., and may not subsequently be made responsive by correction or withdrawal of the nonconforming deviation or reservation.

2.32 Correction of errors

No corrections to uploaded bid is permitted by the portal. Tenders determined to be substantially responsive will be checked by IISc.

2.33 **Evaluation and comparison of Tenders**

Opening of the Financial bid will be preceded by the evaluation of the Pre-qualification Offer (Technical bid), vis-a-vis the capability, capacity and credibility of the Bidder. Evaluation of the Prequalification Offer will be done by the Evaluation Committee constituted for the

purpose. After evaluation is completed, all the Bidders who are qualified will be notified and will be intimated at the time of opening of the Financial bid. Financial bid will be opened in the presence of those who choose to be present or even in the absence of any Bidder.

The IISc will evaluate and compare the Tenders as per comparative statement downloaded from e-procurement portal.

In evaluating the Tenders, the IISc. will determine for each Tender the evaluated Tender Price by adjusting the Tender Price as follows:

a) Making any correction for errors and

b) Making appropriate adjustments to reflect discounts or other price modifications offered

The IISc reserves the right to accept or reject any variation, deviation, or alternative offer. Variations, deviations, and alternative offers and other factors which are in excess of the requirements of the Tender documents or otherwise result in unsolicited benefits for the IISc shall not be taken into account in Tender evaluation.

2.34 Negotiations

The Bidder though technically qualified and whose financial offer is the lowest, fails to convince the Tender Evaluation Committee of his capability, capacity, credibility, his offer may be reviewed, and the Bidder intimated accordingly. In such case, the Bidder, who has quoted the lowest price, may be considered and his price may be negotiated as advised by the tender committee.

2.35 Award criteria

Subject to Clause 2.36, the IISc will award the Contract to the Bidder whose Tender has been determined to be substantially responsive to the Tender documents and who has offered the lowest evaluated Tender Price. After technical evaluation the technically qualified bidders will be considered for opening of the financial bids provided that such Bidder has been determined to be eligible in accordance with the provisions of this tender document and subsequent technical clarifications offered by the responsive bidders.

2.36 Right to accept any Tender and to reject any or all Tenders

Notwithstanding Clause 2.35, the IISc reserves the right to accept or reject any Tender, and to cancel the Tender process and reject all Tenders, at any time prior to the award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the IISc's action.

2.37 Notification of award and signing of Agreement

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

The notification of award will constitute the formation of the Contract, subject only to the furnishing of a performance security in accordance with the provisions of clause 2.39

The Agreement will incorporate all agreements between the IISc and the successful Bidder /Bidders. It will be kept ready for signature of the successful Bidder in the office of IISc. Following the notification of award along with the Letter of intent. The successful Bidder will sign the Agreement and deliver it to the IISc.

Upon the furnishing by the successful Bidder of the Security deposit, the IISc will issue formal work order.

The successful bidder is required to sign an agreement for the due fulfilment of the contract and start the work immediately on of the acceptance of his tender. A draft of the Articles of

the Agreement is enclosed. The Earnest Money will be forfeited and at the absolute disposal of the Employer if the Contractor defaults from signing the Agreement of in starting the work.

2.38 Security deposit (SD)

Further percentage on the running bills and final bill in addition to Earnest Money Deposit shall be levied from the contractor. When the SD deducted from R.A Bills of the contractor **@ 6%** of the bill amount exceeds Rs.1.00 Lakh, the amount in excess of Rs. 1.00 Lakh may, at the request of the bidder, be released to him against the production of the bank guarantee issued from a Nationalized/Scheduled bank only for an equal amount in the prescribed form. The bank guarantee should be valid till the completion of the defect liability period.

If the security deposit is provided by the successful bidder in the form of a Bank Guarantee, it shall be issued either by a Nationalized/Scheduled bank.

Failure of the successful Bidder to comply with the requirements of clause 2.38 shall constitute sufficient grounds for cancellation of the award and forfeiture of the earnest money deposit.

2.39 Corrupt or Fraudulent practices

The IISc requires that the Bidders observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, IISc.

a) will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question.

b) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a IISc contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a IISc contract.

2.40 Payment Terms

For Civil works: Monthly running account bills.

For Electrical works: 80% against the supply of material and 10% after installation and 10% after testing and commissioning, subject to the other provisions of the tender document.

For O&M works: Monthly running account bills.

2.41 Work done as a sub- contractor under a prime contractor will not be considered for qualification. **"Prime Contractor"** means a firm that performs a construction work itself and that the work is directly entrusted to the firm by the owner/ government/ local body/ quasi government/ Government undertaking bodies.

2.42 <u>Make in India</u>

Only "Class–I and Class-II local supplier will be eligible to bid notified vide (DPIIT) Notification No. P-45021/2/2017-PP (BE-II) dated 4th June 2020 amended from time to time.

3.Declaration of Tenderer

Name of Work: **"Annual Operation and Maintenance of Water Supply and distribution System at IISc., Bangalore"**

3.1 I/We, declare that specifications, plans, designs and conditions of contract on which the rates have been quoted are completely studied by me/us before submitting this tender.

3.2 I/We declare that I/We have inspected the work spot and have made myself/ourselves thoroughly conversant and satisfied as regards the field conditions prevalent there, regarding the materials, labour and the particulars of various leads with which the materials required to be brought for the work.

3.3 I/We, declare that the rates quoted for items of works for which now tenders are called for are inclusive of leads with which I/We propose to bring the materials. I/We will not have any claims for higher leads, and my/our quoted rates are with all leads and lifts etc.,

3.4 I/We, declare that the rates tendered by me/us for this work have not been witnessed by any other contractor/s who has/have tendered for this work.

3.5 I/We, declare that I/We, have understood all the conditions mentioned above and also the specifications stipulated in tender condition either by going through myself/ourselves or by getting translated into my/our own mother tongue.

4. **Eligibility Criteria**

Technical Criteria:

4.1– Any specialised firms company registered under KPWD /CPWD/ railways/ MES/ central PSUs/ or any Government department of atleast Class I / Class A Civil contractors are eligible to apply.

4.2 The Bidder should have Experience of having a successfully completed either of the following works:

(a) Three (03) completed works each costing not less than **40%** (forty percent) of the estimated cost i.e. **Rs.37,42,296.00**

(Or)

(b) Two (02) completed works each costing not less than **60%** (Sixty percent) of the estimated cost i.e. **Rs. 56,13,444.00**

(Or)

(c) One (01) completed work costing not less than **80%** (eighty percent) of the estimated cost i.e. **Rs. 74,84,592.00.**

The similar work means "Any water supply O&M work for large campuses".

4.3 The works should have been completed in last seven (7) consecutive years.

Note: The Experience certificate / work order should be in the same registered name as per Clause 4.1 and not as a joint venture.

Financial Criteria

4.4 The bidder should have registered for a minimum period of Ten years.

4.5 The average annual financial gross turnover should be **30%** of estimated cost in that last five years.

4.6 The minimum annual financial turnover for the two consecutive years should be **30%** of estimated cost.

4.7 The bidder should have not incurred any loss in more than two years. The bidder should submit the **solvency certificate** from the bank for 30% of estimated cost. The Solvency should not be more than Six-month-Old ending last day of the month, previous to the month in which tender is invited.

4.8 The average net worth of the bidder as of **2022-23** should be not less than 25% of estimated cost. Necessary certificate by the Charted Accountant shall be submitted.

4.9 The bidder should have not been blacklisted by any State / Central Govt. Departments / BBMP / PSU/ Central PSUs/ Autonomous bodies / Institutions.

4.10 The bidding capacity of the bidder should be 75% or more of the estimated cost.

The bidder should possess the bidding capacity as calculated by the following formula.

Available bid capacity = A x M x N -B, where

A = Maximum value of engineering (Civil/ Electrical/ Mechanical as relevant to work being procured) works executed in any one year during the last five years (updated at the current price level), taking into account the completed as well as works in progress.

M = Multiplier Factor (usually 1.5)

N = Number of years prescribed for completion of the work in question.

B = Value (updated at the current price level) of the existing commitments and ongoing works to be completed in the next 'N' years.

4.11 Information on works for which tenders have been submitted and ongoing works as on the date of this Tender.

(A) Existing commitments and on-going works:

Description of work	Place & State	Contract number & date	Name & address of the customer	Value of Contract in Lakhs	Stipulated period of completion	Value of work remaining to be completed in Lakhs	Anticipated date of completion
1	2	3	4	5	6	7	8

[Details to be furnished with necessary work order signed from concerned project in-charge not below the rank of Executive Engineer or Competent Authority. The Work order/Testimonials will be verified, if required]

(B) Works for which Tenders already submitted:

Description of work	Place & State	Name & address of the customer	Estimated value of work in lakhs	Stipulated period of completion	Date when decision is expected	Remark if any
1	2	3	4	5	6	7

4.12 Certificate from Charted Account stating turn over for the last five years is also to be uploaded.

Sl.No	Year	Turn over amount	Remark
1	2018-19		
2	2019-20		
3	2020-21		
4	2021-22		
5	2022-23		

Litigation and Arbitral Issues:

4.13 Net pending litigations should not be more than 50% of bidder's net worth. As a supporting document of undertaking letter to be submitted by Bidder. It must be certified by Authorized Legal person / lawyer.

4.14 No consistent history of court/arbitral award decisions against the bidder for the last five years. As a supporting document of under letter to be submitted by Bidder. It must be confirmed by Authorized Legal person / lawyer.

5. **Special Conditions**

5.1.1 Establishment of Labor Camp is strictly prohibited in the premises of Indian Institute of Science Campus. Essential labor for round the clock work at site will be allowed with prior permission of Project Engineer cum Estate Officer.

5.1.2 Any damage to the existing service lines during execution of work shall be got rectified by the bidder at his own cost and risk.

5.1.3 Debris shall be disposed-off to an undisputed place of Bangalore outskirts as per the direction of the Engineer-in-Charge, whenever required.

5.1.4 Labor employed at the site will not be allowed to use cellphone while working at the site.

5.1.5 Supply of Electricity: - Electricity required for construction shall be arranged by the contractor himself. Electricity if supplied to the contractor by the Institute will be metered and amount will be recovered in the Bills as per actual at rates fixed by the Institute. Supply of electricity from the Institute is not mandatory. Non-supply of electricity by the Institute cannot be held as reason for shortfall in progress.

5.1.6 Water supply: The Contractor has to make his own arrangement for water supply. However, if water supply to the site at one convenient point is made available by the Institute, the charges for the consumption of water will be borne by the Contractor at 1.50% of the value of the work.

5.2 Schedule of Quantities (Bill of Quantities) is attached herewith. It should, however, be clearly understood that these quantities are liable to alterations by omission, addition or variation, at the discretion of the Architects/Project Engineer Cum Estate Officer.

5.3 The drawings together with specifications and conditions of contract are enclosed. These should be studied carefully by the intending tenderers. In the absence of specifications for any item of work, material or ingredient in the specifications, CPWD/MoRTH specifications shall be followed and in the absence of specification for any item, materials are ingredient shall be fixed in all respects in accordance with the instructions and requirements of the Project Engineer Cum Estate Officer, the work will be the best of the kind.

5.4 The tenderer is expected to inspect the site and acquaint himself with the local conditions and will be deemed to have so done before submitting the tender.

5.5 The rates quoted shall be for finished work and shall include for all necessary incidental work. Sales or any other tax on materials in respect of this contract will be payable by the Contractor. The Contractors cannot presume any details regarding the contract.

5.6 It is entirely the responsibility of the Contractor to arrange for and provide all materials required for successful completion of the work except such special materials that may be supplied if any.

5.7 Tenders determined to be substantially responsive will be checked by IISc for any arithmetic errors. Errors will be corrected by the IISc as follows.

5.8 Where there is discrepancy between the rates in figures and in words, the lower of the two will be governed.

5.9 Where there is a discrepancy between the unit rate and the line-item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will be governed.

5.10 Where there is a discrepancy in entries of unit rate between the Original and Duplicate, the lower will govern.

5.11 The Contractor should make his own arrangements to cover the all-round construction area, by providing polyester net/polythene sheet/barricading to avoid inconvenience to other surrounding departments, as directed by the Project Engineer-cum-Estate Officer of the work.

5.12 The debris arise during the period of construction will have to be cleared then and there to keep the surroundings clean and tidy. Such debris shall, if not cleared, be cleared at contractor's risk and cost.

5.13 The contractor shall vacate the campus premises with all his men/ materials immediately after completion of the project.

5.14 These special conditions will have the overriding effect on any of the terms and conditions of the contract elsewhere included in the contract document repugnant to each other and in such events, only the condition on the issue, if any as in special condition shall only be applicable and prevails. In case of disputes in interpretation of any clause the decision of the Director of IISc is final thereof and binding.

6. **GENERAL CONDITIONS**

6.1 **DEFINITIONS OF TERMS**

In constituting these conditions and specifications, the following expressions shall have the meaning, therein assigned to them unless there is something repugnant in the subject of context in consisting with such meanings.

6.2 Institute shall mean the "Indian Institute of Science, Bangalore".

6.3 "Office" shall refer to the Office of the Project Engineer cum Estate officer.

6.4 "Contractors" shall mean the tenderer whether a firm, registered company, partnership or any individual whose tender has been accepted by Institute or by an Officer (duly authorized in this behalf) on behalf of the Institute and who has entered into agreement with Institute for due fulfillment of the contract and shall include the legal representatives, successors, heirs and assignees of the tenderer.

6.5 "Engineer" shall mean the "Project Engineer cum Estate officer", Indian Institute of Science, Bangalore or such other officer as may be appointed to call as the Project Engineer cum Estate officer for the purpose of the contract and shall also mean and include other officers of equivalent rank directly in charge of the work or any part thereof under administrative control of the Director, IISc, Bangalore-12.

6.6 When the Engineer is named as final authority, it includes all the above-mentioned officers and, in such matters, the contractors shall have the right of appeal against the orders up to the Director, IISc, Bangalore, whose decision shall be final and legally binding on all the parties concerned.

6.7 The Project Engineer cum Estate officer named as final authority for any decision taken, shall mean only the Director, IISc, Bangalore or his duly authorized assistant.

6.8 The Engineer in charge shall mean the Project Engineer cum Estate officer directly in charge of the work or his duly authorized assistants.

6.9 Plant shall mean and include any or all plants, machinery, tools and other implements of all description necessary for the execution of the work in a safe and workmen like manner.

6.10 The expression "Works" where used in these conditions shall unless thereby something in the subject or contract repayment to such construction, be construed to mean the work or the works constructed to be executed under or virtue of the contract whether temporary or permanent and whether original, altered, substituted or additional.

6.11 "Contract and contract document" shall mean and include the notice inviting tenders, proceedings of the pre bid meeting, the stamped agreement, conditions of contract, specifications and Schedules 'B', drawings and all other connected documents with tender schedule.

6.12 "Specifications" shall mean the specifications annexed and where these are not specifically mentioned shall be as may be detailed and necessary due to particular nature of work as approved by the Project Engineer cum Estate officer.

6.13 "Site" shall mean and include all the area in which operations in respect of the work are carried out. This shall also include materials stacking yards and the area where temporary structures are put up for installing any machinery etc.

6.14 "Tests" shall mean such tests as are required to be carried out either by the contractor or by the Project Engineer cum Estate officer from time to time on completion as detailed in the specifications before the work is certified as being satisfactory and is taken over by the Project Engineer cum Estate officer.

6.15 "Month" shall mean a Calendar month.

6.16 "Prime contractor" means a firm that performs construction work itself and that the work is directly entrusted to the firm by the owner / Government / local body / Quasi

Government / Government undertaking. Words used in singular shall also include the plural & vice-versa where the context so demands.

6.17 **CONTRACTOR TO INSPECT SITE**:

The contractor shall visit and examine the construction site and satisfy himself as to the nature of the existing roads or other means of communications, the character of the soil for the excavations, the extent and magnitude of the work and facilities for obtaining materials and shall obtain generally his own information on all matters affecting the execution of the work. No extra for charges made in consequence of any misunderstanding or incorrect information on any of these points or on the grounds of insufficient description will be allowed. All expenses incurred by the contractor in connection with obtaining information for submitting this tender including his visits to the site or efforts in compiling the tender shall be borne by the Tenderer and no claims for reimbursement thereof shall be entertained. .

6.18 ACCESS TO SITE:

The Contractor is to include in his rates for forming access to the site, with all temporary roads and gangways required for the works.

6.19 SETTING OUT:

The Contractor shall set out the building in accordance with the plans. All grid/center lines shall be pegged out to the satisfaction of the Engineer. The Contractor shall be responsible for the correctness of the lining out and any inaccuracies are to be rectified at his own expense. He will be responsible for taking ground levels of the site before setting out and recording them without any extra charge.

The Contractor shall construct and maintain proper benchmark at the intersection of all main walls, columns, etc., in order that the lines and levels may be accurately checked at all times.

6.20 **TREASURE TROVE**:

Should any treasure, fossils, minerals, or works of art of antique interest be found during excavation or while carrying out the works, the Contractor shall give immediate notice to the Engineer of any such discovery and shall make over such finds to the Institute.

6.21 **ACCESS FOR INSPECTION:**

The Contractor is to provide at all times during the progress of the works and the maintenance period proper means of access, with ladders, gangways etc., and the necessary attendants to move and adapt as directed for the inspection of measurement of the works by the Engineer or their representatives.

6.22 **ATTENDANCE UPON ALL TRADERS:**

The Contractor shall be required to permit tradesmen/ Specialized agencies appointed by the employer to execute works like water supply, Sanitary, Electrical installation, lifts, air conditioning, hardware and other specialized works. The contractor shall also permit the above mentioned agencies to use his scaffolding and retain the scaffolding till such works are completed. The rates quoted by the contractor shall be inclusive of the above facility.

6.23 **GATEKEEPER AND WATCHMAN:**

The Contractor from the time of being placed in possession of the site must make arrangements for watching, lighting and protecting the work, all materials, workmen and the public by round the clock on all days including Sundays and holidays at his own risk and cost.

6.24 **STORAGE OF MATERIALS:**

The Contractor shall provide for necessary sheds of adequate dimension for storage and protection of materials like cement, steel, lime, timber and such other materials including tools and equipment which are likely to deteriorate by the action of sun, wind, rain or other natural causes due to exposure in the open. The cement storage site shall be leak proof and shall hold at least 4 months requirement. All such sheds shall be cleared away and the whole area left in good order on completion of the contract to the satisfaction of the Engineer.

All materials which are stored on the site such as bricks, aggregates etc., shall be stacked in such a manner as to facilitate rapid and easy checking of quantities of such materials.

6.25 **COST OF TRANSPORTING**:

The Contractor shall allow in his cost for all transporting, unloading, stacking and storing of supplies of goods and materials for this work on the site and in the places approved from time to time by the Engineer. The Contractor shall allow in his price for transport of all materials controlled or otherwise to the site.

6.26 **W.C. AND SANITARY ACCOMMODATION AND OFFICE ACCESSORIES AND ACCOMMODATION**:

The contractor shall provide at his own cost and expense adequate closet and sanitary accommodation complying in every respect to the rules and regulations in force of the local authorities and other public bodies, for his workmen, for the workmen of nominated sub-contractors and other contractors / specified agencies working in the building, the Project Engineer of works and other Institute agents connected with this building project and maintain the same in good working order.

The Contractor shall also provide at his own expense adequate office accommodation for the Project Engineer of works preferably contiguous to his office and shall maintain the same in a satisfactory condition and shall provide light, fan and attendant etc., for the same and shall remove them after completion of the works. He shall arrange to provide latest survey Instruments and at all times maintain the same in good working order at site, to enable the Project Engineer of works or other representative of Institute to check the lines and levels of the work.

6.27 **MATERIALS**:

Materials shall be of approved quality and the best of their kind available and shall conform to I.S. specifications. The Contractor shall order all the materials required for the execution of work as early as necessary and ensure that such materials are on site well ahead of requirement for use in the work. The work-involved calls for high standard of workmanship combined with speed and to the entire satisfaction of the Project Engineer.

6.28 **TO ASCERTAIN FROM CONTRACTORS FOR THE OTHER TRADES.**

The Contractor shall ascertain from all agencies / Sub-contractors all particulars relating to their work with regard to the order of its execution and the position in which chases, holes and similar items will be required; before the work is taken in hand as no patch works shall be allowed for cutting away work already executed in consequence of any neglect to ascertain these particulars beforehand.

6.29 **SAMPLE APPROVAL:**

Before ordering materials, the Contractor shall get the samples approved from the Project Engineer cum estate officer well in time.

6.30 **TESTING OF WORK AND MATERIAL**:

The Contractor shall, if required by the Engineer arrange to test materials and/or portions of the works at his own cost in order to prove their soundness and efficiency. If after any such test the work or portion of works is found in the opinion of the Engineer to be defective or unsound, the Contractor shall pull down and redo the same at his own cost. Defective materials shall immediately be removed from the site at his own cost.

6.31 **FOREMAN AND TRADESMEN:**

All Tradesmen shall be experienced men properly equipped with suitable tools for carrying out the work of carpentry and joinery and other specialist trades in a first-class manner and where the Engineer deem necessary, the Contractor shall provide such tools which are considered necessary for carrying out of the work in a proper manner.

All such tradesmen shall work under an experienced and properly trained Foreman, who shall be capable of reading and understanding all drawings, pertaining to this work and the contractor shall also comply with other conditions set out in different clauses of the conditions of the contract.

6.32 **PROJECT PROGRAMME OF WORKS AND WEEKLY PROGRESS REPORT**:

a) Organization chart:
The contractor should submit the proposed organization chart for the project including the details of staff to be deployed full time on site to the approval of Project Engineer, where the PROJECT ENGINEER raises any objection to either the qualification or experience or required professionalism of any of the staff deployed by the contractor, the same shall be replaced by suitably competent person to the approval of PROJECT ENGINEER within 7 days.

b) Program chart:
The Contractor shall furnish the detailed programme of execution for timely completion of the project (inclusive of rainy season). Such a detailed program of works prepared using Industry Standard Scheduling Software like MS Project 2000 or Primavera shall be submitted by the Contractor within ten days after receiving communication of tender acceptance. As per the detailed drawings and schedule of quantities; the contractor shall work out concurrent activities with start and finish times, integrating of all tasks with interface and milestone event drawn and to evaluate for reduction in total project duration through improved over lapping of tasks and activities where feasible. The Contractor shall plan for improved planning and scheduling of activities and forecasting of resource requirements, ability to use the computer effectively to produce timely valid information for Project Management purpose. Accordingly, PERT; CPM Networking shall be drawn. GANNT charts shall also be furnished. The Contractor shall also furnish necessary particulars to the Project Engineer of works for compiling weekly progress reports in the form furnished by the Institute. A monthly financial programme shall also be submitted.

6.33 **CLEARING OF SITE**:
The contractor shall after completion of the work clear the site of all debris and left-over materials at his own expense to the entire satisfaction of the Institute. The same should be carted out of the Institute at his own cost.

The contractor shall also clear the labour camp/RMC plant of all types of permanent/temporary structures, soak pits, sump, septic tanks or any other such installations as identified by the PROJECT ENGINEER to the entire satisfaction of the Institute. The debris/excess stuff shall be carted out of the Institute at his own risk and cost.

6.34 **PHOTOGRAPHS**:
The Contractor shall at his own expense supply to the Institute photographs in duplicate copies not less than 25 cm x 20 cm. (10" x 8") along with soft copy, of the works taken from all the portions of the building at intervals of not more than one week during the progress of the work, or at every important stage of construction, as directed by the Project Engineer of work.

6.35 **PROVISION OF NOTICE BOARD**:
The Contractor shall provide a notice board on proper supports 3m x 2m (10' x 6') in a position approved by the Engineer. He shall allow for painting and lettering stating name of work; name of Architects; Structural Consultants; General Contractor and Sub-Contractors. All letters except that of the name of the work shall be in letters not exceeding 5 cm. in height and all to the approval of the Engineer. Proper barricading shall be erected all-round the site before commencement of the work.

6.36 **PROTECTION:**
The contractor shall properly cover up and protect all work throughout the duration of work until completion, particularly masonry, moldings, steps, terrazzo or floor finishes, staircases

and balustrades, doors and window frames, plaster angles corners lighting and sanitary fittings, glass, paint work and all finishing.

6.37 **PREPARATION OF BUILDING FOR OCCUPATION AND USE ON COMPLETION:**
The whole of the work shall be thoroughly inspected by the Contractors and all deficiencies and defects set right. On completion of such inspection, the Contractor shall inform the Engineer in writing that he has finished the work and it is ready for the Engineer's inspection.

On completion, the Contractor shall clean all windows and doors and all glass panes, including cleaning of all floors, staircases and every part of the building including oiling of all hardware. He will leave the entire building neat and clean and ready for immediate occupation and to the satisfaction of the Engineer.

6.38 The tenderer must understand clearly that the rates quoted are for complete items of works including charges due to materials, labour, all lead and lift, HOM of plant and machineries, scaffolding, supervision, service works, power, all types of royalties, sales tax, labor cess, all types of taxes payable to the Govt and local bodies, overhead charges, etc., and includes all extra to cover the cost of night work if and when required and no claim for additional payment beyond the prices or rates quoted will be entertained for payment subsequently towards any claims on the grounds of misrepresentation or on point that he was supplied with information given by promise or guarantee by the Institute, or by any person whether member of or employee in Institute will not be entertained. Failure on the contractor's part to obtain all necessary information for the purpose of submitting his tender and quoting rates therein shall not absolve him of any risk or liability consequent upon the submission for tender.

6.39 All the works shall be carried out as per specifications prescribed by BIS, National Building code, CPWD / KPWD specifications, relevant IS codes or as directed by the Project Engineer in the absence thereof.

6.40 In case there is any conflict in the specifications and drawings the decision of the Project Engineer cum Estate officer shall be final and binding on the contractor.

6.41 All the materials shall be got approved by the Project Engineer cum Estate officer before use.

6.42 The rates quoted for in individual items shall include labour, cost of materials conveyance and lift charges for all materials required for successful completion of work and all taxes payable to any authority as per rules in vogue from time to time.

6.43 Necessary pillars shall be constructed by the Contractor for benchmark at no extra cost as directed by the Project Engineer.

6.44 Site order book shall be maintained in the work spot and the contractor shall sign in the order book in token of having gone through the instructions issued by the inspecting officers and carryout the instructions promptly.

6.45 In the work spot the contractor shall provide suitable temporary office with a covered area of 1000 sq.ft matching that of the Contractor's office with necessary furniture for use of Institute as directed by the Project Engineer for which no extra payment or compensation shall be claimed. The furniture however will after completion of the work, be the property of the contractor and shall remove them at the close of the contract.

6.46 The contractor shall take all precautions against damage from accident. No compensation will be allowed to the contractors for their tools and plant materials lost or damaged from any cause. The contractor is liable to make good the structure or plants damaged by any other cause at his own cost. The Institute will not pay the contractor for corrections or repairing any damaged portion of work done during construction.

6.47 The contractor shall employ adequate no. of skilled & unskilled labours required for successful timely execution of work. He shall submit daily reports to the Engineer in charge

regarding the strength of labour employed both skilled and unskilled.

6.48 The contractor shall furnish weekly medical report showing number of persons ill or incapacitated and nature of their illness, to the Project Engineer.

6.49 The contractor shall furnish a report of any accident which may occur, within 24 hours of its occurrence to the Project Engineer.

6.50 The contractor shall keep on site of work a qualified Engineer as required as per rules of registration as their authorized representative who will receive all instructions given from the Institute officers. The representative shall have permanent office at site of work where communications can be sent and notices can be served by the Project Engineer throughout the duration of work.

6.51 Prior approval should be obtained from the Project Engineer for the construction and location of the temporary site office, store sheds and labour quarters, within the premises of the site, similarly the contractor shall get approval of the Project Engineer regarding the areas to be utilized for stacking the materials etc., for the work.

6.52 Reference to detailed specifications are indicated against the items contained in the Schedule 'B', in case there is any item for which no detailed specifications is indicated, it shall be carried out as per specifications intimated by the Project Engineer. The contractor shall not be entitled for any extra claims or compensation on this account. In case of additional or extra items not covered by the Schedule 'B', the contractor shall carry out the work as per specifications intimated by the Project Engineer.

6.53 The Engineer shall have the right to direct the contractor to progress the various items of works in the manner prescribed by him.

6.54 Failure to adhere to any of the above will be sufficient cause for taking action under clause (2) or clause (3) or both along with their sub clauses of conditions of contract.

6.55 Contractor shall make arrangements at his own cost to construct approach road for conveyance of materials etc., preferably on the alignment accepted by the Institute to procure land etc. for housing, staff and workmen near the site of the work.

6.56 It is not possible for the Institute to release any quarry (metal and sand etc.,) for this work. The contractor has to make his own arrangements. No claim regarding leads and lift will be accepted.

6.57 The contractor has to make his own arrangements in regard to power supply and water required for construction and drinking water facilities.

6.58 Tool, Tax, Octroi, Royalty for collecting earth, gravel, sand, stone, excise duty, sales tax, labour cess or any other tax payable on account of this contract shall be met by Contractor.

6.59 The contractor shall be entirely responsible for sufficiency of the scaffolding, timbering, machinery, tools, implement and generally of all means used for fulfillment of the work. Whether such means may not be approved or recommended by the Project Engineer, the contractor must accept at his own cost all risks of accidents or damages.

6.60 After completion of the work, service drawings as per actual execution in Auto CAD should be submitted by the agency for services such as Electrical, Water supply and Sanitary before submission of final bill.

6.61 Extra care shall be taken regarding the laborers by providing waist belt, Helmets scaffolding etc. at your own cost and supervision and shall be carried out as per the directions of the Project Engineer.

6.62 WORKMANSHIP AND LABOUR:

The quality of all materials, tools, operators and labour used on the work shall be subject to the approval of the Project Engineer cum Estate officer or his authorized agent who shall have

power to order immediate removal by the contractor any of the above that may not meet with his approval.

In case of failure to carry out orders of removal within the time specified, the Project Engineer or his authorized agents shall get the same removed at the contractor's expense.

6.63 KEEPING DRY AND PUMPING:

Unless otherwise provided for in the contract, the contractor will at his own expense keep all portions of the work free from undue water, whether due to springs, soakage or inclement weather and will use his own implements and machinery for this purpose.

6.64 BAILING OUT OR DEWATERING:

Adequate arrangements shall be made by the contractor for dewatering the foundation trenches and excavation and keeping the same dry while the masonry or concrete work is in progress and till the Project Engineer considers that the mortar is sufficiently set.

The rates for the various items include the cost of shoring, strutting, coffer dam, channels or other incidental devices necessary for diverting the water met within foundation. The cofferdam and the diversion channel shall, however, be maintained in good and working condition till the completion of the structure or until such time, as in the opinion of the Project Engineer till the coffer dam or/and diversion channel is no longer necessary. Bailing out water necessitated by the failure to maintain the cofferdam and diversion channel will not be paid for separately under any conditions.

No extra rate shall be paid for removing any stuff outside, which might find excess due to rains or for reasons whatsoever from the sides or bottom of the foundation trenches and excavation or from also where when the dewatering operations are in progress.

The contractor must assure himself by making the necessary investigation regarding the depths to which foundations are likely to go. If any work is ordered to be done beyond dimensions or deviations marked in the drawings, no extra rate other than the rate for the Undertaking of work quoted by the contractor be paid.

The contractor will make himself arrangements for necessary plant such as Pump, engines, and other materials required in this connection.

6.65 FACILITIES FOR INSPECTION:

The work at all times be open for inspection by the Project Engineer or his duly authorized Assistant and the contractor shall arrange easy access to every part of the work and shall provide such ladders, scaffolding and lifts for this purpose as necessary at his own cost.

6.66 DELIVERY OF WORKS:

The final bill will be prepared after the work is handed over to the Project Engineer or his duly authorized representative in a thoroughly complete, clean, sound and workman like state.

6.67 EXTRA ITEM:

Whenever the contractor is ordered by the Project Engineer or the person duly authorized by him to execute any item of work, which is not in his tender, it shall be the contractors duty to see that the order is duly entered in the order book on the work, unless a separate communication to this effect is received by him, it shall be his duty to get the rates sanctioned for the item by the appropriate authority. For any extra item of work not thus ordered either by any entry in the order book or separate communication, the contractor shall have no claim to payment.

6.68 COMPLIANCE WITH BYELAWS AND PROTECTIONS AGAINST ACCIDENTS, ETC:

Contractor is responsible for complying with all acts, bye-laws, Municipal and other regulations for the provision and maintenance of lights during nights, barricading, providing any other protection that may be necessary and will be liable for all claims that may arise

from accidents of nuisance caused by works.

6.69 DISPUTES:
Disputes on the points between the Project Engineer and the contractors shall be referred to the Center for campus management and Development, whose decision shall be given in writing and shall be final and binding on the contractor.

6.70 TOOLS ETC.,
The contractor shall unless otherwise specially stated in the contract, be responsible for the payment of all import duties, octroi duties, sales tax, quarry fees etc., on all materials and articles brought to site.

6.71 CLEARANCE OF SITE:
The site described and shown on the plan is to be cleared of all obstruction, loose stones and materials, rubbish of all kinds of shrubs and brushwood, the roots being entirely removed. The products of the cleaning to be stacked in such a place and manner as ordered by the Project Engineer.

In jungle clearing all trees not marked for preservation, jungle wood and brushwood shall be cut down and their roots entirely removed up. All wood and materials from the clearings will be property of the Institute and should be stacked as the Engineer in charge directs. Trees shall not be cut without prior permission of the Institute.
All holes or hollow, whether originally existing or produced by digging up roots, shall be carefully filled up with earth well rammed to the required density and leveled off, as may be directed.

6.72 LINE OUT:
The contractor shall use necessary measuring instruments, theodolite, workstation and other materials like flags, strings, pegs, nails, pillars, paints, etc., and also Labour required for ascertaining of the initial ground levels at the different stages of excavation and construction of masonry or other structures at his own cost. Any dispute in regard to the accuracy of the measuring instruments and the device shall be subjected to the final decision of the Engineer-in charge of the work.

6.73 MACHINERY: All the machinery that will be employed on the work shall be approved, efficient and thoroughly, complying with the specifications of each machine or parts and shall have been manufactured by reputed and qualified firms. All the machinery employed on the work shall be open to inspection at all working hours, by the Project Engineer and any defect shall be rectified, repaired, replaced, renewed or remodeled so that its performance in the opinion of the Project Engineer is satisfactory. Any defective part of the machine, which requires replacement, shall be promptly replaced, failing which the Engineer-in-charge, shall be at liberty to cause the defective fittings removed from site of work at the cost of the contractor.

6.74 OPERATORS: The machines shall be in charge of efficient and trained operators, which terms shall include drivers, mechanics or other personnel who are actually operating the machines. The Engineer in-charge has the right to test operators, etc., as deemed necessary by him for the class of machinery, which he is to operate and shall drive out such of the operators who fail in the tests.

6.75 SAFETY PRECAUTION: All reasonable safety precautions for the safety of workers shall be taken. The contractors shall be responsible for the maintenance of all regulations under the Factory Act, workmen's compensation. Minimum wages act and other act for the safety and welfare of the workers employed by him. In addition, the contractors shall provide adequate protection to all workers employed by him against natural elements such as rain, sun, wind etc., during working hours and provide free, pure protected drinking water during working hours.

6.76 NON-STOP OPERATION:
In the continuous or non-stop operations suitable shifts or working hours for each shift shall

be maintained. The contractor is liable for all reasonable extra payment for all extra hours of work done by the workers employed by him.

6.77 TESTS:

The Project Engineer cum Estate officer or his authorized representatives shall have full scope and right of entry at all times to examine and test, measure, count, weigh, take bores, or in any manner satisfy himself that the work executed is according to the specifications and required strength. Any portion of work got disturbed, during such tests, shall be made good by the contractors, without extra cost. The Engineer in charge has the right to change the design proportions, mixes within reasonable limits to ensure requisite strength of the structure. Laboratory for requisite tests shall be established by the Contractor at site only, at his own cost.

6.78 ADEQUATE ARRANGEMENTS TO ACHIEVE PROGRESS:

The Project Engineer shall have the right to advise the contractor on the strength, quality and nature of labour to be employed on work to maintain progress on the work, commensurate with the strength of structure. Similarly, he shall advise the contractor on the nature and adequacy of the machinery that are required on the work.

6.79 DETAILS TO BE FURNISHED FOR ENGAGING SUB-CONTRACTOR FOR SPECIALISED WORKS:

The tenderer shall be required to engage agencies of standing and repute who have experience in executing works of similar nature and magnitude. Such specialized trades cover electrical installation (HT/LT), Lifts, A.C. sanitary and water supply works, firefighting installation and any such other trades as may be directed by the Institute. The successful tenderer shall be required to engage Sub-agencies for such specialized trades only with the prior written approval of the Project Engineer cum Estate officer after giving an opportunity to the Project Engineer cum Estate officer to evaluate the experience and competence of the sub-agency for each trade. In order to ensure implementation of this requirement, it is required that each tenderer shall submit along with his tender, names of three sub-agencies for each trade amongst whom tenderer proposes to engage if successful in the tender. Along with names of sub-agencies for each trade, the tenderer shall furnish in detail the following particulars in respect of each sub-agency.in the format furnished in Technical Bid.

All such information concerning sub-agencies shall be furnished along with the tender. Any tender containing insufficient information in this regard is liable for rejection. In the event of non-compliance of this requirement, the Institute shall have the right to nominate any sub-agency who in their opinion meets the selection criteria. In such event it would be incumbent on the successful tenderer, to accept and appoint then nominated sub-agency without demur and on this account, if there is any additional cost, such cost shall be borne by the successful tenderer. The Institute shall have no liability on this account. The Institute has the right to evaluate the experience, reputation etc., of such sub-agencies and on their approval in writing to the successful tenderer, successful tenderer shall be required to engage only such approved agencies for execution.

If the Institute is not satisfied with the performance or capability of the names in the panel furnished by the tenderer, the successful tenderer shall be required to engage an agency nominated by Institute. In all these matters, there shall be no additional financial implication to the Institute. The successful tenderer shall be required to execute works within the accepted rates only and no claim will be accepted due to the Institute, insistence on engaging any sub-agency. The Institute further reserves the right to instruct the successful tenderer to terminate the work of sub-agency at any time during the contract, if the performance is found unsatisfactory. In such case, the successful tenderer shall be required to furnish a further panel of names from whom a similar selection can be made by the Institute In this instance also, the Institute is not liable for any additional cost. Responsibility for the delay occurred in this process, if any shall rest with the successful

tenderer.

It is the responsibility of the successful tenderer to ensure that the sub-agencies engaged in the work comply with all the clauses in the agreement between the Institute and the successful tender. It shall be responsibility of the successful tenderer to exercise first line supervision on the works executed by his subagencies including supervision on the quality of materials and workmanship and to ensure that the sub agencies comply with the technical specifications, drawings and bill of quantities. The successful tenderer shall also establish competent site organization technically and administratively to ensure that the works of various sub-agencies are supervised and well co-ordinate to ensure proper sequencing of construction and finishing works and to ensure that the overall time schedule is fully complied with.
The detailed construction programme schedule to be furnished by successful tenderer shall include action plan for procurement of materials and execution of works at site for each of the sub-agency and the detailed construction programme schedule shall reflect proper integration of each component of the building to ensure well-coordinated execution so as to complete the project including services within the stipulated time schedule.

6.80 Existing service lines such as electrical, water supply, sewer lines, telephone lines etc., shall be carefully protected and preserved before commencement and during excavation, dismantling /demolition operations. Details of UG facilities shall be provided to the successful tenderer. Any damage caused to the aforesaid service lines, etc., during excavation, demolition/dismantling shall be made good at Contractor's own expense/cost. Restoration of any service lines, which needs to be shifted and found in the proposed site, is the responsibility of the contractor and the agency shall carry out the work as per the direction of Project Engineer the cost of such work will be borne by the Institute.

6.81 Dust nuisance to neighbour shall be minimized by providing and erecting screens to the required height as per direction of Project Engineer cum Estate officer with Aluminium sheets or canvas or other suitable material before commencement of the work. The site shall be cleared off such protection arrangement after virtual completion of work. All the operations shall be carried out strictly in accordance to regulations of municipal and other local authorities and shall be restricted to normal working hours.

6.82 No debris or materials got from dismantlement/demolition the building(s) shall be thrown in the public road causing inconvenience to the traffic and any fine or penalty imposed by local authority for non-compliance of this provision shall be borne by the contractor.

6.83 The Contractor shall be responsible for any injury to persons, animals, or things and for all structural damage to property which may arise from the operation or neglect of himself and or any nominated sub-contractors, contractor's Employees and or third party whether such injury or damage arising from carelessness, accident or any other cause whatsoever, in any way connected with the carrying out the construction/dismantling/demolition.

The contractor shall take required insurance cover with an approved insurance company as provided in the contract and deposit with the Institute well before commencement of construction/ demolition / dismantling.

6.84 **Preservation of trees**: The contractor shall preserve all existing trees in and adjacent to
6.85 the site which does not interfere with the construction as determined by the Engineer-in charge.

6.86 **Drawings and working Details:** The work shall be carried out strictly in accordance with the approved plans and estimates and specifications and as per the instructions of the Engineer-in-charge, and no deviations or changes are permitted without the written order of the Engineer. The designs and drawings enclosed with the tender documents are only typical and tentative. The working drawings and the working details of the several components of works will be prepared and made available at the time of execution and the contractor shall carryout the work in accordance with such working drawings and working

details.

6.87 **Omissions and discrepancies in drawings and instructions:**
In all cases of omissions, doubts or discrepancies in the dimensions or discrepancies in the drawings and item of work, a reference shall be made to the Project Engineer cum Estate officer, whose elucidation and elaboration shall be considered as authorized. The Contractor shall be held responsible for any error that may occur in the work through lack of such reference and precautions.

6.88 The contractor shall be responsible for accuracy for all shapes, dimensions, and Alignments both vertical and horizontal etc., of all the components of the work.

6.89 **Lands for the use of the Contractors Camp:**
The contractor shall have to make his own arrangements at his own cost for construction of living accommodation outside the IISc premises. The Employee shall not provide any space / building for labour camp.

6.90 **Undesirable Person to be removed from site:**
The contractor shall not employ on site any person who is undesirable, if in the opinion of the Project Engineer the person or persons at site of work employed on behalf of the contractor is/are considered undesirable. The Project Engineer shall notify the contractor to this effect and the contractor will be bound by the decision of the Project Engineer to remove such person or persons from the site of work and from the labour camp. The contractor shall not be entitled to any damage or loss on this account. On the contrary, the contractor shall be liable to compensate the Institute for any loss or damage to the Institute property caused by the employment of such person.

6.91 **Labour Statistics**:
The contractor shall submit daily reports on the following:
(a) Total No. of labour employed in the working area.

6.92 **Execution of work during night times:**
The work shall normally be carried out between 08.00 hours and 17.00 hours with a break of one hour and when permitted during night period, the second shift shall be between 17.00 hours and 00 hours with a break of half an hour during night. When ordered to work at night, adequate provision for lighting the working area should be made by the contractor at his cost and got approved by Engineer. The agency shall not be paid extra for the works executed during night.

6.93 **Safety code:**

a) The Contractor at a prominent place at work spot should bring these safety provisions to the notice of all concerned by display on notice board. The persons responsible for compliance of the safety code shall be named therein by the contractor.
b) To ensure effective enforcement of the rules relating to safety precautions, the arrangement made by the contractor shall be open to inspection by the Labour Officer, Engineer or his representatives.
c) All necessary personal safety equipment's as considered adequate by the Engineer should be kept available for immediate use of persons employed at the site and maintained in the good condition and the contractor should take adequate steps to ensure proper use of equipment by those concerned.
d) Workers employed on mixing concrete, cement grout, cement mortar shall be provided with protective footwear protective goggles and protective gloves. Those engaged in mixing or stacking cement or any materials injurious to the eye, nose and mouth shall be provided with a face mask and protective cover free of cost by the contractor.
e) Those engaged in welding work shall be provided with welder's protective eye Shield and gloves. Stonebreakers shall be provided with protective goggle and protective clothing and seated at sufficiently safe intervals.
f) Those engaged in binding and fabricating steel shall be provided with protective

gloves.

g) Those engaged in deep cuts, large rock excavation shall be provided with helmets.
h) All labour / persons at work shall wear helmet compulsorily.
i) When the work is near any place where there is risk of drowning all necessary equipment's shall be kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provisions should be made for prompt first aid treatment of all injuries likely to be sustained during the course of work.
j) Adequate and suitable caution and danger signal boards shall be prominently exhibited at road/high tension overhead line/where heavy electrical machines are working where overhead cranes or hoist; derricks, winches are working where blasting zone is demarcated. The content of the board shall be in English and the local language for easy identification.
k) All scaffolding, ladder, stairways, gangways, staging, centering, form work and temporary support and safety devices etc., shall be sound in strength and constructed and maintained as such throughout its use. The agency shall obtain approval from Project Engineer cum Estate officer for scaffolding, formwork etc., before commencement of work.
l) No materials on any site of work shall be so stacked as to cause danger or inconvenience to any persons or public.
m) The Contractor shall provide all necessary fencing and lighting to protect the public/working men from accident and shall be bound to bear the expense of defense of every suit action or other proceedings of law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and cost, which may be awarded in any such suit action or proceedings to any such persons or which may with consent of the contractor be paid to compensate any claims by any such person.
n) No electric cables or apparatus, which is liable to be a source of danger to persons, employed shall remain electrically charged unless a caution Board is put into that effect and close approach to the same is prohibited.
o) All practical steps shall be taken to prevent danger to persons employed from risk of fire or explosives. No floor, roof or other portion of any building used for residence shall be so over-loaded with debris or materials so as to render it unsafe.
p) The final disposal of water used for work or removed from work spot as well as the supply used for domestic consumption shall be as directed by the Engineer. The contractor shall make his own arrangement for purification of domestic water supply used by his staff and labour colony and used on the site of work to the satisfaction of the Engineer.

q) The source of drinking water supply/distribution system in workers colony shall be protected from chances of contamination by poisonous materials epidemic causing infections bacteria etc., by maintaining the source and system under adequate hygienic conditions.
r) Notwithstanding the above clauses, there is nothing in this to exempt the contractor to exclude the operations of any other Act or Rules in force of the Central Govt., State Govt.

6.94 **AWARENESS OF SITE CONDITIONS AND CARRYING OUT OF SITE INSPECTION PRIOR TO TENDER SUBMISSION:**

Prior to the preparation and submission of his Tender, the Contractor shall make visits to the site and carry out all the necessary inspections and investigations in order to obtain all information and to make his own assessment of the conditions and constraints at site, including the means of access to it. The Contractor shall make himself aware of all the features of the site and the working conditions and space and shall, in general, be responsible for obtaining all the necessary and requisite information needed for him to prepare and submit his Tender.

Should the Contractor require any clarifications he shall seek these in writing from the Project Engineer before submitting his Tender. At no stage will any extra claims be entertained or allowed on any matter or for any reason arising from or as a consequence of

the Contractor's failure to comply with all the requirements stipulated in this Clause.

6.95 **WORK AND WORKMANSHIP**

To determine the acceptable standard of workmanship, the Project Engineer may order the Contractor to execute certain portions of works and services under the close supervision of the Project Engineer. On approval, they shall label these items as guiding samples so that further works are executed to conform to these samples.

6.96 **TEST CERTIFICATES**

The contractor shall submit copy of test certificates for all the major electrical equipment such as circuit breakers, CTs, PTs, instruments, relays, busducts, rising mains, busbars, cables etc., and panel as a whole, confirming to relevant IS/BIS standards issued by manufacturers.

6.97 **SAMPLES AND CATALOGUES**

Before ordering the material necessary for these installations, the contractor shall submit to the Engineer-in-Charge/Consultants for approval, a sample of every kind of material such as cables, conductors, conduits, switches, socket outlets, circuit breakers, lighting fixtures, boxes etc., along with the catalogues with their dimensional details.
For major items such as sub lighting panels distribution boards, the submission of drawings/catalogues along with technical details shall be enough. Prior to ordering any electrical equipment/material/system, the contractor shall submit to the Engineer-in-Charge/Consultants the catalogues, along with the samples, where applicable, from the approved manufacturer. The contractor shall arrange inspection and testing at the manufacturer's factory or assembly shop for final approval. No material shall be procured prior to the approval of the Engineer-in- Charge/Consultant.

Also, the contractor shall ensure that the dimensional details of the equipment fit into the allotted space provided in the building.

6.98 **COMPLETION CERTIFICATE**

On completion of the electrical installation a certificate shall be furnished by the contractor countersigned by the licensed supervisor, under whose direct supervision the installation was carried out.

6.99 **PERFORMANCE GUARANTEE**

The contractor shall indemnify the Institute against defective materials and workmanship for a period of one year after completion of the work. The contractor shall also hold himself fully responsible during that period for reinstallation or replacement at free of cost to institute, the following:
Any defective work or material supplied by the Contractor.

Any material or equipment damaged or destroyed as a result of defective workmanship by the contractor.

6.100 **RATE ANALYSIS**

At any time and at the request of the Project Engineer the contractor shall provide details or breakdown of costs and prices of any part or parts of the works.

6.101 The Project Engineer cum estate officer of IISc reserves the rights to delete any item from the contractor’s scope of work.

7. CONTRACTOR'S LABOUR REGULATIONS

7.1 DEFINITION:

In these regulations unless otherwise, expressed or indicated the following words and expressions shall have the meaning hereby assigned respectively that is to say:

Labour means workers employed by the contractor or the Institute directly or indirectly through sub-contractor or any other person, or any agent on his behalf on a payment as per prevailing Karnataka State labour regulations and will not include supervisory staff like overseers etc.

Fair wages means whether for item or place of work notified at the time of inviting tenders for the work and where such wages have not been so notified, the wages prescribed by the Karnataka Public Works Department for the district in which the work is done.

Contractors shall include every person whether a sub-contractor head or agent employing labour on the work taken contract.

The relevant orders of Government of Karnataka in regard to payment of wages as amended from time to time shall be followed by the contractor.

7.2 WORKING HOURS:

Normally working hours of a labour employed should not exceed 8 hours a day. The working day shall be so arranged that inclusive of interval for rest if any, it shall not spread over more than 12 hours on any day.

When a worker is made to work for more than 8 hours on a day or for more than 48 hours in any week, he is entitled to double the ordinary rate of wages. Children shall not be made to work.

Every worker shall be given a paid weekly holiday normally on Sunday.

7.3 DISPLAY OF NOTICE REGARDING WAGES ETC.

The contractor shall (a) before he commences his work on contract, display and correctly maintain in a clean legible condition in conspicuous places on the work, notices in English and in the local language spoken by the majority of the workers, giving the rate of wages which have been certified by the Regional Labour Commissioner, as fair wages and the hours of work which such wages are earned, and a copy of such notices shall be sent to the certifying officers.

7.4 PAYMENT OF WAGES:

Wages due to every worker shall be paid to him direct.

7.5 FIXATION OF WAGES PERIODS:

The contractor shall fix the wages period of which the wages shall be payable.
Wages of every worker employed on the contract shall be paid.

In case of establishments in which the wage period is one week, within three days from the end of the wage period wages shall be paid. In the case of other establishment before the expiry of the 7th day or 10th day from the end of the wage period according to the numbers of the workers employed in such establishment does not exceed 100 or exceeds 1000.

When the employment of any workers is terminated by or on behalf of the contractor the wages earned by him shall be paid before the expiry of the days succeeding the one which his employment is terminated.
All payment of wages shall be made on a working day except when the work is completed before the expiry of the wages period in which case final payment shall be made within 48 hours of the last working day at work site and during the time.
NOTE: The term working day means a day on which the labour is employed, and the work is in progress.

7.6 FINE AND DEDUCTIONS WHICH MAY BE MADE FROM WAGES:
The Wages of workers shall be paid to him without any deductions of any kind except the following deductions:
Deductions for absence for duty i.e., from the place or the places whereby the terms of his employment he is required to work. The amount of deductions shall be in proportion to the period for which he was absent.

Deductions for damage or loss of goods expressly entrusted to the employed person for custody or for loss of money or any other deduction which he is required to account, where such damage or loss is directly attributable to neglect or default.

Deduction for recovery of advance or for adjustment of over payment of wages, advance granted shall be entered in a register.

And other deductions which the Institute may from time to time allow.

7.7 Fine:

No fine shall be imposed on any worker save in respect of such acts and the Commissioner of Labour has approved omissions on his part as.

No fine shall be imposed on a worker and no deduction for damage or loss be made from his wages until the worker has been given an opportunity. Undertaking of showing cause against such fines or deductions.

The total amount of fines which may be imposed in any one wage period on a worker shall not exceed an amount equal to the wages payable to him in respect of that wage period.

No fine imposed on any worker shall be recovered from him by instalments or after the expiry of sixty days from the date which it was imposed.

Every fine shall be deemed to have imposed on a day of the act or omission in respect of which it was imposed.

The contractor shall issue an employment card in Form III to each worker on the day of the worker's entry into the employment. If the worker has already any such card with him for the previous employment of contractor, he shall merely endorse that employment card with relevant entries. On termination of employment, the employment card shall again be endorsed by the contractor and returned to the worker.

7.8 REGISTER OF UNPAID WAGES:
The contractor should maintain a register of unpaid wages in such a form as may be convenient at the place of work but same shall include the following particulars:

- Full particulars of the labourer's whose wages have not been paid.
- Reference number of the muster roll and wage register
- Rate of wages
- The period
- Total amount not paid
- Reasons for not making payment

- How the amount of unpaid wages was utilized
- Acquaintance with dates.

7.9 REGISTER OF ACCIDENTS:

The contractor shall maintain a register of accidents in such form as may be convenient at the workplace but the same shall include the following particulars.

- Full particulars of the laborers who met with accidents.
- Rate of wages
- Sex
- Age
- Nature of accidents and cause of accident
- Time and date of accidents
- Date and time when admitted in Hospital
- Date of discharge from the Hospital.

The agency shall alone be liable to pay compensation for any damage/death /injury sustained by the personnel or any other members of the agency in the course of their work/duty at the Institute during the contract period. Govt. of India issued guidelines on payment of compensation in cases of death / permanent incapacitation of person due to unintended/ unforeseen occurrences during maintenance, operation and provisioning of public services. Under these guidelines, the agency has to pay an amount of Rs. 10 Lakhs as compensation in the cases where a person is died and up to Rs. 7.5 Lakhs in the case of disabled based on loss of earning capacity. Institute has the right to recover further penalty in the cases where the incidents have happened with the negligence of the agency.

7.10 REGISTER OF FINE ETC.

The contractor shall maintain a register of fines and a register of deductions for damages or loss in form Nos. I and II respectively which shall be kept at the place of work.
The contractor shall maintain both in English and local language a list approved by Commissioner for labour clearly stating the acts and commissions for which penalty or fine may be imposed on a workman and display it in a good condition in conspicuous place on the work.

7.11 SUBMISSION OF RETURNS:

The contractor shall submit periodical returns as may be specified from time to time.

7.12 AMENDMENTS:

The Government of Karnataka may from time to time add to or amend the regulations and on may question as to the application interpretation on effect if these regulations the decision of the Commissioner of Labour or Deputy Commissioner for Labour to Govt. in that behalf shall be final.

7.13 Labour Clause

No labourers below the age of 18 years shall be employed on the work.
Payments of wages of labourers. The contractor shall pay not less than fair wage of labourers engaged by him on the work.

EXPLANATION:

(a) The contractor shall notwithstanding the provision of any contract to the contrary cause to be paid wages to labourers indirectly engaged for the work including any labour engaged by his sub-contractors in connection with the same works if the labourers have been immediately employed by him.
(b) In respect of all labours directly or indirectly employed in the works for the performance of the contractor's part of this agreement, the contractor shall comply with or cause to be complied with Govt. of India, Contractors Labour Regulations from time to time, in regard to payment of wages. Wage period, deductions from wages recovery of wages not paid and deductions unauthorized made, maintenance of wage book, wage slips, publication of scale of wage and other terms of employment, inspection and submission of periodical returns and all other matter of a like nature. The Project Engineer cum Estate officer or In-charge Engineer concerned shall have the right to deduct from the money due to the contractors any sum required for making good the loss suffered

by a worker or workers by reason of non-fulfilment of the conditions of the contract for the benefit of the workers, non-payment of wages or of deductions made from his or her wages which are not justified by their terms of the contractor non-observance of the regulations.
(c) For payment of minimum wages, the Contractor is bound to follow the relevant orders of Govt. of India from time to time.
(d) Vis-à-vis the Institute the contractor shall be primarily liable for all payments to be made under and for the observance of the regulations aforesaid without prejudice to his right to claim indemnity from his sub-contractors. The regulations aforesaid shall be deemed to be part of this contract, and any breach thereof shall be deemed to be a breach of this.

7.14 In respect of all labour directly or indirectly employed in the work for the performance of the contractor's part of this agreements the contractor shall at his own expense arrange for the safety provisions as per Karnataka P.W.D. safety code framed from time to time and shall at his own expense provide for all facilities in arrangements and provide necessary facilities as aforesaid he shall be liable to pay penalty of Rs.50/- for each default and in addition the Project Engineer cum Estate officer in charge shall be at liberty to make arrangements and provide facilities as aforesaid, and recover the cost incurred in that behalf from the contractor.

7.15 The contractor shall submit by the 4th and 19th of every month to the Project Engineer of true statement showing in respect of the second half of the preceding month and the first half of the current month respectively (1) the name of labourers employed by him on the work (2) their working hours, (3) the wages paid to them, (4) the accidents that occurred during the said fortnight showing the circumstances under which they happened and the extent of damage and injury caused to them and (5) the number of female workers who have been allowed, maternity benefit according to clause 19F and the amount paid to them, failing which the contractor shall be liable to pay the Institute a sum of not exceeding Rs. 50/- for each default or materially incorrect statement by deduction from any bill due to the contractor and amount levied as fine.

7.16 In respect of all labour directly or indirectly employed in the works for the performance of the contractor's part of this agreement, the contractor shall comply with or cause to be complied with all the rules framed by Institute from time to time for the protection of health and sanitary arrangements for workers employed by the Indian Institute of Science and its contractors.
7.17 Maternity benefit rules for female workers employed by contractor, leave and pay during leave shall be regulated as follows:

(i) in case of delivery: Leave during maternity leave not exceeding 8 weeks up to and including the day of delivery and 4 weeks following that day.

(ii)In case of miscarriage, up to 3 weeks from the date of miscarriage.

7.18 Pay:

i) In case of delivery: Leave pay during maternity leave will be at the rate of women's average daily earning calculated on the total wages earned on the days when full time work was done during the period of three months immediately preceding the date on which she gives notice that she expects to be confined.
ii) In case of miscarriages: Leave pay at the rate of average daily earnings calculated on the total wages earned on the day's full time works was due during a period of 3 months immediately preceding the date of miscarriage.

iii) Conditions for the grant of maternity leave: No maternity leave benefit shall be admissible to a woman unless she has been employed for a total period of not less than 10 Months immediately preceding the date of delivery /miscarriage.

8. **CONDITIONS OF CONTRACT**

Clause 1. <u>Security Deposit</u>

Estimated cost of the work put to tender	E.M.D Percentage	S.D. Percentage
(i)	(ii)	(iii)
Rs.93,55,739.00	2%	5.5%
Note : EMD + SD to be limited to 7.5% of the contract value		

(a) Clause -1(a) The person/persons whose tender may be accepted (hereinafter called the contractor which expression shall unless the context otherwise requires, include his heirs, executors, administrators and assigns) shall pay Earnest Money Deposit indicated in Column (ii) of the table given below and shall permit Institute (a) to deduct SD at the percentage mentioned in Column (iii) of the table given below of all moneys payable of work done under the Contract, at the time of making such payments to him/them and (b) to hold such deductions as further Security Deposit. The EMD + SD will be limited to 7.5% of the contract value.

E.M.D - Earnest Money Deposit
S.D - Security Deposit

No Interest will be paid on EMD / Further / Additional Security deposit.

(b) Additional or Reduction in Security Deposit

The EMD for the tendered work and additional amount of Security Deposit at the rates mentioned in **Sub-clause 1(a)** above should be, paid by the contractor. The Project Engineer cum Estate officer may allow if a portion of the work is withdrawn from the Contractor under the provisions of Clause 12(a) a proportionate reduction in the amount of security Deposit.

a) EMD paid along with the tender shall be refunded only after the completion of the defect liability period or payment of final bill whichever is later without any interest.

b) 1% labour cess towards workers Welfare Fund on the works expenditure will be recovered from RA bills for depositing the same to the welfare board as per Karnataka Govt. Order. Rates quoted should be inclusive of cess.

(c) However, if the Contractor desires, agency may furnish a BG issued by the Public Sector Undertaking Bank / Scheduled commercial Bank / Nationalized Bank in favour of the Registrar, Indian Institute of Science, payable at Bangalore amounting to **5.5%** of the total contract value valid up to completion of defect liability period in which case EMD deposited by them will be refunded and no recoveries towards security deposit will be effected in the running account bills.

(d) Dues to Institute, to be set off against Security Deposit.

All compensation or other sums of money payable by the Contractor to Institute under the terms of this contract may be realized or deducted from any Security Deposit payable to him or from any sums which may be due or may become due by Institute to the Contractor on any account whatsoever and in the event of his security deposit being reduced by reason of any such realization or deduction as aforesaid, the Contractor shall, within ten days thereafter, make good in cash any sum or sums which have been deducted from his security deposit or any part thereof. Otherwise, the amount will be treated as outstanding due from the agency.

(e) Refund of Security Deposit (EMD & SD):

i) EMD paid by the contractor at the time of tendering and SD deducted from the R.A bills at the prescribed rates shall be refunded to the contractor immediately after the virtual completion of the work against production of bank guarantee for an equal amount from

any of the Scheduled commercial Bank/Nationalized Bank valid for a period as mentioned in clause (ii) below.

ii) The bank guarantee received as stipulated in (i) above, will be treated as performance guarantee and shall be returned to the contractor after the final bill is paid or after **Twenty Four Months including monsoon period** from the date of virtual completion of the work during which period the work should be maintained by the contractor in good order, whichever is later. The validity of the bank guarantee shall be maintained for the above period.

iii) In case of BG's furnished towards security deposit same shall be returned after completion of the defect liability period.

Clause 2. PENALTY FOR DELAY

a) Written Order to Commence Work

After acceptance of the tender, the Project Engineer cum Estate officer shall issue a written order to the successful Tenderer to commence the work. The Contractor shall enter upon or commence any portion of work only with the written authority and instructions of the Project Engineer cum Estate officer. Without such instructions the Contractor shall have no claim to demand for measurements of or payment for, work done by him.

b) Programme of work

The time allowed for carrying out the work as entered in the tender shall be strictly observed by the contractor. It shall be reckoned from the date of handing over the site to the Contractor not less than 75 percent of work site area comprising a continuous block. The work shall throughout the stipulated period of the contract be proceeded with, all due diligence (time being deemed to be the essence of the contract on the part of the Contractor). To ensure good progress during the execution of the work, the contractor shall be bound (in all cases in which the time allowed for any work exceeds one month) to comply with the time schedule according to the programme of execution of the work as agreed upon and enclosed by the contractor during execution of agreement.

c) Review of progress and responsibility for delay etc.,

The Project Engineer cum Estate officer shall review the progress of all works with the contractor at least once every month. Such a review shall take into account the programme fixed for the previous week, obligations on the part of the Institute for issue of drawings etc, and also the obligations on the part of the Contractor. The review shall also examine the accumulated delays by the contractor if any and mitigation measures proposed by the contractor to overcome the delay.

Apportioning of responsibility for delay between Contractor and Institute.

In case the progress achieved falls short by more than 25 percent of the cumulative programme, the reasons for such shortfall shall be examined and a record made thereof apportioning the responsibilities for the delay between the contractor and the Institute. This record should be signed in full and dated both by the Project Engineer cum Estate officer and the Contractor. If the contractor refuses to sign the said record, approval of the reasons for delay may be submitted to **CENTER FOR CAMPUS MANAGEMENT AND DEVELOPMENT (CCMD)** for approval and such approval is binding on the contractor.

Shortfall in progress made up subsequently.

To the extent the shortfall is assessed, as due to the delay on the part of the contractor, a notice shall be issued to him by the Project Engineer cum Estate officer to make up the shortfall. If the shortfall is not made up before the progress of the work is reviewed during the second month succeeding the month in which the shortfall was observed, the Contractor shall be liable to pay penalty as indicated in **Clause 2(d)** below.

Grant of extension of time.

If the delay is attributable to reasons beyond the control of the Contractor, requisite extension of time shall be granted by the Project Engineer cum Estate officer in accordance with **Clause 5** after obtaining the approval of his higher authorities, wherever necessary.

Review of progress by Centre for Campus Management and Development.

The Centre for Campus Management and Development shall review the progress periodically, preferably more number of times as required. These reviews are in addition to the monthly reviews required to be done by the Project Engineer cum Estate officer. The results of such review by the CENTER FOR CAMPUS MANAGEMENT AND DEVELOPMENT (CCMD) shall, wherever necessary, be incorporated in the next review of the Project Engineer cum Estate officer.

If the Contractor stops the work for 45 days when no stoppage of work is shown on the current Program and the stoppage has not been authorized by the Employer, then The Employer may terminate the Contract at the risk and cost of the contractor.

Settlement of dispute regarding shortfall in progress.

In case of dispute between the Project Engineer cum Estate officer and Contractor regarding the responsibility for the shortfall in progress, the matter shall be referred to the Centre for Campus Management and Development who shall thereupon give a decision within fifteen days from the date of receipt of reference. The decision of the Centre for campus management and Development shall be final and binding on the contractor and the Project Engineer cum Estate officer.

d) Penalty for delay

In respect of the shortfall in progress, assessed as due to the delay on the part of contractor as per **Clause 2(b)** and **2 (c)**, the contractor shall be liable to pay as penalty an amount equal to one percent of the contract value of the balance work assessed according to the programme(Clause 35), for every week that the due quantity of work remains incomplete; provided always that the total amount of penalty to be paid under the provisions of this clause subjected to a maximum of 10 percent of the contract value of the entire work as shown in the tender, provided further that in the event of the contractor making up the shortfall in progress within the stipulated or extended time of completion, the penalty so recovered may be refunded on an application in writing by the contractor.

Note: If the Project Engineer cum Estate officer considers it necessary, he shall be entitled to take action as indicated in **Clause 3 (d)** also.

d.(1). Liquidated damages

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

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

(e) Adjustment of excess/over payments.

Excess/over payments as soon as they are discovered should be adjusted in the next running account bill of the contractor and in case the final bill has already been paid, the excess/over payment made shall be recovered from the Security Deposit of the contractor together with interest at such percentages as Institute may decide from time to time, from the date of such excess or over payment to the date of recovery.

ACTION WHEN WHOLE OF SECURITY DEPOSIT IS FORFEITED

Clause 3. In any case in which under any clause or clauses of this contract the contractor shall have rendered himself liable to pay compensation and/or penalty amounting to the whole of his security deposit including the amount deducted in instalment from his bills as Further Security Deposit, the Project Engineer cum Estate officer on behalf of the Director, IISc shall have power to adopt any of the following courses as he may deem best suited in the interest of Institute.

(a) Forfeiture of Security Deposit.

Without prejudice to Institute's right to recover any loss from the Contractor under sub-clauses (b) and (c) of Clause 3 of the Contract, to rescind the contract (of which rescission notice in writing to the contractor under the hand of the Project Engineer cum Estate officer shall be conclusive evidence). And in that case, the security deposit of the contractor including whole or part of the lump sum deposited by him and also the amount deducted from his bills as Further Security Deposit, shall stand forfeited and be absolutely at the disposal of the Institute.

(b) Debiting cost of labour and materials supplied.

To employ labour paid by the Institute and to supply materials to carry out the work or any part of the work, debiting the contractor with the cost of the labour and the price of the materials (as to the correctness of which cost and price the certificate of the Project Engineer cum Estate officer shall be final and conclusive against the contractor) and crediting him with the value of the work done; in all respects in the same manner and at the same rates as if it had been carried out by the contractor under terms of this contract, and in that case the certificate of the Project Engineer cum Estate officer as to the value of the work done shall be final and conclusive against the contractor.

(c) Recovery of extra cost on unexecuted work

To measure up the work of the contractor and to take such part thereof as is remaining unexecuted out of his hands and to give it to another contractor to complete it in which case any expenses which may be incurred in excess of the sum which would have been paid to the original contractor, if the whole work had been executed by him (as to the amount of which excess expenses the certificate in writing of the Project Engineer cum Estate officer shall be final and conclusive) shall be borne and paid by the original contractor and shall be deducted from any money due to him by Institute Otherwise the amount will be treated as outstanding due from the agency.

(d) Action against unsatisfactory progress

If the contractor does not maintain the rate of progress as required under **Clause 2** and if the progress of any particular portion of work is unsatisfactory even after taking action under **Clause 2(c)** and **2(d)**, the Project Engineer cum Estate officer shall be entitled to take action under **Clause 3(b)** or **3(c)** at his discretion in order to maintain the rate of progress after giving the contractor 10 days notice in writing whereupon the contractor will have no claim for any loss sustained by him owing to such actions.

(e) No compensation for loss sustained on advance action

In the event of any of the above courses being adopted by the Project Engineer cum Estate officer, the contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased, or procured any materials, entered into any

agreements or made any advances on account of, or with a view to the execution of the work or the performance of the contract. And in case the contract shall be rescinded under the provision aforesaid the contractor shall not be entitled to recover or be paid any sum for any work thereof actually performed by him under his contract, unless and until the Project Engineer cum Estate officer shall have certified in writing the performance of such work and the amount payable in respect thereof, and he shall only be entitled to be paid the amount so certified.

(f) Recovery of 1% of the contract value towards the laborers welfare fund created by the Government of Karnataka will be effected in the running account bills of the contractor.

Clause 4. CONTRACTOR TO REMAIN LIABLE TO PAY COMPENSATION IF ACTION IS NOT TAKEN UNDER CLAUSE-3.

In any case in which any of the powers conferred upon the Project Engineer cum Estate officer by **Clause 3** thereof shall have become exercisable and the same shall not have been 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 for which under any clause hereof he is declared liable to pay compensation or penalty amounting to the whole of his security deposit and the liability of the contractor for past and future compensation or penalty shall remain unaffected.

Power to take possession of or require removal of or sell contractor's properties.

In the event of the Project Engineer cum Estate officer taking action under **sub-clause (a)** or **(c) of Clause 3**, he may, if he so desires, take possession of all or any tools, plant, materials and stores, in or upon works or the site thereof or belonging to the contractor, or procured by him 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 contract rates not being applicable, at current market rates, to be certified by the Project Engineer cum Estate officer whose certificate thereof shall be final. In the alternative, the Project Engineer cum Estate officer may after giving notice in writing to the contractor or his clerk of the works, foreman or other authorised agent, require him to remove such tools, plant, materials or stores from the premises within a time to be specified in such notice; and in the event of the contractor, failing to comply with any such requisition, the Project Engineer cum Estate officer 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 respect, and the certificate of the Project Engineer cum Estate officer as to the expense of any such removal; and the amount of the proceeds and expense of any such sale shall be final and conclusive against the contractor.

Clause 5. GRANT OF EXTENSION OF TIME

(a) If the contractor shall desire an extension of the time for completion of the work, he shall apply in writing to the Project Engineer cum Estate officer before the expiry of the period stipulated in the tender or before the expiry of 30 days from the date on which he was hindered as aforesaid or on which the cause for asking for extension occurred, whichever is earlier and the Project Engineer cum Estate officer or other competent authority may if in his opinion, there are reasonable grounds for granting an extension, grant such extension as he thinks necessary or proper. The decision of such competent authority in this matter shall be final.

(b) The time limit for completion of the work shall be extended commensurate with its increase in cost occasioned by alterations or additions and the certificate of the Project Engineer cum Estate officer or other competent authority as to such proportion shall be conclusive.

Clause 6. ISSUE OF FINAL CERTIFICATE – CONDITIONS REGARDING

On completion of the work the contractor shall report in writing to the Project Engineer cum Estate officer the completion of the work. Then he shall be furnished with a certificate by the Project Engineer cum Estate officer of such completion, but no such certificate shall be given nor shall the work be considered to be complete until the contractor shall have removed from the premises on which the work shall have been executed, all scaffolding, surplus materials and rubbish, and shall have cleaned thoroughly all wood work, doors, windows, wall, floor or other parts of any building, in or upon which the work has been executed, or of which he may have had possession for the purpose of executing the work, nor until the works shall have been measured by the Project Engineer cum Estate officer or other competent authority, or where the measurements have been taken by his Project Engineer until they have received the approval of the Project Engineer cum Estate officer or other competent authority, the said measurements being binding and conclusive against the contractor. If the contractor shall fail to comply with the requirements of this clause as to the removal of scaffolding, surplus materials and rubbish, and cleaning on or before the date fixed for the completion of the work the Project Engineer cum Estate officer or other competent authority may, at the expense of the contractor, remove such scaffolding, surplus materials and rubbish, and dispose of the same as he think fit and clean off such dirt etc., as aforesaid and contractor shall be liable to pay the amount of all expenses incurred but shall have no claim in respect of any such scaffolding or surplus materials as aforesaid except for any sum actually realized by the sale thereof.

Note: CLOSURE OF CONTRACT PENDING COMPLETION OF MINOR ITEMS.

In cases where it is not desirable to keep the building contract open for minor items, such as flooring in the bathrooms, etc., which can be carried out only after installation of sanitary work the main contract may be finalized after getting a supplementary agreement executed in the prescribed form by the same contractor for doing the residual work.

Clause 7. Contractor to submit bills monthly in printed form

(a) A bill shall be submitted by the contractor on or before 15th of each month for all items of work executed in the previous month as required by IISc. The Running account bills will be paid within three weeks from the date of submission of the bill in complete acceptable form after duly checked and certified by concerned Engineer, under normal circumstances.

All bills shall be prepared in the prescribed printed and electronic form in PDF/Excel format in quadruplicate and handed over to the Project Engineer in charge of the work/ Project Engineer cum Estate officer's Office and acknowledgment obtained.
The charges to be made in the bills shall always be entered at the rates specified in the tender in full or in part as the case may be, in the case of any extra work ordered in pursuance of these conditions, and not mentioned or provided for in the tender, the charges in the bills shall be entered at the rates hereinafter provided for such work.

(b) Scrutiny of Bills and measurement of work
The details furnished by the Contractor in the bill will be completely scrutinized and the said work will be measured by the Project Engineer in the presence of the Contractor or his duly authorized agent. The countersignature of the contractor or the said agent in the measurement book shall be sufficient proof to the correctness of the measurements, along with the Test certificates to be produced with the bill, which shall be binding on the contractor in all respects.
(c) One copy of the passed bill shall be given to the Contractor without any charge.

Clause 8. PAYMENT PROPORTIONATE TO WORK APPROVED AND PASSED.

No payment shall be made for any work estimated to cost rupees five thousand or less until after the whole of the work shall have been completed and certificates of completion given. But in the case of works estimated to cost more than Rs. 5,000 the contractor shall on

submitting the bill and after due verification by the Project Engineer as per Clause 7(b) entitled to necessary Payment proportionate to the part of the work then approved and passed by the Project Engineer cum Estate officer or other competent authority whose certificate of such approval and passing of the sum so payable shall be final and conclusive against the contractor i.e. part payment of submitted RA bills is admissible to contractor. Any such reduced payment amount is admissible for adjustment in the successive RA Bills or Final Bill.

Payment at reduced rates
The rates for several items of works agreed to within shall be valid only when the items concerned are accepted as having been completed fully in accordance with the stipulated specifications. In cases where the items of work are not accepted as so completed, The Project Engineer cum Estate officer or other competent authority may make payment on account of such items at such reduced rates as he may consider reasonable in the preparation of final or on account bills.

Payment or intermediate certificates be regarded as advances:
All such intermediate payments shall be regarded as payments by way of advance against the final payments only and not as payments for work actually done and completed, and shall not preclude the Project Engineer cum Estate officer or other competent authority from requiring any bad, unsound imperfect or unskilful work to be removed or taken away and reconstructed or re-erected nor shall any such payment be considered as an admission for the due performance of the Contract or any part thereof in any respect or the accruing of any claim, nor shall it conclude determine or affect in any other way the powers of the Project Engineer cum Estate officer or other competent authority as to the final settlement and adjustment of the accounts, or otherwise or in any other way vary or affect the contract.

Submission of Final bill and its settlement
The contractor shall submit the final bill within one month from the date of actual completion of the work in all respects. His claims shall be settled within five months from the date of submission of the bill in complete acceptable form after duly checked and certified by concerned Engineer, under normal circumstances.

Disputed items
Note: The contractor shall submit a list of the disputed items within 30 days from the disallowance thereof and if he fails to do this, his claim shall be deemed to have been fully waived and absolutely extinguished.

Clause 9. Definition of Work :

a. The expression `Work' or 'Works' where used in these conditions, shall unless there be something in the subject or context repugnant to such construction, be construed to mean the work or works contracted to be executed under or in virtue of the contract, whether temporary or permanent and whether original, altered, substituted or additional.

b. Work to be executed in accordance with specifications, drawings, orders etc.

The contractor shall execute the whole and every part of the work in the most sound and substantial and workmanlike manner, and in strict accordance with the specifications both as regards materials and workmanship. The contractor shall also conform exactly, fully and faithfully to the designs, drawings and instructions in writing relating to the work signed by the Project Engineer cum Estate officer or other competent authority and lodged in his office and to which the contractor shall be entitled to have access at such office, or on the site of the work for the purpose of inspection during office hours. The contractor shall also be responsible for the delivery of structure in sound conditions and the execution of the work strictly in accordance with the specifications of the work.

c. Action where there is no specification

In the case of any class of work for which there is no such specification, then in such a case of the work shall be carried out in all respects in accordance with the instructions and requirements of the Project Engineer cum Estate officer or other competent authority.

d. Work as per Specifications and IS Codes.

The detailed specification, which forms a part of contract, accompanies the tender document. In carrying out the various items of work as described in Schedule B of the tender documents and the additional, substituted, altered items of work, this detailed specification shall be strictly adhered to, supplemented by relevant provisions of Indian standard specifications, the code of practice; etc., The Indian standard specification, National Building Code and the code of practice to be followed shall be the latest versions of those listed in the detailed technical specifications. Any class of work, not covered by the detailed technical specifications, shall be executed in accordance with the instructions and requirements of the Project Engineer cum Estate officer and the relevant provisions of the Indian standard specifications.

Clause 10. Alteration in quantity of work, specifications and designs, Additional work, deletion of work

The Project Engineer cum Estate officer shall have power to make any alternations in, omissions from additions to or substitutions for the original specification, drawings, designs and instructions that may appear to him to be necessary or advisable during the progress of the work. For that purpose or if for any other reason it shall in his opinion be desirable, he shall have power to order the Contractor to do and the contractor shall do any or all the following: -

a) Increase or decrease the quantity of any work included in the contract.
b) Omit any such work.
c) Change the character or quality or kind of any such work,
d) Change the levels, lines, positions and dimensions of any part of the work,
e) Execute additional work of any kind necessary for the completion of the works and
f) change in any specified sequence, methods or timing of construction of any part of the work.

Contractor bound by Project Engineer cum Estate officer's instructions

The Contractor shall be bound to carry out the work in accordance with any instructions in this connection which may be given to him in writing signed by the Project Engineer cum Estate officer or other competent authority and such alteration shall not in any way vitiate or invalidate the contract.

Standard Quantity Take-off (SQT)

Contractor within **14 days** of Issue of LOI to submit the Project Manager & seek approval for the Standard quantity Take-off sheets for all the items mentioned in the Tender BOQ, after due referencing the Tender/ GFC drawings and the Technical Specification. Upon approval, the SQT shall remain the base document for initiating any change orders/ variation in accordance to Clause 31, tracking the daily project progress, and for the measurement sheets.

Orders for variations to be in writing

1. No such variations shall be made by the Contractor without an order in writing of the Project Engineer cum Estate officer; provided that no order in writing shall be required for increase or decrease in the quantity of any work where such increase or decrease is the result of the quantities exceeding or being less than those stated in the 'Schedule B' provided also that if for any reason the Project Engineer cum Estate officer shall consider it desirable to give any such order verbally, the Contractor shall comply with such order

without any confirmation in writing of such verbal order given by the Project Engineer cum Estate officer, whether before or after the carrying out of the order, shall be deemed to be an order in writing within the meaning of the clause; provided further that if the Contractor shall within seven days confirm in writing to the Project Engineer cum Estate officer and if such confirmation is not contradicted in writing within fourteen days by the Project Engineer cum Estate officer, it shall be deemed to be an order in writing by the Project Engineer cum Estate officer.

2. **a)** Any additional work which the contractor may be directed to do in the manner above specified as part of the work shall be carried out by the Contractor on same conditions in all respects on which he agreed to do the main work and same rates as are specified in the tender for the main work. However, change in the Undertaking rates tendered and accepted shall be considered in respect of items under which the quantity of work performed exceeds tendered quantity by more than 25 percent and this actual change in rate will be restricted only to such excess quantity (i.e. beyond 125 percent of the tendered quantity).

(b) Rate for excess quantity beyond 125 percent of tendered quantity

The Additional quantity which exceeds 125 percent of the tendered quantity shall be paid at the rates entered in or derived from Schedule of Rates prevalent at the time of executing additions and alterations plus or minus the overall percentage of the original tendered rates over the current Schedule of Rates (KPWD) of the year in which the tender is accepted (as per the comparative Statement prepared at the time of acceptance of the tender).

(c) Rates for additional, substituted, altered items of work

If the additional, substituted or altered work includes any class of work for which no rate is specified in the contract, then such work shall be carried out at the rates specified for or derived from similar item of work in the agreement. In the absence of similar items in agreement, rate shall be as specified for or derived from similar items in the schedule of rates of KPWD prevalent at the time of execution of such additional substituted or altered items of works, plus or minus the overall percentage of original tendered rates over the current schedule of rates of (KPWD) the year in which tender is accepted as mentioned in sub clause (b) above. With regard to the question whether the additional, substituted or altered item/items of work/works is / are similar or not, to that/those in the agreement / in the Schedule of Rates of KPWD and the decision of the CCMD shall be final and binding on the contractor.

(d) Determination of rates for items not found in Estimate or Schedule of Rates

If the rates for additional, substituted or altered work cannot be determined in the manner specified in sub **clauses (b)** and **(c)** above, then the contractor shall within 7 days of the date of receipt by him of the order to carry out the work, inform the Project Engineer cum Estate officer of the rates which it is his intention to charge for such class or work, supported by analysis of the rate or rates claimed. Thereupon the Project Engineer cum Estate officer shall determine the rate or rates on the basis of observed data and failing this, on the basis of prevailing market rates. Under no circumstances the contractor shall suspend the work on the plea of non- settlement of rates for items falling under this clause. In the event of any dispute regarding the rates for such items the decision of Project Engineer cum Estate Officer, CCMD shall be final.

Working out the data rates for non-SR/ non tendered items shall be based on the procedures laid down in the standard rate analysis format of KPWD Bangalore circle Bangalore. The data rates shall be approved by the Project Engineer cum Estate Officer, CCMD and shall be binding on the contractor.

Clause 11. <u>TIME LIMITS UNFORSEEN CLAIMS</u>

Under no circumstances whatever shall the contractor be entitled to any compensation from Institute on any account unless the contractor shall have submitted claim in writing to the Project Engineer cum Estate officer or other competent authority within 30 days of the cause of such claim occurring.

Clause 12. NO CLAIM TO ANY PAYMENT OR COMPENSATION FOR DELETION OF WHOLE OR PART OF WORK

(a) If at any time after the execution of the contract documents, the Project Engineer cum Estate officer or other competent authority shall, for any reason whatsoever, require the whole or any part of the work as specified in the tender, to be stopped for any period or require the whole or part of the work (i) not to be carried out at all or (ii) not to be carried out by the tendered contractor, he shall give notice in writing of the fact to the contractor who will thereupon suspend or stop the work totally or partially as the case may be. In any such case, except as provided hereunder, the contractor shall have no claim to any payment of compensation whatsoever on account of any profit or advantage which he might have derived from the execution of the work in full but which he did not so derive in consequence of the full amount of the work not having been carried out, or on account of any loss that he may be put on account of materials purchased or agreed to be purchased, or for unemployment of labour recruited by him. He shall not also have any claim for compensation by reason of any alterations having been made in the original specifications, drawings, designs and instructions, which may involve any curtailment of the work, as originally contemplated.

(b) Payment for materials already purchased or ordered by contractor.

Where, however, materials have already been purchased or agreed to be purchased by the contractor before receipt by him the said notice the contractor shall be paid for such materials, at the rates determined by the Project Engineer cum Estate officer or other competent authority provided they are not in excess of requirements and are of approved quality, and/or shall be compensated for the loss, if any, that he may be put to, in respect of materials agreed to be purchased by him, the amount of such compensation to be determined by the Project Engineer cum Estate officer or other competent authority whose decision shall be final.

(c) Labour charges during stoppage of work

If the contractor suffers any loss on account of his having to pay labour charges during the period during which the stoppage of work has been ordered under this clause, the contractor shall on application, be entitled to such compensation on account of labour charges as the Project Engineer cum Estate officer or other competent authority, whose decision shall be final, may consider reasonable. Provided that the contractor shall not be entitled to any compensation on account of labour charges if in the opinion of the Project Engineer cum Estate officer or other competent authority, the labour could have been employed in the same locality by the contractor for the whole or part of the period during which the stoppage of the work has been ordered as aforesaid.

(d) Time limit for stoppage of work

The period of stoppage ordered by the Project Engineer cum Estate officer or other competent authority should not ordinarily exceed six months. Thereafter the portion of works stopped may be treated as deleted from this agreement if a notice in writing to that effect is given to the Project Engineer cum Estate officer or other competent authority by the contractor within seven days after the expiry of the above period.

Execution of work deleted:

The portion of work thus deleted may be got executed from the same contractor on supplemental agreement on mutually agreed rates, which shall not exceed current Schedule of Rates plus or minus tender percentage.

Clause 13. ACTION AND PENALTY IN CASE OF BAD WORK

If at any time before the security deposit is refunded to the contractor, it shall appear to the Project Engineer cum Estate officer or other competent authority that any work has been executed with unsound, imperfect or unskilful workmanship or with materials of inferior quality, or that any materials or articles provided by him for the execution of the work are unsound or of a quality inferior to that contracted for, or are otherwise not in accordance with the contract, it shall be lawful for the Project Engineer cum Estate officer or other competent authority to intimate this fact in writing to the contractor and then notwithstanding the fact that the work, materials or articles complained of may have been paid for, the contractor shall be bound forthwith to rectify, or remove and reconstruct the work so specified on whole or in part as the case may require, or if, so required shall remove the materials or articles at his own charge and cost and in the event of his failing to do so within a period to be specified by the Project Engineer cum Estate officer or the competent authority in the written intimation aforesaid, the contractor shall be liable to pay a penalty not exceeding one percent on the amount of the estimate for every day not exceeding ten days during which the failure, so continues and in the case of any such failure the Project Engineer cum Estate officer or other competent authority may rectify or remove, and re-execute the work or remove and replace the materia1s or articles complained of, as the case may be at the risk and expense in all respects of the contractor should the Project Engineer cum Estate officer or other competent authority for any valid reasons consider that any such inferior work or materials as described above is to be accepted or made use of, it shall be within his discretion to accept the same at such reduced rates he may fix thereof.

Clause 14. WORK TO BE OPEN TO INSPECTION - CONTRACTOR OR RESPONSIBLE AGENT TO BE PRESENT

(a) All works under or in course of execution or executed in pursuance of the contract shall at all time be open to the inspection and supervision of the Project Engineer cum Estate officer or other competent authority and his Engineer-in-charge, and the contractor shall at all times during the usual working hours, and at all other times at which reasonable notice of the intention of the Project Engineer cum Estate officer or other competent authority Project Engineer to visit the work shall have 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 the purpose. Orders given to the contractor duly authorized agent shall be considered to have the same force and effect as if they had been given to the contractor himself.

(b) Employment of Minimum Technical Staff

The Contractor shall employ the following technical staff during execution of this work:

a) One qualified Graduate Engineer & One qualified Diploma Engineer, when the cost of the work to be executed up to 1 Crore,
b) Two qualified Graduate Engineer & Three qualified Diploma Engineer, when the cost of the work to be executed from 1 Crore to 10 crores;
c) Three qualified Graduate Engineer & Six qualified Diploma Engineer, when the cost of the work to be executed above 10 crores;
d) In addition to (i) and (ii) above, the contractor shall employ different types of such technical personnel as may be required and sufficient for execution of work and directed by the Project Engineer cum Estate officer to ensure efficient execution of work.
e) The technical staff so employed, should be available at site whenever required by Engineer in-charge to take instructions.

f) If the contractor fails to employ the technical staff as aforesaid, he shall be liable to pay a sum of Rs. 25000 (Rupees Twenty thousand only) for each month of default in the case of Graduate Engineers and Rs. 15000 (Rupees Ten thousand only) for each month of default in case of Diploma Holders.

g) If the Contractor himself possesses the required qualification and is available at the site for receiving instructions from the Project Engineer cum Estate officer and other competent authority vide **sub-clause (a**) above it will not be necessary for the technical staff to be available at site for receiving instructions.

Clause 15. NOTICE TO BE GIVEN BEFORE WORK IS COVERED UP

The contractor shall give not less than five days' notice in writing to the Project Engineer cum Estate officer or his Project Engineer in charge of the work before covering up or otherwise placing beyond the reach of the measurement any work in order that the same may be measured; and correct dimensions thereof taken before the same is so covered up or placed beyond the reach of measurement, and shall not cover up or place beyond the reach of measurement, and work without the consent in writing of the Project Engineer cum Estate officer or other competent authority or his Project Engineer in charge of work; and if any work shall be covered up or placed beyond the reach of measurement, without such notice having been given or consent obtained, the same shall be uncovered at the contractor's expense, and in default thereof no payment or allowance shall be made for such work or for the materials with which the same was executed.

Clause 16. CONTRACTOR LIABLE FOR DAMAGE DONE, AND FOR IMPERFECTIONS FOR TWELVE MONTHS AFTER CERTIFICATE OF COMPLETION

If the Contractor or his workmen or servants shall break, deface, injure or destroy any part of a building in which they may be working, or any building, road fence, enclosure or grassland or cultivated ground contiguous to the premises on which the work or any part thereof is being executed, or if any damage shall be done to the work, while it is in progress from any cause whatever or if any imperfections become apparent in it within Twelve months of the grant of a certificate of completion, final or otherwise, by the Project Engineer cum Estate officer or other competent authority the contractor shall make good the same at his own expenses, or in default the Project Engineer cum Estate officer or other competent authority may cause the same to be made good by other workmen, and deduct the expenses (of which the certificate of the Project Engineer cum Estate officer or other competent authority shall be final) from any sums that may be due or may thereafter become due to the contractor, or from his Security Deposit or the proceeds of sale thereof, or of a sufficient portion thereof.

The Defects liability period shall be extended for as long as defects remain to be corrected. Every time notice of a Defect is given, the Contractor shall correct the notified Defect within the length of time specified by the Institute.

Clause 17. CONTRACTOR TO SUPPLY PLANT, LADDERS, SCAFFOLDINGS, ETC., AND IS LIABLE FOR DAMAGES ARISING FROM NON-PROVISION OF LIGHT, FENCING ETC

The contractor shall supply at his own cost all materials, plant, tools, appliance, implements, ladders, scaffolding, and temporary works required for the proper execution of the work whether in the original, altered or substituted form and whether included in the specification, or other documents forming part of the contract or referred to in these conditions or not, and which may be necessary for the purpose of satisfying or complying with the requirements of the Project Engineer cum Estate officer or other competent authority 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 the materials. Failing this, the same may be provided by the Project Engineer cum Estate officer or other competent authority at the expense of the contractor and expense may be deducted from any money due to the contractor under the contract or from his security deposit or the proceeds of sale thereof, or of a sufficient portion thereof. The contractor shall provide necessary fencing and lights required to protect the public from accident, and shall also be bound to bear the expense of defense of every suit, action or other legal proceedings, that maybe brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and costs which may be awarded in any suit, action or proceedings to any person, or which may with the consent of the contractor be paid for compromising any claim by any such person.

Clause 18. Measures for prevention of fire

The contractor shall not set fire to any standing jungle, trees, brushwood or grass without a written permit from the Project Engineer cum Estate officer. When such permission is given, and also in all cases when destroying cut or dug up trees, brushwood grass, etc., by fire the contractor shall take necessary measures to prevent such fire spreading to or otherwise damaging surrounding property.

Clause 19. Liability of contractor for any damages done in or outside work Area.

Compensation for all damages done by contractor or his men whether in or beyond the limits of Institute property including any damage caused by spreading of fire mentioned in Clause 18 shall be estimated by the Project Engineer cum Estate officer and the estimate of the Project Engineer cum Estate officer, subject to the decision of the Centre for Campus Management and Development on appeal shall be final and the contractor shall be bound to pay the amount of the assessed compensation on demand failing which the same will be recovered from the contractor as the damages in the manner prescribed in clause 1(c) or deducted by the Project Engineer cum Estate officer or other competent authority from any sums that may be due or become due from Institute to the contractor under this contract or otherwise.

The contractor shall bear the expenses of defending any action or other legal proceedings that may be brought by any person for injury sustained by him owing to neglect of precautions to prevent the spread of fire and shall pay any damages and cost that may be awarded by the court in consequence.

Clause 20. Work on Notified Holiday

No work shall be done on any notified holiday without the sanction in writing of the Project Engineer cum Estate officer or other competent authority.

Clause 21. WORK NOT TO BE SUBLET

(a) The contract shall not be assigned or sublet by the contractor. However, any specific portion of the work which is of a specialized nature and normally not executable by a general contractor could be got done by the specialized agencies which are executing such works, after obtaining the specific approval of the Project Engineer cum Estate officer in writing in each case. Such consent to sublet the work, if given, shall not relieve the contractor from any liability or obligation under the contract and he shall be responsible for the acts, defaults and neglects of any sub-contractor or his agents, servants or workmate as fully as if they were the acts, defaults or neglects of the contractor, his agents, servants or workmen.

Consequences of subletting work without approval, becoming insolvent, bribing etc., by contractor and action against the contractor.

If the contractor shall assign or sublet his contract or any portion thereof without the specific approval of the Project Engineer cum Estate officer or attempts to do so or become insolvent or commence any proceedings to get himself adjudicated as insolvent or make any composition with his creditors or attempts so to do or if any bribe, gratuity, or indirectly be given, promised or offered by the contractor or any of his servants or agents to any officer or person in the employ of Institute in any way relating to his office or employment or if any such officer or person in the employment or if any such officer or person shall become in any way directly or indirectly interested in the contract, the Project Engineer cum Estate officer or other competent authority may thereupon by notice in writing rescind the contract and the security deposit of the contractor shall thereupon stand forfeited and be absolutely at the disposal of Institute and the same consequences shall ensure as if the contract had been rescinded under Clause 3 here of and in addition, the contractor shall not be entitled to recover or be paid for any work actually performed under contract.

(b) Recovery of excess payments based on excess measurements and action against contractor.

Whenever it is noticed that excess payments have been made to the contractor based on excess measurements recorded by the Project Engineer in the measurement book and countersigned by the contractor or his duly authorized agent, action shall be taken to recover the excess payments together with interest immediately. Action may also be taken to remove the name of the contractor from the approved list of contractors and also to blacklist him.

Change in classification of excavations accepted not permitted.

Once the measurements mentioning the classification of the excavations are recorded in the measurement book and the same is signed by the contractor or his authorized agent in token of acceptance, no request for reclassification by the contractors shall be entrained.

(c) Criminal proceedings against IISc Officer and Contractor for the lapses.

Institute also reserve the right to initiate criminal proceedings against the concerned Institute Officers who are directly responsible for the lapse and the contractors who have colluded with the officers of the Institute in the lapse and fraudulently received amounts not due to them legitimately.

Clause 22. SUM PAYABLE BY WAY OF COMPENSATION TO BE CONSIDERED AS REASONABLE COMPENSATION WITHOUT REFERENCE TO ACTUAL LOSS.

All sums payable by a contractor by way of compensation under any of these conditions shall be considered as reasonable compensation to be applied for the use of Institute without reference to the actual loss or damage sustained and whether any damage has or has not been sustained.

Clause 23. SETTLEMENT OF DISPUTES -TIME LIMIT FOR DECISION

(a) If any dispute or difference of any kind whatsoever were to arise between the Project Engineer cum Estate officer and the contractor regarding the following matters namely,

(i) The meaning of the specification's designs, drawing and instructions herein before mentioned,

(ii) The quality of workmanship or materials used on the work and

(iii) Any other question, claim right, matter, thing whatsoever, in any way arising out of or relating to the contract, designs, drawings, specification, estimates, instructions, or orders, or those conditions, failure to execute the same whether arising during the

progress of the work, or after the completion, termination or abandonment thereof, the dispute shall, in the first place, be referred to the Centre for campus management and Development who have jurisdiction over the work specified in the contract. The Centre for campus management and Development shall within a period of fifteen days from the date of being requested by the Contractor to do so give written notice of its decision to the Contractor.

If the decision of the Centre for campus management and Development is not acceptable to the contractor, he may approach the **Director, IISc within** a period of 15 days for settlement.

(b) Director, IISc decision's final.

Subject to other form of settlement hereafter provided, the Director's decision in respect of every dispute or difference so referred shall be final binding upon the contractor. The said decision shall forthwith be given effect to and contractor shall proceed with the execution of the work with all due diligence.

(c) Remedy when Director's decision is not acceptable to contractor.

In case the decision of the Director is not acceptable to the contractor, he may approach the Law Court at Bangalore for settlement of dispute after giving due written notice in this regard to the Director within a period of ninety days from the date of receipt of the written notice of the decision of the Director. Further, the Bangalore courts alone shall have the exclusive jurisdiction.

(d) Time limit for notice to approach Court of law by contractor

If the Director has given written notice of his decision to the contractor and no written notice to approach the law court has been communicated to him by the contractor within a period of ninety days from receipt of such notice, the said decision of Director shall be final and binding upon the contractor.

(e) Time limit for notice to approach law court by contractor when decision is not given by Director, IISc as at (b).

If the Director fails to give notice of his decision within a period of ninety days from the receipt of the contractor's request in writing for settlement of any dispute or difference as aforesaid, the Contractor may within ninety days after the expiry of the first named period of ninety days approach the Law Courts at Bangalore giving due notice to the Director.

(f) Contractor to execute and complete work pending settlement of dispute.

Whether the claim is referred to the Director or to the Law Courts, as the case may be, the contractor shall proceed to execute and complete the works with all due diligence pending settlement of the said dispute or differences.

(g) Obligations of the Project Engineer cum Estate officer and contractor shall remain unsettled during considerations of dispute.

The reference of any dispute or difference to the Director or the Law Court may proceed notwithstanding that the works shall then be or be alleged to be complete, provided always that the obligations of the Project Engineer cum Estate officer and the contractor shall not be altered by reason of the said dispute or difference being referred to the Director or the Law Court during the progress of the works.

Clause 24. <u>CONTRACTOR TO PAY COMPENSATION UNDER WORKMEN'S COMPENSATION ACT.</u>

(a) The contractor shall be responsible for and shall pay any compensation to his own workmen payable under the relevant Workmen's Compensation Act for injuries caused to the workmen. If Institute pays such compensation on behalf of the contractor it shall be recoverable by Institute from the contractor under as per relevant clauses.

(b) **Contractor to pay expenses of providing medical aid to workmen.**

The contractor shall be responsible for and shall pay the expenses of providing medical aid to any workman who may suffer a bodily injury as a result of an accident. If Institute incurs such expenses, the same shall be recoverable from the contractor forthwith and be deducted without prejudice to any other remedy of Institute, from any amount due or that may become due to the contractor.

Clause 25. CONTRACTOR TO PROVIDE PERSONAL SAFETY EQUIPMENT FIRST AID APPARATUS, TREATMENT etc.

The contractor shall provide all necessary personal safety equipment and first aid apparatus for the use of the persons employed on the site and shall maintain the same in good condition suitable for immediate use, at any time and shall comply with the following regulations in connection therewith: -

- The worker will be required to use the equipment so provided by the contractor and the contractor shall take adequate steps to ensure proper use of the equipment by those concerned.
- When work is carried on in proximity to any place where there is a risk of drowning; all necessary steps shall be taken for the prompt rescue of any person in danger.
- Adequate provision shall be made for prompt first - aid treatment of all injuries likely to be sustained during he course of the work.

Clause 26. Minimum Age of Person Employed by Contractor

(a): No contractor shall employ

- Any person who is under age of 18 years.
- Who does not produce a valid certificate of vaccination against epidemic deceases in respect of himself/ herself as well as all the members of his/her family.

(b) The contractor shall provide potable water facilities to the workers. Similar amenities shall be provided to the workers engaged on large works in urban area.

(c) Removal of persons not satisfying conditions (a) (i) & (ii)

The Project Engineer cum Estate officer or other authority is authorized to direct the removal or to remove through - his own agency, from the work any person referred to in sub-clauses (a) above not satisfying these conditions and no responsibility shall be accepted by the Institute for any delay caused in the completion of the work by such directions for removal.

(d) Payment of fair and reasonable wages by contractor.

The contractor shall pay fair and reasonable wages, which shall not be less than the minimum wages fixed by Govt. of India from time to time to the workmen employed by him in the contract undertaken by him. In the event of any dispute arising between the contractor, and his workmen on the ground that the wages paid are not fair and reasonable the dispute shall be referred without delay to the Project Engineer cum Estate officer or other competent authority, who shall decide the same. The decision shall not in any way affect the conditions in the contract regarding the payment to be made by Institute at the agreed tender rates.

Clause 27. CONTRACTOR NOT ENTITLED TO ANY CLAIM OR COMPENSATION FOR DELAY IN EXECUTION OF WORK IN BORROW PITS.

The contractor shall not be entitled to claim compensation if there is any delay in the execution of the work on account of water standing in borrow pits and Compartments. The rates are inclusive for hard or cracked soil, excavation in mud, sub-soil water or water standing in borrow pits and no claim for extra rate shall be entertained, unless otherwise specified.

Clause 28. METHOD OF PAYMENT OF BILLS

Payment to contractors shall be made by RTGS by the Institute.

Clause 29. SET OFF AGAINST ANY CLAIM OF INSTITUTE

Any sum of money due and payable to the contractor (including the security deposit refundable to him) under this contract may be appropriated by the Institute and set off against any claim of Institute in respect of a payment of a sum of money arising out of or under any other contract made by the contract with the Institute.

Clause 30. RATES INCLUSIVE OF SALES TAX AND LABOUR CESS AND ROYALTY

(a) The rates to be quoted by the contractor shall be inclusive of all taxes like GST , Labour cess, Royalty etc., No extra payment on this account will be made to the contractor.

(b) When there is a change in existing taxes from time to time i.e. upward or downward is admissible accordingly

(c) All quarry fees, octroi dues levied by the state or any local body or authority and ground rent, if any, charged by the Project Engineer cum Estate officer for stacking materials should be paid by the contractor.

Clause 31. IMPORTANCE OF SAFETY

In addition to Contractor's Contractual Obligations on Safety as per the relevant clauses stated, The Contractor shall comply with all safety standards to the satisfaction of the Employer's Representative.

In respect of all labour, directly or indirectly employed on the project for the performance and execution of the Contractor's Work under the Contract, the Contractor shall at its own expense arrange for all the safety provisions as listed in (i) Safety codes of C.P.W.D. and Bureau of Indian Standards, (ii) The Electricity Act, (iii) The Mines Act, and Regulations, Rules and Orders made there under and such other acts as applicable. Precautions as stated in the safety clause are the minimum necessary and shall not preclude the Contractor taking additional safety precautions as may be warranted for the particular type of work or situations. Also mere observance of these precautions shall not absolve the Contractor of his liability in case of loss or damage to property or injury to any person including but not limited to the Contractor's labour, the Employer's, Architect's, Employer's Representative's and Project Manager's representatives or any member of the public or resulting in the death of any of these.

The Contractor shall institute and implement to the satisfaction of the Project Manager a construction safety programme, including:

1 Preparing a Site-specific written safety programme consistent with the EHS Plan, Indian law and best practices. As a minimum, the programme shall require applicable safety equipment for all workers, use of barriers and barricades around potentially dangerous areas, protection of workers working under elevated conditions, accident reporting, first aid provisions etc.

2 Weekly safety reviews and 'risk assessments' shall be carried out in conjunction with the Project Manager and the Employer in order to identify potential safety hazards and to mitigate against them.

3 Attending weekly or as scheduled safety meetings at site conducted by the site safety representative of project manager

4 The Contractor will be required to provide all personnel entering the Site an Identity and safety rules card and verbal explanation of the safety programme.

5 Requiring all Sub-Contractors and other workers under the responsibility of the Contractor (including the Vendors or later phases of the construction of the Project) to adhere to the written safety programme as per approved format.

Experienced safety officers with adequate number of supporting personnel shall be appointed by the Contractor for full time on the site during the Contract period.

NON-COMPLIANCE OF REGULATIONS

If the Project Manager or the Employer's Representative notifies the Contractor of non-compliance with the foregoing regulations, the Contractor shall immediately, if so directed, or in any event not more than eighteen (18) hours after receipt of such notice, make all reasonable efforts to correct such non-compliance. If the Contractor fails to do so, the Employer may suspend all or any part of the Work. When the Contractor has undertaken satisfactory corrective action, Employer shall lift the suspension of the Work. The Contractor shall not claim any extension of time to complete the Work or additional fees due to any such work suspension.

The Client reserves the right to levy penalty if the safety norms such as not wearing helmets, safety gloves/belts/shoes/jackets. etc., even after a written notice by the enforcing authority, a penalty of Rs. 10,000/- per day per event or till the safety norms are adhered to in addition to stopping of work till the safety norms are adhered

Clause 32 Refund of Security Deposit (EMD & SD):

The Security Deposit lodged/paid by a Contractor shall be refunded to him after the final bill is paid or after the successful completion of defect liability period, during which period the work should be maintained by the Contractor in good order, whichever is later.

Clause 33 BAR CHART / CPM CHART:

BAR chart /CPM chart shall be produced during agreement by the contractor. According to the bar chart work is to be executed otherwise penalty will be levied for the delay of work

THE ARTICLES OF AGREEMENT

This Agreement is made at Bangalore, on this **XXth day of MONTH** in the year **TWO THOUSAND AND TWENTY Four (XX.XX.2024**).

BY AND BETWEEN

INDIAN INSTITUTE OF SCIENCE herein referred as IISc, a Trust registered under the Charitable Endowments Act, 1890, a deemed University and an autonomous Institution funded by the Ministry of Education, Government of India having its office at **Sir C.V Raman Road, Malleswaram, BANGALORE 560 012**, represented by the **Registrar IISc**, Bangalore (hereinafter referred to as the IISc which expression shall unless repugnant to the context or meaning thereof, mean and include its successors in interest, trustees and permitted assigns) of the ONE PART

AND

M/s xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx Bangalore – 56003xx, hereinafter referred to as the "CONTRACTOR", (which expression shall unless repugnant to the context or meaning thereof, mean and include their partners, their respective heirs, executors, administrators and assigns) on the OTHER PART.

RECITALS

WHEREAS the IISc is desirous of getting the work of "**"Annual Operation and Maintenance of Water Supply and distribution System at IISc., Bangalore"**"(hereinafter called the work) executed by the Contractor at the rates quoted by him amounting to **Rs.xxxxxxxx (Rupees xxxxxxxxxxxxxxxxxxxxxxx only**) Inclusive of all Taxes which is **xxx% Above/Below** the estimated amount put to tender.

B. WHEREAS the Contractor has agreed to execute the aforesaid work on terms and conditions mentioned herein and subject to Tender Conditions of Contract and in accordance with the particular specifications, general notes and the schedule of quantities, schedule of rates, payment, and penalty condition, to the satisfaction of the IISc, Bangalore

NOW THIS AGREEMENT WITNESSETH AND THE PARTIES HERETO AGREE AND SOLEMNLY AFFIRM AS FOLLOWS:

1. In consideration of the payment to be made to them as hereinafter provided, the contractor shall, subject to the terms, conditions, specifications, schedule of quantities, drawings, etc., more particularly stated in the Schedules aforesaid, execute and complete the work within **12 Months** for the work after 10 days of issuance of work order or from the date of handing over of site, whichever is later.

2. IISc shall pay to the contractor such sums as shall become payable hereunder at the time and in the manner specified in the conditions contained in the schedule aforesaid.

3. The time allowed for carrying out the work as entered in the tender Agreement shall be strictly observed by the contractor and shall be deemed to be the essence of the contract on the part of the contractor and shall be reckoned from 10 days after the date on which the work order to commence the work is issued to the Contractor or the date of handing over of site, whichever is later. The work shall throughout the stipulated period of the contract be proceeded with all due diligence and the Contractor shall pay compensation an amount equal to one percent, or such smaller amount, as the Director, Indian Institute of Science (whose decision shall be final) may decide on the amount of estimated cost of the whole work as shown in the tender for every day that the work remains un-commenced or unfinished, after scheduled dates.

4. The contractor shall ensure good progress during the execution of the work be bound in all cases in which the time allowed for any work exceeds one month (save for special jobs) to complete Mile stone-1 i.e.15% of the whole work before the time allowed under the contract has elapsed, Mile stone-2 35% of the work before the time has elapsed, Mile stone-3 60% of the work before the time has elapsed, Mile stone-4 80% of the work before of the time has elapsed,100% of the work before completion of such time has elapsed.

However, for special jobs if a time schedule has been submitted by the contractor and the same has been accepted by the Project Engineer-cum-Estate Officer, CCMD the contractor shall comply with the said schedule. In the event of the Contractor failing to comply with the conditions he shall be liable to pay as compensation an amount equal to one percent or such smallest amount, as the Director, Indian Institute of Science (Whose decision in shall be final), may decide on the said estimated cost of the whole work for every day that the due quantity of work remains incomplete; provided always that the entire amount of compensation to be paid under the provisions of this clause shall not exceed seven and a half (10%) percent of the estimated value of the contract as shown in the tender, provided further that in the event of contractor making up the short fall in progress within the stipulated or extended time of completion, the penalty so recovered may be refunded on an application in writing by the Contractor.

5. The Engineer in charge shall review the progress of all works with the contractor once every week. Such a review shall take into account the programme fixed for the previous week, obligations on the part of the Institute for issue of drawings etc., and also the obligations on the part of the Contractor. The review shall also examine the accumulated delays by the contractor if any and mitigation measures proposed by the contractor to overcome the delay. In case the progress achieved falls short by more than 25 percent of the cumulative programme, the reasons for such shortfall shall be examined and a record made thereof apportioning the responsibilities for the delay between the IISc and the contractor. This record should be signed in full and dated both by the Project Engineer and the Contractor.

6. The Director, Indian Institute of Science, without prejudice to its rights under the contract in any respect of any delay or inferior workmanship or otherwise, or to any claim for damages in

respect of any breaches of the Contract and without prejudice to any rights of remedies under any of the provisions of this contract or otherwise and whether the date of 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 Project Engineer-cum-Estate Officer, CCMD a notice in writing to rectify reconstruct or replace any defective work or that the work is being performed in any inefficient or otherwise improper or unworkmanlike manner, shall omit to comply with the requirements of such notice for a period of seven days of such notice thereafter or if the contractor shall delay or suspend the execution of the work so that in the judgment of the Project Engineer-cum-Estate Officer, CCMD (which shall be final and binding) either they will be unable to secure completion of the work by the date for completion of the work or they had already failed to complete the work by that date.

(ii) If the Contractor being a company passes a resolution or if the Court passes an order to wind up the company or if a receiver or a manager is appointed on behalf of the creditors of the company or under circumstances which entitles the Court or the creditors to appoint a receiver or manager which would entitle the Court to make a winding-up order.

(iii) If the Contractor commits breach of any of the terms or conditions of this contract.

(iv) If the contractor assigns or sublets without written approval of the Project Engineer-cum-Estate Officer, CCMD or becomes insolvent.

The Director of the Institute shall have following powers:

a) To determine or rescind the Contract as aforesaid (in which termination or recession notice in writing to the Contractor underhand of the Project Engineer-cum-Estate Officer, CCMD shall be conclusive evidence). Upon such determination or recession the security deposit of the Contractor shall be liable to be forfeited and shall absolutely be at the disposal of Institute.

(2) To employ labor paid by the Institute and supply materials to carry out the work or any part by debiting the Contractor with the cost of the labor and the price of the materials (of the amount of which cost and price certified by the Project Engineer-cum-Estate Officer, CCMD shall be final and conclusive against the Contractor) and crediting him with the value of the work done in all respect on the same manner and at the same rates as if it has been carried out by the contractor under the term of his contract. The certificate of the Project Engineer-cum-Estate Officer, CCMD as to the value of the work done shall be final and conclusive against the contractor, provided always that action under the sub-section shall only be taken after giving notice in writing to the contractor. Provided also that if the expenses incurred by the Institute are less than the amount payable to the contractor at his agreement rates, the difference shall not be paid to the Contractor.

(3) After giving notice to the contractor to measure up the work of the contractor and to take such part thereof as shall be un-executed out of their hands and to give it to another contractor to complete in which case any expenses which may be incurred in excess a sum of which would have been paid to the original contractor if the whole work had been executed by him (of the amount of which excess the certificate in writing of the Project Engineer-cum-Estate Officer, CCMD shall be final and conclusive) shall be borne and paid by the original contractor and may be deducted from any monies due to him from the Institute under this contract or any other account whatsoever, of from his security deposit or the proceeds of sales thereof, or a sufficient part thereof as the case may be.

In the event of any one or more of the above courses being adopted by the Project Engineer-cum-Estate Officer, CCMD, the contractor shall have no claim to compensation for any loss sustained by them by reason of 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 of action is taken under any of the provisions, aforesaid, the contractor shall not be entitled to recover or be paid any sum for work thereto/for actually performed under this contract unless the Project Engineer-cum-

Estate Officer, CCMD has certified in writing the performance of such work and the value payable in respect thereof and they shall only be entitled to be paid the value so certified.

7. The schedules above mentioned include the General Rules and Directions to Contractors and the following documents, viz.,
   i) Letter of Intent
   ii) Letter of Acceptance
   iii) Work Order
   iv) Conditions of Contract
   v) Contractor's Bid – Bill of Quantities
   vi) Technical Specifications
   vii) Drawings
   viii) The pre-Bid meeting proceedings and corrigendum
   ix) Any other document listed in the Contract Data as forming part of the contract shall form an integral part of the agreement and the decision of the Project Engineer-cum-Estate Officer, CCMD in reference to all matters of a dispute as to material and workmanship shall be final and binding on both the parties.

8. The IISc reserves the right of altering the drawings of the works and of adding to or omitting any item of work from or of having portions of the same carried out departmentally or otherwise and such alterations or variations shall not violate this agreement.
9. This agreement comprises the work aforesaid, and all subsidiary works connected therewith even though such works may not be shown on the schedule appended hereto.
10. In the event the contractor or their employees, agents, sub-contractors deface or destroy the property or the establishment belonging to IISc, the same shall be made good by the contractor at their own expenses.
11. The Contractor shall ensure cleanliness at the premises of IISc ensure cleaning of site and removal of debris every week. In any event the contractor ceases to comply the foregoing the IISc shall ensure the site cleaned at the expense of the contractor.
12. The Contractor shall at all time be responsible for the safety of their employees, agents, sub-contractors, and in any event during the commission of work or in their due course of work the IISc shall not be held responsible. The contractor shall defend, indemnify and hold the Institute harmless from any liability or damage, law suits, penalties imposed by any State or Central Government or statutory body or by a third party for reasons of violation of any of statutory provisions or requirements by the contractor.
13. The Contractor shall adhere to the working conditions and its scope strictly and any act not in confirmation with the scope of work which is mutually accepted by both the parties shall only be done after prior approval and acceptance in writing by the Director.
14. The Contractor shall at any time be responsible for the completion of work in time, also the contractor shall be responsible to submit the final bill within one month after completion of the work.
15. Notwithstanding anything contained in the tender submitted by the contractor, all the clauses of this agreement shall be binding on both parties.
16. Where counter-terms and conditions, printed or copied, are offered by the contractor, the same shall not be deemed to have been accepted by the IISc, unless specific written acceptance thereof is furnished by the IISc. Notwithstanding the foregoing, no verbal agreement or inference from a conversation with any office members/representatives/employees of the IISc before, during, or after the execution of the agreement, shall in any way affect or modify any of the terms/obligations contained herein.
17. In the event the contract is terminated by the IISc due to any aforementioned act/omission on the part of the contractor, or for any reason whatsoever, the IISc shall be entitled to engage the services of any other person, agency or Contractor to meet its requirement, without prejudice to its rights including claim for damages against the Contractor.

18. This agreement can be terminated by IISc with the prior written notice of Seven (7) days in the event of a breach of any of its terms of this agreement and even otherwise this Agreement may be terminated by IISc by giving a minimum of 7 days prior written notice to the Contractor.

19. The IISc shall be indemnified for all losses due to commissions and omissions of persons deployed by the contractor. If any loss or damage is caused to the IISc on account of any negligence, carelessness, acts of omissions. commissions of contractors, its employees or staff, the same shall be made good by the contractor. The contractor shall defend, indemnify and hold the Institute harmless from any liability or damage, law suits, penalties imposed by any State or Central Government or statutory body or by a third party for reasons of violation of any of statutory provisions or requirements by the contractor. The IISc shall not be liable for any damage or compensation payable to any workmen or to any person as a consequence of this work and the IISc shall be completely indemnified accordingly.

20. The contractor shall pay wages directly to its personnel The contractor shall also ensure that no amount by way of commission or otherwise is deducted from the wages of the workmen. The contract labourers deployed by the agency shall not involve in any theft/pilferage/damage to Institute property. After necessary investigations, if proved that the contractor or their personnel are responsible for the incident, the contractor is liable and will be penalized to the extent of the value of the loss and additionally Rs. 50,000/- for each such incident.

21. All terms and conditions, the scope of work, and other conditions as mentioned in the tender document will be diligently complied by the contractor. The terms and conditions, the scope of work, and other conditions mentioned in the tender documents shall form a part and parcel of this agreement.

22. The Contractor hereby agrees and affirms that during or subsequent to the performance of the duties under this Agreement, the Contractor shall maintain confidentiality and shall not divulge, communicate, use or appropriate any of the IISc Information, except to the extent necessary for the Contractor to fulfill his obligations or duties to the IISc under this Agreement. The Contractor shall not cause transmission, removal or transfer of tangible embodiments of, or files from the IISc place of business, without the prior written consent of the IISc and shall not disclose any information of the IISc to any third part

23. In case of disputes including all questions relating to the performance of the obligations under this agreement and all the dispute and differences which shall arise either during or after the agreement period or other matters arising out of or relating to this agreement or payments to be made in pursuance thereof shall be decided by the Director of IISc whose decision shall be binding on the contractor. The Contractor hereby agrees to be bound by the decision of the Director, IISc.

24. **COURTS:**

Courts of appropriate jurisdiction situated in Bangalore City shall have exclusive jurisdiction. Any dispute or difference arising between the parties to the agreement in relation to any of the matters specified herein, shall be settled in the Courts of appropriate jurisdiction situated in Bangalore City which shall have exclusive jurisdiction in regard to any matter arising under or in relation to this agreement. Laws of India and the State of Karnataka, shall be applicable in this regard

25. **GOVERNING LAW**

This Contract shall be governed by the Law of India for the time being in force

IN WITNESS WHEREOF the parties hereto have set their respective hands the day and the year here in above written.

In the presence of: Signed by for and on behalf of the said Contractor.
Witness 1:

(Company Name)

In the presence of:
Witness 2:

Signed by for and on behalf of the IISc.

REGISTRAR
INDIAN INSTITUTE OF SCIENCE
BANGALORE-12

MEMORANDUM OF WORK

INDIAN INSTITUTE OF SCIENCE, BANGALORE-12
ITEM RATE TENDER FOR WORK

1.	General Description	**"Annual Operation and Maintenance of Water Supply and distribution System at IISc., Bangalore"**
2.	Estimated Cost	**Rs 93,55,739.00**
3.	Earnest Money	**Rs.1,87,115.00**
4	Date of Commencement of work	Within ten days from the date of issue of work order or the date of handing over the site whichever is later
5	Frequency of interim Certificate and payment	Once every month.
6.	Further Security Deposit	5.5% on the running account bills and final bill in addition to Earnest Money Deposit. When the S.D. deducted from the RA bills of the Contractor @ 5.5% of the bill amount exceeds Rs.1.00 lakhs, the amount in excess of Rs.1.00 lakh may, at the request of the Contractor, be released to him against the production of a bank guarantee issued by a Nationalized Bank only for an equal amount in the prescribed form. The bank guarantee should be valid till the completion of the period mentioned in page 2 of Sl.No.1.
5.	Time allowed for the completion of work in all respects from the date of commencement of work	**12 Months**
6	Bills Of Quantities.	As per enclosure.
7	Defects liability period /release of security deposit.	The security deposit lodged/paid by a contractor shall be refunded to him after the final bill is paid or after Twenty Four **24 months** from the date of completion of the work, during which period the work so executed should be maintained by the contractor in good order, whichever is later.
8	Period for payment of Running Bill.	Four weeks from the date of submission of each Running account bill by the Contractor.
9	Period for submitting the final Bill.	One month from the date of virtual completion of the work by the Contractor.

10	Specifications.	The work shall be carried out strictly in accordance with the enclosed specifications and wherever items are not covered by those specifications in accordance with specifications/drawings /designs/requirements and directions of the Project Engineer-cum-Estate Officer, CCMD

I/We, hereby tender for the execution for the Indian Institute of Science, Bangalore-12 of the works specified in the under mentioned memorandum within the time specified in such memorandum at the rates specified therein and in accordance, in all respects, with the specifications, designs, drawings and instructions in writing which have been read by me/read and explained to me and with such materials as provided for by and in all other respects in accordance with such conditions as for as possible.

I/We hereby agree to abide by and fulfill all the terms and provisions of the conditions contained in the articles of agreement, which have been read by me/us or in default thereof to forfeit and pay to the Registrar, Indian Institute of Science or his successors he sums of monies mentioned in the said conditions

The sum of **Rs.1,87,115.00 (Rupees One Lakh Eighty Seven Thousand One Hundred Fifteen Only)** has been deposited in cash/bank draft as Earnest Money the full value which is to be absolutely forfeited to the Registrar or his successors in Office should I/We fail to commence the work specified in the above memorandum and complete the same.

Dated this XX **day of XX 2024**.

Signature of the Contractor

Witness to Contractor/s Signature:
NAME
ADDRESS
OOCCUPATION

The above tender is hereby accepted by me on behalf of the Indian Institute of Science, Bangalore-12.

REGISTRAR
INDIAN INSTITUTE OF SICENCE
BANGALORE.

Indian Institute of Science, Bangalore-12
A P P E N D I X

1.Name of the work	**"Annual Operation and Maintenance of Water Supply and distribution System at IISc., Bangalore"**
2.Date of commencement of work	Within Ten days from the date of issue of work order or the date of handing over the site whichever is later
3.Time of Completion	**12 Months**
4.Frequency of interim Certificate and payment	Once in every month.
5.Further Security deposit	5.5% on the running bills and final bill in addition to earnest money deposit. When the S.D. deducted from the R.A. Bills of the contractor @ **5.5%** of the bill amount exceeds Rs.1.00 Lakhs, the amount in excess of Rs.1.00 Lakh may, at the request of the contractor, be released to him against the production of bank guarantee issued from a Nationalised /Scheduled Bank only for an equal amount in the prescribed form. The bank guarantee should be valid till the completion of the defect liability period.
6. Defects liability period / retention amount from the final bill/release of balance of deposit.	The security deposit lodged/paid by a contractor shall be refunded to him after the final bill is paid or after Twenty Four 24 months from the date of completion of the work, during which period the work so executed should be maintained by the contractor in good order, whichever is later.
7. Penalty for delay	In respect of the shortfall in progress, assessed as due to the delay on the part of contractor as per clause 2(b) and 2(c), the contractor shall be liable to pay as penalty an amount equal to one percent of the estimated cost of the balance work assessed according to the programme, for every day that the due quantity of work remains incomplete, provided always that the total amount of penalty to be paid under the provisions of this clause shall not exceed 7 ½ percent of the estimated cost of the entire work as shown in the tender, provided further that in the event of the contractor making up the shortfall in progress within the stipulated or extended time of completion, the penalty so recovered may be refunded on an application in writing by the contractor.
8. Period for payment of Running Bill	Three weeks from the date of submission of each Running account bills by the Contractor.
9. Period for submitting the final Bill	One month from the date of virtual completion of the work by the Contractor.

10. REFERENCES

I.S. STANDARDS OF ELECTRICAL WORKS

Sl.No	STANDARDS	TITLE
	Code of Practice / Guide	
1	IS : 732 – 1989	Code of Practice for Electrical wiring installations.
2	IS : 4648 – 1968	Guide for Electrical layout in residential buildings
3	IS : 80614 – 1976	Code of Practice for Design, installation and maintenance of service lines up to and including 650V.
4	IS : 7752 (Part-1) - 1976	Code of Practice for interior illumination : General requirements and recommendations for welding interiors.
5	IS : 4347 – 1967	Code of Practice for hospital lighting
6	IS : 6665 – 1972	Code of Practice for industrial lighting
7	IS : 2672 – 1966	Code of Practice for Library lighting
8	IS : 10118 (Part-1) - 1982	Code of Practice for selection, installation and maintenance of switcher and Control gear : Installation.
9	IS : 4146 – 1983	Application guide for voltage transformers.
10	IS : 3043 – 1987	Code of practice for earthing.
11	IS : 5216 (Part-2) - 1982	Guide for safety procedures and practices in electrical work : General.
12	IS : 4237 – 1982	General requirements for switchgear and control gear for voltages not exceeding 1000 V AC or 1200 V DC.
13	IS : 6875 - (Part-1) - 1973	Control switches (Switching devices for control and auxiliary circuits including 1000 V AC and 1200 V DC : General requirements and tests.
14	IS : 10027 – 2000	Composite units of Air-Break switches and rewireable type fuses for voltages not exceeding 650 V AC.
15	IS : 4064 (Part-1) - 1978	Composite units of Air-Break disconnector, Air-Break switch disconnector and fuse- combination units for voltages not exceeding 1000 V AC or 120 V DC : General requirements.
16	IS : 8828 – 1996	Electrical accessories - circuit breakers for over current protection for household and similar installation.
17	IS : 2516 (Part-1/Sec01)-1985	Circuit-Breaks : Requirements and tests : Voltages not exceeding 100 V AC or 1200 V DC.

18	IS : 5039 – 1983	Distribution pillars for Voltages not exceeding 1000 V AC or 1200 V DC.
19	IS : 8544 (Part-4) - 1979	Motor starters for voltages not exceeding 1000 V : Reduced voltage AC starters, two- step auto transformer starters.
20	IS : 9537 (Part-1) - 1980	Conduits for electrical installations General requirements
21	IS : 9537 (Part-4) - 1983	Conduits for electrical installations : Pliable self recovering conduits of insulating materials.
22	IS : 3854 – 1997	Switches for domestic and similar purposes.
23	IS : 1293 – 1988	Plugs and sockets outlets of rated voltage up to and including 250 Volts and current up to and including 16 Amperes.
24	IS : 2418 (Part-1) - 1977	Tubular Fluorescent lamps for general lighting services : Requirements and tests.
25	IS : 9900 (Part-1) - 1981	High pressure mercury vapor lamps : Requirements and tests.
26	IS : 1913 (Part-1) - 1978	General and safety requirements for luminaries : Tubular fluorescent lamps.
27	IS : 10322 (Part-1) - 1982	Luminaries : General requirements
28	IS : 302 (Part-1) - 1979	General and safety requirements for household and similar electrical appliances.
29	IS : 6236 – 1971	Direct recording electrical measuring instruments.
30	IS : 2705 (Part-1) - 1992	Current transformers : General requirements.
31	IS : 2448 (Part-1) - 1963	Adhesive insulating tapes for electrical purposes : Tapes with cotton textile substrates.
32	IS: 8130-1984	Code for Conductor Construction
33	IS: 5831-1984	Code for Insulation & sheath material
34	IS:694-1990	PVC insulated Flexible Single Core Wire/ Unarmoured Multicore/ Flat Cables. For working voltage upto & including 1100V.
35	IS:1554(Part-1)-1988	Copper or Aluminium Conductor, PVC insulated, extruded inner sheathed PVC, galvanised steel wire/strip armoured, extruded PVC sheathed LT Control/Power Cable. For working voltage up to & including 1.1KV.
36	IS:3975-1990	Code for Number of Strips in armouring construction.

37	IS: 7098/II/85	XLPE insulated HT & AB Cables. For working voltage 6.35/11KV.
38	IS:14255-1995	Code for Aerial Bunched Cables.For working voltage up to 1.1KV.
39	IS:13573/VDE 0278/IEC 60502/HD 629.1.S2 CENELEC	Code of Type tests for HT termination jointing kit.
40	IS 7569:1987	Cast Acrylic Sheets for use in Luminaires
41	IS 8030:1976	Specifications for Luminaires for Hospitals
42	IS 10242: Part 3: Sec 6: 1986	Electrical installations in ships: Part 3 Equipment, Section 6 Luminaires & accessories
43	IS 10322: Part 2 1982	Specification for Luminaires - Part 2: Constructional Requirements
44	IS 10322: Part 3 1984	Specification for Luminaires - Part 3: Screw & Screw Less Terminals
45	IS 10322: Part 4 1984	Specification for Luminaires - Part 4: Method of Tests
46	IS 10322: Part 5: Sec 1: 2012	Luminaires: Part 5 Particulars requirements, Sec 1 General Purpose Luminaires
47	IS 10322: Part 5: Sec2: 2012	Specifications for Luminaires - Part 5 : Particular Requirements - Section 2: Recessed Luminaires
48	IS 10322: Part 5: Sec4: 1987	Luminaires: Part 5 Particulars requirements, Section 4 Portable general-purpose luminaires
49	IS 13383: Part 1 : 1992	Photometry of Luminaires - Method of Measurement - Part 1: Luminaires for use in interior Lighting
50	IS 13383: Part 2 : 1992	Methods of Photometry of luminaires: Part 2 Luminaires for road & street lighting
51	IS 13383: Part 3 : 1992	Photometry of Luminaires - Method of Measurement - Part 3: Luminaires for Floodlighting
52	BSEN 10025 Grade 5, 355JO (or) ASTM A 572-50	Steel sheet thickness
53	IS 875 Part 3	Wind Velocity
54	IS 2062 (or) ASTM A 572-50	Base Plate
55	BSEN ISO 1461 (or) ASTM A123 (or) IS 2629	Galvanized in single hot dip / With Average 70 Microns
56	BS 5135	Welded Single L-Seam Joint
57	AISI 304 Grade	Stainless Steel Wire Rope (Factor of Safety: TR No. 7)
58	IS 1239	Maximum Load Carrying Capacity (Lantern)

59	IS 9595 (or) IS 10178 AWS	Single Section & Single Joint welded
60	ASTM - A 123 and 153	Hot dip Galvanized in Single dipping with not less than 65 Microns

EARTH WORK - IS CODES		
1	IS-1200 (Part 1)	Method of measurement of building and Civil Engineering Works.
2	IS 1200 (Part 1)	Method of measurement of earth work
3	IS 1200 (Part-27)	Method of measurement of earth work (by Mechanical Appliances)
4	IS 4988 (Part IV)	Excavators
5	IS 12138	Earth moving Equipment's
6	IS 3764	Safety code for excavation work
7	IS 4082	Recommendations of stacking and storage of construction materials at site
CONCRETE WORK - IS CODES		
1	IS 383	Specification for coarse and fine aggregate from natural sources for Concrete.
2	IS 456	Plain and reinforced concrete - Code of practice
3	IS 516	Method of test for strength of concrete
4	IS 1199	Method of sampling and analysis of concrete
5	IS 1200 (Part II)	Method of measurement of building and civil engineering work (concrete work)
6	IS 2386	Method of test for aggregates for concrete Part I to Part V
7	IS 4656	Specification for form vibrators for concrete.
8	IS 456	Code of Practices for plain and Reinforced concrete.
9	IS 516	Method of test for strength of concrete.
10	IS 1200 (Part II)	Method of measurement of building and civil engineering work – concrete work
11	IS 1791	Specification for batch type concrete mixes
12	IS 4925	Batch plants specification for concrete batching and mixing plant
13	IS 4926	Ready – Mixed Concrete
14	IS 10262	Recommended guidelines for concrete mix design
15	IS 13311 (Part I)	Indian standard for non-destructive testing of concrete. Method of test for ultrasonic pulse velocity
16	IS 13311	Indian standard for non-destructive testing of concrete. Method of testing by rebound hammer.
STRUCTURAL STEEL WORK - IS CODES		
1	IS 226	Structural steel (Standard quality)
2	IS 800	Code of Practice for use of structural steel in general building construction.
3	IS 801	Code of practice for use of cold formed light gauge steel structural member's in general building construction.
4	IS 806	Code of Practice for use of steel tubes in general building construction.
5	IS 808	Dimension for hot rolled steel sections.
6	IS 813	Scheme of symbols for welding.
7	IS 814	Covered electrodes for metal arc welding of (Part I & II) structural steel.
8	IS 816	Code of practice for use of metal arc welding and general construction in mild steel.

9	IS 822	Code of Practice for inspection of welds.
10	IS 961	Structural steel (high tensile)
11	IS 1120	Coach Screws.
12	IS 1149	Specification for light tensile steel rivet, bars for structural purposes.
13	IS 1161	Steel tubes for structural purposes.
14	IS 1182	Recommended practice for Radiograph examination of fusion welded butt joints in steel plates.
15	IS 1200	Method of measurement in Building Civil Engineering work.
16	IS 1239	Mild steel tubes, tubulars and other wrought steel fittings
17	Part I	Mild Steel
18	Part II	Mild steel tubulars and other wrought sheet pipe fittings.
19	IS 1363	Black hexagonal bolts, nut and black hexagon screws product of Grade C (size range M25 to M64) (Part 1 to 3).
20	IS 1365	Slotted counter sunk screws.
21	IS 1367	Technical supply conditions for threaded fasteners.
22	IS 1977	Structural steel (ordinary quality)
23	IS 2016	Plain washer.
24	IS 2062	Structural steel (fusion welding quality)
25	IS 2595	Code of practice for Radiographic testing.
26	IS 4000	High strength bolts in steel structures Code of practice.
27	IS 4923	Hollow steel sections for structural use.
28	IS 5624	Specification for foundation bolts.
29	IS 6227	Code of practice for use of metal arc welding in tubular structure.
30	IS 7215	Tolerances for fabrication of steel structures.
GI SHEET FIXING		
1	IS 277	Galvanised steel sheets (plain and corrugated)
2	IS 1367 (PT - 13)	Technical supply conditions for threaded steel fasteners pt.13 hot dip galvanized coating on threaded fasteners
3	IS 1200 (PT.IX)	Method of measurements of building and civil engineering works Part - 9 Roof covering (including cladding)
DEMOLISHING WORK		
1.	IS 1200 (Pt - XVIII)	Method of Measurements of Building and Civil Engineering Works (Part -XVIII) Demolition and Dismantling
2.	IS 4130	Demolition of Buildings-
Water Supply Works		
1.	IS 2065	Code of practice for water supply in buildings
2.	CPHEEO manual	Manual on Water Supply and Treatment by CPHEEO

ABREVIATIONS:

The following abbreviations wherever they appear in the specifications, shall have the meaning or implication hereby assigned to them:

Mm	Millimetre
Cm	Centimetre
M	Metre
Km	Kilometre
Mm /sqmm 2	Square Millimetre

Cm /sqcm 2	Square centimetre
Dm /sqdm 2	Square decimetre
M /sqm 2	Square metre
Cm / cubic cm 3	Cubic centimetre
Dm / cubic dm 3	Cubic decimetre
M3/cum 3	Cubic metre
Ml	Millilitre
Kl	Kilolitre
Gm	Gram
Kg	Kilogram
Q	Quintal
T	Tonne
Fps system	Foot pound second system
°C	Degree Celsius temperature
Fig	Figure
Re/Rs	Rupee/ Rupees
No	Number
Dia	Diameter
AC	Asbestos cement
CI	Cast Iron
GC	Galvanised corrugated
GP	Galvanised plain
GI	Galvanised iron
PVC	Polyvinyl chloride
RCC	Reinforced cement concrete
SW	Stone ware
SWG	Standard wire Gauge

11. TECHNICAL SPECIFICATION

The work shall be carried out as per CPWD / KPWD Specification and relevant IS codes. In case of discrepancy between technical specification and BOQ, the BOQ prevails.

Special conditions and Scope of work

11.1 The CONTRACTOR will be bound by the details furnished by him / her to IISc, while submitting the bid or at subsequent stage. In case, any of such documents furnished by the firm is found to be false at any stage, it would be deemed to be a breach of terms of contract making the firm liable for termination of contract.

11.2 The CONTRACTOR shall ensure that the manpower deployed in IISc, conforms to the qualification and experience prescribed in the Tender Document.

11.3 The CONTRACTOR shall furnish the following documents in respect of the individual manpower who will be deployed at IISc, before the commencement of work:

11.4 List of Manpower short listed by the CONTRACTOR for deployment at IISc, containing full details like name, date of birth, marital status, address etc.

11.5 Biodata of the persons.

11.6 Certificate of verification of antecedents of persons by local police authority.

11.7 In case, the person employed by the successful CONTRACTOR commits any act of omission / commission that amounts to misconduct /indiscipline/ incompetence / security risks, the CONTRACTOR will be liable to take appropriate disciplinary action against such persons, including, making good the financial loss and their removal from work, immediately after being brought to notice, failing which it would be assumed as breach of contract which may lead to cancellation of contract.

11.8 The CONTRACTOR shall provide identity cards to the personnel deployed at site carrying the photograph of the personnel and personal information such as name, date of birth, age etc. attested by the Security Officer at the institute. The duty hours should not exceed eight hours at a stretch. Continuous shifts by the same person should be avoided and no post should remain unmanned. Odd duties/shifts may be required according to exigencies, which are to be provided by CONTRACTOR as per their job assignments. The CONTRACTOR should issue the Uniforms and Personal Protection Equipment (PPE) and ensure that the said Uniform / PPE must be worn by the staff/workers while they are on duty in the IISc campus. Nothing will be paid extra on this account and the CONTRACTOR should consider this cost while quoting. No worker below the age of 18 (eighteen) years shall be employed at the work. The contractor shall also be responsible for its personnel in observing all security and safety regulations and, instructions as may be issued in writing by the Institute from time to time.

11.9 The CONTRACTOR shall ensure that any details of office, operational process, technical know-how, security arrangements, and administrative/organizational matters are not divulged or disclosed to any person by its personnel deployed in this office.

11.10 The CONTRACTOR shall ensure proper conduct of his personnel in institute/office premises and enforce prohibition of consumption of alcoholic drinks/ smoking while on duty. The workers/staff employed by the contractor shall not act in any way detrimental to the interests of IISc and they are not employees of IISc and shall not have any employment related claims on IISc.

11.11 Attendance sheet has to be maintained every day and copy of same to be enclosed along with the bill for monthly payment.

11.12 The Contractor's employees will be allowed entry into the specified areas of the premises of IISc

with the permission of the Director or any other Officer authorized in this behalf in writing with valid photo identity card issued by the Contractor and displayed prominently. The Institute reserves the right to grant permission or to refuse permission or to withdraw it where it has been granted earlier without assigning any reason. The Contractor shall ensure that his employees attend to their assigned duties and do not wander or roam around and not to pose disturbance to guests, staff, faculties, students, participants, etc., of IISc.

11.13 The CONTRACTOR shall designate a coordinator, out of the deployed personnel, who would be responsible for immediate interaction with the office, so that optimal services of the persons deployed by CONTRACTOR could be availed without any disruption.

11.14 The CONTRACTOR shall provide replacement and ensure that as far as possible no designated post is left vacant in any shift.

11.15 IISc is not liable at any stage to provide free of cost accommodation, transport, food, medical and any other requirement of their personnel deployed at the institute.

11.16 Payment shall be made only to the contractor and on a monthly basis as per actual services and the terms of the work order. The contractor has to submit invoices/bills by the third week of the next month for the services rendered in the preceding month along with ESI/PF challans etc., pertaining to that month. The proof of remittance of statutory deductions of PF, ESI to the appropriate agency, for those employed at IISc, must be provided by the CONTRACTOR to IISc every month along with the claim bill, failing which the claim bill shall not be settled. These remittance /payments must be made in a separate challan specifically for the contract personnel deployed at IISc in the name of IISc.

11.17 IISc reserves the right to amend or withdraw any of the terms and conditions contained in the Tender Document or to reject any or all tenders without giving any notice or assigning any reason. The Director, IISc is the final authority for settling any disputes and the decision of the Director in this regard shall be final and binding on all.

11.18 IISc shall provide to Contractor, unhindered and continuous access to all areas of the IISc campus in order to perform the works as per the Contract. This access shall be available to Contractor from the Effective Date.

11.19 OBSERVANCE OF SAFETY PRECAUTIONS:

11.20 The Contractor shall abide with all the safety regulations as in included in the Civil & Electrical safety guide for works contract at site. The contractor shall comply with all applicable provisions of the safety regulations, clean-up program and other precautionary measures. The contractor shall comply with all instructions given by the safety engineer or his authorized representatives regarding safety precautions, protective measures, clean up and all the other practice which in the opinion of the Engineer or his authorized representative might be hazardous.

11.21 If the contractor has been found violating the safety rules more than twice as per the intimation received from the Engineer in-charge, he will be penalized with Rs. 500 each time and this amount shall be deducted from their R.A Bills.

11.22 Safety and fire training for staff engaged on work shall be organized by the Contractor under the guidance of IISC Safety team. Cost for such training occurred, if any, shall be borne by the Contractor.

11.23 Safety helmets, safety shoes, gloves, safety belts, torches and any other safety equipment are to be provided by the contractor to his workers.

11.24 No operator/Helper doing more than the maximum shift allowed by the contract. (26/27 shifts in a month).

11.25 If CONTRACTOR fails to provide services to the satisfaction of the institute as per Contract specifications and other specifications as issued by the IISc from time to time, which are within the scope of the activities specified herein, the same will be communicated to CONTRACTOR in writing. If three such notices are issued to CONTRACTOR and the defaults notified therein remain uncured within the time notified in the said notices, then the contract will be terminated.

11.26 The insurance and securities of the plant and equipment at the IISc campus is the sole responsibility of the IISc. Reasonable measures must be adopted by the staff deployed by the Contractor for maintenance of such equipment. The Contractor and their staff shall be held responsible for any type of theft/pilferage/damages, if during any necessary investigations, it is proved that CONTRACTOR/their personnel are responsible for the incidents, and the CONTRACTOR shall be held liable and be penalized to the extent of loss caused to the equipment.

11.27 Contractor shall have no responsibility or liability for the pre-existing adverse condition of IISc campus. Prior to Contractor starting any work at the site, IISc will provide documentation that identifies the presence and condition of hazardous materials existing in or around IISc campus that Contractor may encounter while performing under this Contract. IISc shall disclose to Contractor industrial hygiene and environmental monitoring data regarding conditions that may affect Contractor's work or personnel at the campus. IISc shall keep Contractor informed of changes in any such conditions.

11.28 The requirement of manpower may vary according to the need and may be reviewed/ reduced/enhanced as and when required by the PE cum EO, IISc. Accordingly, payment will be regularized as per the rate quoted in the tender.

11.29 The contract may be terminated by either party by giving a prior written notice of two months (60 days) to other party. The termination may be due to not fulfilling the contractual obligations by any party.

11.30 In the event of termination for default by Contractor, IISc shall serve a detailed written notice of the breach along with its intention to terminate the Contract during which, the Contractor must attempt at diligently pursuing cure of the breach. Subject to the above, IISc shall put the contractor in notice again i.e. five days before the conclusion of the said 60 days' notice period as a follow-up and in the event Contractor still fails to cure the breach then this contract shall stand terminated.

11.31 Contractor may also suspend or terminate the Contract by giving 60 days prior written notice (or any affected portion thereof) to IISc immediately for the cause which are, if IISc materially breaches the Contract, including, but not limited to, failure or delay in making any payment when due, or fulfilling any payment conditions or other obligations under the Contract.

11.32 If the Contract (or any portion thereof) is terminated for any reason other than Contractor's default, IISc shall pay Contractor for Services performed till the date of notice of termination served on the contractor by the Institute.

11.33 This Contract shall be governed by and construed in accordance with the Laws of India. If a dispute is not resolved by negotiations, either party may, by giving written notice, refer the dispute to a meeting of appropriate higher management, to be held within ninety (90) days after the giving of notice. If the dispute is not resolved within the said ninety (90) days, either party may commence arbitration proceedings by putting the other party in notice. The place of Arbitration shall be in Bangalore, India and the Arbitration and conciliation Act, 1996 amended up to date and corresponding rules shall apply to this Agreement. The arbitration proceedings shall be conducted in English. The Award passed by the said Tribunal shall be final and binding

on the Parties. Courts in Bangalore City alone shall have exclusive jurisdiction in this regard.

11.34 All maintenance and repair works involved during the execution of work shall be undertaken by Contractor as per the contract.

11.35 All major faults and problems shall be reported to the Engineer in-charge immediately of occurrence through a memo. After inspection by the Engineer in-charge, procedures for rectification shall be approved by CONTRACTOR.

11.36 Any damage or loss due to failure to carry out prescheduled maintenance work shall be to the cost of CONTRACTOR provided such failure to carry out the maintenance work shall be solely for the reasons attributable to the Contractor. However, the shutdown availability and safe access to site and equipment is the responsibility of the IISc.

11.37 Any other work, if required or insisted by IISc including tests and calibrations etc., shall be undertaken by CONTRACTOR. at mutually agreed extra costs.

11.38 The necessary salary and other allowances due to the employees by the contractor shall be paid by him and shall strictly comply with all rules and regulations of statutory bodies and other labour laws. All employees engaged by the contractor shall be comprehensively insured for accidents and injuries.

11.39 Materials to be used like furniture, Almirah, racks, office and storage space, computer with internet and printer etc. will be provided by IISc to contractor free of charge.

11.40 All technical documents (like Single Line Diagram, As built drawings, O&M Manuals, Asset list, Substation layout, Maintenance history/reports, failure history of assets, OEM details of existing assets, copy of reports of any technical study done by IISc in the past, Environmental Health and Safety plan of IISc etc. pertains to the substation, equipment and area covered under this contract shall be provided by IISc to contractor for effective execution of the contract.

11.41 Basic amenities/ facilities like drinking water, electricity, toilets, Illumination in substations or work area etc. shall be provided by IISc to Contractor free of charge.

11.42 The annual service maintenance of the accessories shall be carried out as per the manufacturer's manuals applicable from time to time. The work shall be carried out by the deployed team of the contractor. However, if OEM or expert visit is required, the same charges have to be paid by IISc. The Back-to-Back AMC of the installed equipment with the respective OEM's are in the scope of IISc.

11.43 The Contractor shall note that they shall have to carry out their work in close coordination with other contractors' agencies working in the same premises with adequate Environment Health and Safety (EHS) measures and precautions. IISc to make sure the other agencies working in the CONTRACTORS's area of work should inform the Contractor well in advance and take suitable written permission and Permit to Work (PTW) from the CONTRACTOR site in-charge for each and every task in order to maintain the safety of equipment and staff at site.

11.44 In the event of contractor showing lack of attendance, negligence to work or under-performance in line to the contract obligations, then the contract may be terminated (as per termination clause elsewhere in this agreement) at any stage after exhausting the right by action under any other relevant clauses of the contract.

11.45 The contractor shall follow all security rules framed and shared in writing by Engineer in-charge from time to time regarding removal of material from site, issue of identity cards, control of entry of persons and other similar matters.

11.46 The Contractors' personnel shall not disclose any information or drawings furnished to him by

PE CUM EO/ OFFICER IN-CHARGE. Any drawings, records and other information's prepared by the contractor or by the PE CUM EO/ OFFICER IN-CHARGE or jointly by both for the execution of the works shall not be disclosed without the prior approval of the PE cum EO/ Officer in-charge, except to its affiliates and subcontractors in connection with performance of the Contract. No photograph of the substation or any other place within the premises of PE cum EO/ Officer in-charge shall be taken without the prior approval of the PE cum EO/ Officer in-charge.

11.47 The contractor shall keep his work spot, site office and surroundings neat, clean and tidy. It should be free from dust, rubbish, scrap, surplus materials and unwanted tools and equipments. All scaffolding and temporary structure including the tools and equipments shall be removed as soon as the job for which they are intended are completed. All equipment and material to be taken inside the plant building shall be cleaned thoroughly before taking them inside. The Engineer-in-charge has right to stop the work, if the contractor fails to improve upon the cleanliness after having been notified.

11.48 PE cum EO/ Officer in-charge will have the right to withdraw the work permit for any of the workmen for reasons of misconduct, incompetence in work, violation of safety and fire rules, negligence on duty etc.

11.49 Cost of damages caused due to bad workmanship of the CONTRACTOR shall be recovered from the contractor. The overall limitation of liability for the Contractor under the contract shall be limited to and in no event shall exceed the 100% of the annual contract value.

11.50 The knowledge/information of availability of manpower on daily basis shall be responsibility of contractor. Contractor should ensure availability through his representative throughout the contract period who shall be responsible for manpower availability and their record keeping.

11.51 The contractor shall depute staff to ensure round-the-clock maintenance of services on all days in a month as given below:

S.No	Description	Water Management	Reliever	Total
1	Supervising Engineer	1		1
2	Plumber/Fitter (Skilled)	4	1	5
3	Semi Skilled Operator	11	3	14
6	SCADA operator(Skilled)	3		3

Total 23

The qualification of the staff at site as per detailed below:
(a) Supervising Engineer(water management): Having Degree in Civil/Electrical/Mechanical/Instrumentation/chemical Engineering and having at least 3 years' experience of operation and maintenance of similar kind of water distribution . He shall be over all in-charge of the site and shall be posted in General shift (9 AM- 5:30 PM). He is responsible for functioning of pumphouses, arranging shutdowns, programming for maintenance, coordination between the IISc and other agencies involved etc. Working knowledge in Hindi & English language is essential. Computer literate with knowledge of MS Word, Excel & MS Project and should have operating knowledge of the SCADA system. He should be able to operate the control and monitoring of the pumping and water distribution using the SCADA.

(c) Plumber(skilled): Minimum 3 years experience in plumbing works.

(d) Semi Skilled Operator: Having 2 years experience in operating valves and pumps.
(f) Operator(Skilled)
(g) SACDA operator should be having 3 years experience in similar work involving SCADA.

The CONTRACTOR shall provide a list of consumables that will be delivered every month or as and when needed at site.

11.52 The Contractor shall ensure sufficient number of its employees are present for the work at IISc and ensure that work does not suffer due to non-availability of sufficient men/machines/materials. The Contractor will also ensure that its employees/staff remain confined only to the assigned jobs and they should not involve or interfere with any other activities of the IISc. The Contractor shall have full directing and controlling authority over the execution of the said work and shall take such action as is necessary for due completion of the activities as already specified.

11.53 For all intents and purposes, the CONTRACTOR shall be the "Employer" within the meaning of different Labour Legislations in respect of manpower so employed and deployed at the IISc for contractual services.

11.54 The CONTRACTOR shall be solely responsible for the redressal of grievances/ resolution of disputes relating to person deployed. IISc, shall in no way, be responsible for settlement of such issues whatsoever. IISc shall not be responsible for any damages, losses, financial or other injury claims to any person deployed by service providing agency in the course of their performing the functions/duties, or for payment towards any compensation. The manpower deployed by the contractor for the contract shall not be entitled for claim, pay, perks and other facilities which may be admissible to casual, ad-hoc, regular/confirmed employees of IISc, during the currency or after expiry of the contract. In case of termination of the contract also, the persons deployed by the contractor shall not be entitled to or and will have any claim for absorption or relaxation for absorption in the regular / otherwise capacity in IISc. The Contractor should communicate the above to all the manpower deployed in IISc by the contractor.

11.55 The Personnel deployed by the Contactor shall be and continue to remain as staff of the Contractor and shall not at any time be eligible for any benefits/entitlements such as gratuity, provident fund etc., as provided to the employees of IISc. The Contractor shall be responsible and liable for any disputes between its employees and itself that may arise in this regard.

11.56 The Contractor shall deploy manpower and personnel to undertake the schedule of works as enumerated in the BOQ. All materials used towards undertaking of services shall be in the scope of IISc.

11.57 The manpower deployed by the contractor shall not have any claims of Master and Servant relationship vis-a-vis IISc nor have any principal and agent relationship with or against the IISc.

11.58 The CONTRACTOR shall alone be liable to pay compensation for any damage/death/injury sustained by the personnel or any other members of CONTRACTOR as sustained by them in the course of the work/duty at the institute during the contract period and all staff employed by the Contractor must be properly insured by the contractor unless such damage/death/injury has been caused by or is attributable in any manner to IISc.

11.59 In the event of theft, pilferage, or damage to the institute's property, after necessary investigations, if proved that CONTRACTOR/ their personnel are responsible, CONTRACTOR shall be given an opportunity to explain their position, consequent upon conclusion of responsibility, contractor shall be liable to make such loss or damages good.

11.60 The Contractor and all his employees shall at all times during the continuance of this agreement, obey and observe all directions and instructions which may be given communicated in writing by the Institute concerning any aspect of services.

11.61 The CONTRACTOR will be required to pay minimum wages as prescribed under the Minimum Wages Act of Central Government as per applicable rates for the staff employed at the site. The CONTRACTOR will maintain proper record as required under the Law/ Acts. The CONTRACTOR shall quote the rates considering the minimum salary as detailed below and shall not be allowed to change their quoted amount due to any reason.

	Category of employee	Minimum salary per month
1	Operator (Skilled)	As per Central minimum wages amended from time to time
2	Operator (Semi skilled)	
3	Supervising Engineer	Rs. 50,000

11.62 The CONTRACTOR will be responsible for compliance of all statutory provisions relating to Provident Fund, and Employees State Insurance etc. in respect of the persons deployed by it at IISc.

11.63 The CONTRACTOR shall be liable for depositing GST and other statutory tax obligations etc. on account of service rendered by it to IISc.

11.64 The CONTRACTOR shall maintain all statutory registers under the applicable Law. The CONTRACTOR shall produce the same on demand to the concerned authority of IISc or any other authority under Law.

11.65 The Tax Deduction at Source (T.D.S.) shall be deducted as per the provisions of the Income Tax Act / GST, as amended from time to time and a certificate to this effect shall be provided to CONTRACTOR by the Finance & Accounts Section of the IISc.

11.66 In case, the contractor fails to comply with any statutory / taxation liability under appropriate law, and as a result thereof IISc is put to any loss / obligation, monetary or otherwise, PE cum EO/ Officer in-charge will be entitled to recover such damage/loss out of the outstanding bills or from the Performance Security Deposit of CONTRACTOR.

11.67 The CONTRACTOR will indemnify IISc from all legally proved claims by a third party on account of personal injury or damage to the third party's tangible property, to the extent caused by the negligence of the Contractor in connection with this Contract. Further IISc shall also be indemnified for all losses occurring due to commissions and omissions of persons deployed by the contractor. There shall not be any loss or damage caused to IISc on account of any negligence, carelessness, acts of omissions, commissions of contractors, his employees, or staff and the same shall be made good by the contractor. IISc shall not be liable for any damage or compensation payable to any workmen or to any person as a consequence of this work and IISc shall be completely indemnified accordingly.

11.68 Both Parties shall not be liable or considered in breach of its obligations under this Contract due to any cause beyond its reasonable control, or by armed conflict, acts or threats of terrorism, epidemics, strikes or other labour disturbances, or acts or omissions of any governmental authority or of the IISc. If a force majeure event occurs, the schedule for Contractor's performance shall be extended by the amount of time lost by reason of the event plus such additional time as may be needed to overcome the effect of the event.

11.69 The total liability/penalty to the Contractor for all claims of any kind arising from or related to the formation, performance or breach of this Contract, shall not exceed the 10% of the monthly Contract Price and not be carry forward to the further month.

11.70 IISc may at any time propose changes in the scope of work. Contractor is not obligated to proceed

with any change until both parties agree upon such change in writing. The written change documentation will describe the changes in scope, and the resulting changes in price and other provisions, as agreed. Subject to the foregoing, no verbal agreement or inference from conversation with any office members/representatives/employees of IISc before, during or after the execution of the agreement, shall in any way affect or modify any of the terms/obligations contained herein.

11.71 The Contractor undertakes to obtain any license, permit, consent, sanction etc. as may be required or called for from/by local or any other authority for doing such work. The Contractor shall comply with all applicable laws, rules and regulations in force. The Contractor undertakes to obtain such permission/license as may be required under the Central Contract Labour (Regulation and Abolition) Act, 1970 as amended from time to time. The Contractor undertakes to produce the license/permission etc. so obtained to IISc or furnish copies thereof as and when required by IISc. The Contractor also undertakes to keep and get renewed such license, permission etc. from time to time. The Contractor shall be responsible for any contravention of the local, municipal, central, state, any other laws, rules, regulations, etc.

11.72 IISc shall at any time ask for documentary evidence for the statutory compliance, with regard to any applicable and relevant provision of law within the scope of the agreement and the nature of responsibilities to be discharged therein, which IISc shall verify. In the event that the Contractor cannot or does not furnish such evidence it shall be deemed to have engaged in unfair labour practice/violation of the terms of the agreement leading to termination of the contract with one month's notice.

11.73 PENALTY**:**

The following penalty will be levied from the monthly bills in case of failure to deploy the persons:

Engineer: Rs.500 per day

Supervisor/operator(skilled/Semiskilled): Rs. 400 per day

The above penalty shall be in addition to the consequential loss, if any, the IISc may incur for substituting the requirement for running the system in view of the failure of contractor to deploy the persons as per the contract.

Failure to complete the repair and replacement work by the contractor as per the contract:
A maximum period of 7 days is allowed to the contractor to carry out the minor repairs and replacement. If the Contractor fails to complete the minor repairs and replacement within 7 days, IISc will charge penalty @ Rs. 300 per day from the 8th day till completing minor repairs/replacement.

If the major repairs/replacement cannot be completed within 7 days due to unforeseen reasons/causes, extension of time limit may be granted by the Engineer-In-Charge in writing after reviewing the nature of problem. The decision of Engineer-In-Charge in this regard shall be final and binding.

The Engineer-in-charge shall be final authority to determine between major and minor repairs / replacements.

11.74 Scope of work Summary

a) Management and maintenance of entire water supply and distribution system using SCADA and manual operations and management and maintenance of treated water lines from STPs and ETP.
b) All pump and valve operations
c) Receiving water from BWSSB and supplying to all areas/buildings in IISc
d) Repairing the leaking water lines drinking & treated water and attending the repairs of pumps and other equipment related to water supply.
e) Receiving and attending to the complaints related to water supply.
f) Preventive and breakdown maintenance of all water supply related equipment/valves/fixture/ lines.
g) Pumping out storm water accumulated from subways.
h) Co-ordination with BWSSB .
i) Arranging water tankers in case of water supply disruption from BWSSB

Objectives of Contract

a) Maximum system availability.
b) Most efficient, effective and optimum usage of water supply system .
c) Enhance the life expectancy of equipment.
d) Regular Management & Maintenance of of equipment.
e) Compliance of safety rules and regulations.
f) Preventive maintenance/scheduled maintenance.
g) Breakdown maintenance.
h) Maximum service to consumers for maintaining uninterrupted , safe drinking water supply and treated water supply.
i) Maintenance of proper records of Management & Maintenance of (Log book, registers, check list etc., shall be approved by IISc).
j) Assistance to IISc in expansions and modification.

Detailed Scope of Work:

Water Supply Management works

a. Management of Water Supply System including Management & Maintenance of water supply lines, GLSR's and Overhead tanks, pumping stations, valves, etc., required for supply of 24/7 supply of water to the residents, students, departments and other community in IISc campus using SCADA monitoring and operations and manual monitoring and operations as required. The list of pump houses given below

Thermal pump House
Main Pump House
ICE pump house
Old Aero Space Pump house
Library Pump House
E-Block Pump House
New Girls Hostel Pump House
New Boys Hostel Pump House
C & D Mess
C-Mess Pump House
Krithika Pump House

Bharani & Rohini Pump House
New Staff Qtrs Pump House
B-Block hostel Pump House
A-Block Hostel Pump House
D-Gate Pump House
Nano Science Pump House
A-Type Pump House
Old Housing Colony Pump House
New D-type Pump House
New E-type Pump House
New E-type(10 blocks) Pump House
HE Pump House
R-Block Pump House
K V School Pump House
HMT Qtrs Pump House
Yeshwanthpura Pump House
PD Block Pump House
P Block Pump House
U-Block hostel PH
S-Block hostel PH
New Chemical Science
500 room Ladies Hostel (all 3 blocks, Jindal, BPCL and C)
Main Guest House and CVH pumphouse
Physical Science Pump House
Biological Sciences Pump House New Chemical Sciences pumphouse Vigyanpura Pumphouse

The list of pumphouses may increase based on the requirements and future infrastructure expansions in IISc.
The agency should deploy qualified manpower to operate & maintain all pumps, level transmitters, flow meters, pressure gauges, PLC and MCC panels, Electric Actuators, Level sensors, Auto Level Controllers, UPS connected to the instruments and all related equipment within the pump house.

b. Maintenance of water supply lines, valves, float valves, ball valves and all related fixtures in the entire campus. Preventive maintenance, periodic maintenance, and breakdown maintenance. The responsibility of the agency is till the supply to sump in case of academic departments only. Minor leaks in delivery lines of individual building OHTs and plumbing fixtures within the building are not in the scope of agency. However, in case of emergency these works also to be attended by the agency as per the instructions of PE cum EO. Scope of the agency starts after the BWSSB meter.

c. Management and maintenance of all ground level reservoirs and overhead storage reservoirs in the entire campus.
List of reservoirs as follows

i. D-Gate GLSR
ii. TPS GLSR
iii. Main Pump house GLSR
iv. Library GLSR
v. Old aerospace GLSR
vi. ICE GLSR
vii. Junta Bazar GLSR
viii. HE quarters sump
ix. A-Type pumphouse GLSR
x. Vigyanpura GLSR
xi. C mess /Sarvam complex GLSR
xii. TPS OHT
xiii. Main Pump house OHT
xiv. D- Gate OHT
xv. Library pumphouse OHT
xvi. A- Type OHT
xvii. NNE OHT

d. Planning and Receiving water from BWSSB(Bangalore water Supply and sewerage board) and filling all the ground level and overhead storage reservoirs and supplying water to sumps and OHTs connected to all hostels, residential quarters, guesthouses, administration buildings, commercial buildings. For academic departments scope of agency is to supply of water till the sump of individual academic department. For residential buildings, hostels, amenities and administrative buildings the scope of the agency is to supply till the OHT of the building.

List of sumps and OHTs(Indicative list. Actual may vary as per requirement) :

1. Hostels
    i. A-block sump & OHT
    ii. B-block sump & OHT
    iii. CD-Mess Sump & OHT
    iv. R-Block sump and OHT
    v. N-block OHT
    vi. M-Block OHT
    vii. Ramanujam hostel OHT
    viii. Kaveri hostel OHT
    ix. Aswini hostel sump and OHT
    x. Krithika hostel sump & OHT
    xi. Rohini Hostel Sump & OHT
    xii. 500 ladies hostel sump & OHT
    xiii. New Girls Hostel Sump & OHT
    xiv. New Boys Hostel Sump & OHT
    xv. E-block hostel sump & OHT
    xvi. U-Block Hostel Sump & OHT
    xvii. P-Block hostel Sump & OHT
    xviii. PD-block Hostel Sump & OHT
    xix. KRVH sump & OHT
    xx. Govt. School Sump & OHT

2. Residential Areas

i. A-type quarters OHTs
ii. Old B-Type quarters OHTs
iii. New B-type quarters OHTs
iv. C-Type quarters OHTs
v. ND type quarters sump & OHTs
vi. NE Type quarters Sump & OHTs
vii. NNE Type quarters Sump & OHTs
viii. DQ type quarters OHTs
ix. Old D Type OHTs
x. Old E-Type OHTs
xi. NSQ quarters sump & OHTs
xii. Vigyanpura Sump and OHTs
xiii. HMT Quarters Sump & OHTs
xiv. Yeswantpura Quarters Sump & OHTs
xv. HE Sump & OHTs

3. Commercial Buildings
   i. Sarvam Complex Sump & OHT
   ii. Shopping Complex OHTs near Junta Bazar
4. Amenities
   i) TATA Auditorium Sump & OHT
   ii) Satish Dhawan Auditorium Sump & OHT
   iii) Amenities Building in Gymkhana campus
   iv) Gymkhana Building Sump & OHT
   v) TMC Club and Faculty Club
   vi) Main Guest House Sump & OHT
   vii)CVH Sump & OHT
   viii) KV School and Govt. School Sump & OHT
   ix) Creche Sump & OHT

5. All admin buildings Sump & OHTs
6. Health Centre Sump & OHTs
7. All academic departments till sump

e. Operation and maintenance of borewell pumps and related pumping lines.

f. Management & Maintenance of Pumps connected to rain water collection sump tanks/subway collection tanks & rain water harvesting pumps.

g. Management and maintenance of water meters connected to individual buildings.

h. Maintenance of Re-cycled water pipe line and their fittings, valves, etc.

i. Establishment, Management & Maintenance of water supply system of complaint cell (of call center type) for recording & attending complaints from quarters, departments, Hostels, Guest Houses, centers and central facilities related to Institute Water supply system and the responsibility of the agency will be up to the inlet of the overhead tank including all matters concerning the overflow of these tanks.

Management & Maintenance of Pumping Stations

a) Switching ON and Switching OFF of pumps and operating relevant valves either manually or from centralised SCADA as and when required according to requirements, instructions from IISc.
b) Maintaining records of all the operations and records of water received, water supplied, energy consumption on hourly/daily/weekly/fortnightly/quarterly/half yearly and yearly basis.
c) Maintaining records of water supply failures with reasons.
d) Observing the pumping stations continuously and reporting any problem or faults to the IISc which require major/minor improvements.
e) Maintaining records of maintenance.
f) Interchanging the pumps as and when required.
g) Co-ordination with operators in BWSSB pumping stations for efficient reliable operation of Water Supply System.
h) Attending the faults and restoration of the Water Supply without delay.
i) Following distribution system and maintaining a book to facilitate system maintenance without interruptions.

Taking preventive maintenance such as maintenance of defective pumps, starters, Valves, sensors etc. Contractor has to maintain a check list for preventive maintenance & upkeep the system" accordingly. However, contractor has to prepare a detailed check list covering all the required items and submit for IISc approval before being implemented.
The Management of Water Supply System involves deployment of right persons as mentioned above for operation and these persons would be responsible for the work contracted for this purpose. The main jobs will include:

a. Routine Surveillance of Pumping stations, water supply distribution lines, sump tanks &overhead tanks.
b. Filling up of Approved Data Sheets for the different equipment of pumping stations, raising deficiency reports and communicating to IISc Engineers and maintenance staff.
c. Recording all tripping of pumps and other events that occur in the order of sequence with the time of occurrence correctly and record them in Log Book.
d. Carrying out operations correctly and accurately and recording the same in the relevant Log Books.
e. Strictly following operating instructions given by the IISc.
f. Observing all safety precautions and ensure safety to men and material and the equipment during the contract period.
g. Attending to all emergencies which may arise during the contract period such as equipment failure, fie accidents, etc., shall get acquainted with the operations of all equipment covered under the contract.
h. Attending to all Telephone Calls and issue receipt message promptly.
i. Preparing daily reports and periodic reports including the reports from SCADA in the prescribed format in duplicate and submit to the concerned IISc authority.
j. Assuming responsibility for the equipment & other materials for any damages that occur due to mal-operation of equipment and shall make good the loss suffered by IISc.
k. To be alert in attending to all operations and events promptly without delay.
l. Updating of interruptions Register, Call register, Data Book. Apart from the above, the contractor shall carry out the checks in the document during the contract period daily.
m. Ensuring routine, preventive and breakdown maintenance works for the Maintenance of Water Supply System involves all the routine.

n. Housekeeping of the pump houses including electrical system in the condition handed-over.

Co-ordination with BWSSB

a. Co-ordination with BWSSB officials for all related works and giving reports to IISc regarding, information from BWSSB and Co-ordination with Engineers and staffs of IISc in all relevant activities.

Water Tanker Arrangement:

Agency need to co-ordinate with water tanker supplier to ensure water supply during failure of water supply from BWSSB or any failure of water supply because any other reason.

Co-ordination Water Tank Cleaning Agency :

Agency need to co-ordinate with water tank cleaning agency for smooth planning and execution of periodic water tank cleaning in the campus.

Co-ordination with IISc Engineers and complaint cell:

i) Co-ordination with IISc officials for all related works and giving reports to regarding, information from IISc complaint cell and Co-ordination with Engineers and staffs of IISc in all relevant activities.

Terms and Conditions

a) All disputes that may arise shall be referred to the Director of IISc, whose decision in this regard shall be final.
b) All major faults and problems shall be reported to IISc within half a day of occurrence through a memo. After inspection by IISc, procedures for rectification shall be got approved by the agency.
c) Any damage or loss due to failure to carry out prescheduled maintenance work shall be to the risk and cost of the agency.

d) Spares/Consumables:

All the spares required to undertake maintenance activities (both preventive and breakdown) shall be arranged by the Contractor. The list of probable spares required for preventive and breakdown maintenance have been shown in the BoQ. The agency shall quote unit rate for that items, and these items will be used as and when required during the maintenance period. The cost shall be inclusive of all, such as basic cost, transportation, loading, unloading, installation, testing and commissioning etc. The applicable taxes shall be paid extra. Apart from the list shown in the BoQ, if any other essential items are required to be used, cost of the same shall be reimbursed based on the purchase invoice with an allowable **contractor profit of 10%.** The contractor profit includes the transportation cost, specialized manpower and T&P charges etc. The contractor shall maintain sufficient stock for unhindered operation of the system. Any delay in attending the complaints due to non-availability of spares shall not be accepted and it will be treated as poor quality of service and appropriate penalty will be levied.

e) **Supply of Water Tankers:** In case of any water supply shutdown or pump or system failure which leads to no water situation, contractor needs to supply water from external water tanker suppliers. The cost shall be reimbursed based on the purchase invoice.

f) Breakdown maintenance shall be provided as and when situation warrants with a failure/leakage in the system. The breakdown maintenance shall be attended at the highest priority so to make good the faulted system and putting into operation. For breakdown maintenance, the contractor shall coordinate/liaison with Engineer In-charge and the original equipment manufacturer for replacement parts and services as necessary. Infrastructure, tools

and tackles and site support shall be provided by the contractor for such jobs with priority and without unnecessary delays. OEM parts and services, if any, required for the completion of breakdown services shall be approved / cleared for execution by appropriate authorities.

g) Short cut method of temporary rectification should be avoided. However, if in the interest of the work it is done so, it must be rectified at the earliest available opportunity.

h) The periodic preventive maintenance shall be as prescribed by the OEM or as per the standard practice in the industry or as instructed by PE cum EO or his authorised representative.

i) Any other work covered under respective terms and conditions, if required or insisted by any regulatory body including hiring of tools & machinery, etc., shall be undertaken by the agency.
j) The necessary salary and other allowances due to the employees by the agency shall be paid by them and shall strictly comply with all rules and regulations of statutory bodies and other labour laws. All employees engaged by the agency shall be comprehensively insured for accidents and injuries.
k) The monthly service charges for the above work shall be paid to the agency on monthly basis on production of bill.
l) The payment to the successful agency is subject to all statutory deduction like Security Deposit, Income Tax, Tax, etc., as are applicable at the time of payment.
m) All materials and tools used for replacement, repairs, testing, etc., shall be approved by IISc.
n) The annual service maintenance of the equipment's shall be carried out as applicable from time to time. The work shall be carried out through authorized personnel. The service charges shall be paid by the agency.
o) The agency shall note that they shall have to carry out their work in close co-ordination with other contractors/agencies working in the same premises.
p) In the event of agency showing lack of attendance to the work, negligence or unfair performance in the opinion of IISc, then the contract may be terminated at any stage without prejudice to the right by action under any other relevant clause of the contract.
q) The agency shall follow all security rules framed by IISc from time to time regarding removal of materials from site, issue of identity cards, control of entry of persons and other similar matters.
r) The agency's personnel shall not disclose any information or drawings furnished to him by IISc. Any drawings, records and other information's prepared by the contractor or by IISc or jointly by both for the execution of the works shall not be disclosed without the prior approval of the IISc. No photograph of the Pumping station, treatment plant or any other place within the premises of IISc shall be taken without the prior approval of the IISc.
s) The agency shall keep his work spot, site office and surroundings neat, clean and tidy. It should be free from dust, rubbish, scrap, surplus materials and unwanted tools and equipment's. All scaffolding and temporary structure including the tools and equipment's shall be removed as soon as the job for which they are intended are completed. All equipment and material to be taken inside the plant building shall be cleaned thoroughly before taking them inside. The agency shall employ adequate housekeeping staff for above purpose. The Engineer-in-charge has the right to stop the work, if the agency fails to improve upon the house keeping after having been notified.
t) IISc will have the right to withdraw the works permit for any of the workmen for reasons of misconduct, incompetence in work, violation of safety and fire rules, negligence on duty etc.
u) Cost of damages caused due to bad workmanship shall be recovered from the agency.
v) The knowledge/Information of availability of manpower on daily basis shall be the responsibility of agency and not of IISc. Agency should ensure availability of their representative throughout the contract period who shall be responsible for manpower availability and their record keeping.

w) The agency shall depute competent staff to ensure round-the clock maintenance services on all days in a Month as per requirement.
x) Agency will have to issue uniform and personal protection equipment (PPE) at his own cost to all staff employed for maintain these plants. Periodic safety audit to be conducted by the agency and records to be maintained regularly. These should be produced for scrutiny by inspecting officers from safety of IISc or SPCB authorities.
y) The duration of the contract is 12 months.
z) Agency is fully responsible for any losses/damages caused to the personnel deployed, plant, equipment and buildings with in the battery limits of the plant

NOTE: Contact Details of Independent External Monitors are Provided Below;

- Mr. Najib Shah, Ph no: 9311706358, Email ID: najibshah@hotmail.com

- Mr. MJ joseph, Ph No: 9560697979, Email ID: mohan.joseph@gamil.com

LIST OF APPROVED MAKES (CIVIL & INTERIOR WORKS)		
S No.	MATERIAL	APPROVED MAKES
	Civil Works	
1	Anti-Termite Chemical	Vam Organic / NOCIL / Bayer / Fosroc Chemicals (India) Ltd / Lupin ,Pest Control India (PCI), Hindustan insecticide
2	Cement	ACC/ Birla / Ultratech / JK / Ambuja / Jaypee cement
3	TMT Steel	TATA TISCO / SAIL / JSW Steel / Vizag Steel, Jindal steel & Power ltd.
4	Bitumen Impregnated Expansion Board	Bengal Chemical Ltd./ STP
5	Construction Chemicals & Plasticisers	Fosroc / Roff / Pidilite / Sika
6	Bitumen	Aggarwal/ Tiki Tar/ Bitumen India/ Bitcol
7	Non Shink Grout	Fosroc / Sika / BASF / Soprema/ MYK Arment , Pidilite, Master builders Solutions/Ferrous crete,Latapoxy/weber
8	Water Proofing Chemicals & Membranes	Fosroc / Sika / BASF / Soprema/ Pidilite , MYK Arment, Fosroc, Dr Fixit, Master builders Solutions
9	Geotextile fabric	Manas/ Suntek/ Ocean/ Parishudh/ Parry/ J.T. Fabric
10	UPVC Pipes	Astral/ Supreme/ Finolex
11	Autoclaved aerated concrete Block	Magicrete/ PrimeACC/ Biltech/Xtralite/Birla Aerocon
12	Welded Mesh	Swish Weldmesh / IRC/ Multiweld Wire Co.
	Wall Finishing Work	
13	White Cement Based Putty	Birla/ JK/ Asian paint
14	Non pigmented Textured Paints	Asian/ Berger/ Nerolac/Heritage/Spectrum paints
15	Internal Texture Paint (wall & ceiling)	Oikos/ Asian/ Berger/Nerolac
16	Cement based Paint	Snowcem / ICI/ Berger,
17	Acrylic Smooth exterior paint	Asian / Nerolac / Berger/ Dulux
18	Acrylic interior paint	Asian / Nerolac / Berger/ Dulux
19	Dry Distemper /OBD	Asian / Nerolac / Berger / Dulux
20	Ceramic glazed wall tiles	Nitco / Kajaria / Johnson / RAK / Somany, H&RJohnson, RAK, Kajaria
21	Acoustical Insulation	Lloyd Insulation/Saint gobain/ Knauf/
22	Lacquered Glass	Saint Gobain Planique/ AIS /Modi
23	Anti-Fungal Paints	Asian / Dulux / ICI / Berger, Jotun
24	Glass partitions & Doors profiles	Dorma/ Jeb/ Alloy
25	Frosting Film	3M/ Llumar/ LG
26	Epoxy Paint	Asian/ Sika/ Shalimar/STPL/
27	Plywood, Block Boards, Particle Boards	Green/ Century/ Archid/ Kitply/ Duro
28	Upholstery Foam	Sheela/ Allied/ Flexipol/ SKPI/ Jumex/ Suryaa
29	Calcium silicate board, tiles & panel	Ramco/ Aerolite/ Armstrong
30	MDF Board	Greenpanel/ Century/ Actiontesa
31	Mirror	Modiguard / Saint Gobain/ AIS
32	Plaster of Paris	Sakarni/ Shriram/ Superfine/ JK
33	Changing room lockers	Godrej / green lam / equivalent
34	PVC seating for halls	Innovative Seatings / KF systems /equivalent
35	Storage Rack	Godrej/ Silverlining/ Giraffe/ Spider/ Mex
	Steel Work & Roofing	
36	Structural Steel Section	Tisco/ SAIL/ Apollo/ Vizag/ JSW /Tata steel limited, Jindal steel & Power ltd.

37	Structural Steel tubular Section	Tata Structural/ Apollo Steel Pipes/ SAIL/ Kalinga/ JSW/Jindal steel & Power Ltd, SAIL, (to be procured from Primary producers)
38	Welding Rods	Advani/ Esab/ Nucor,Victor, D&H Norma
39	Mild Steel Plates, Flat, Angles, Chequred Plate	Tisco/ SAIL/ Apollo/ Vizag/ JSW
40	Stainless Steel	Salem/ Jindal/Sail
41	Synthetic Enamel Paint	Asian / Nerolac / Berger / Dulux / ICI, Jotun
42	Deck sheeting	Tata/ SAIL/ Jindal/Tata Blue Scope.
43	Fire rated Paint	Akzo Nobel Coatings Pvt. Ltd./ Asian Paints Ltd. Berger, Jotun, Carboline, Newkem
44	Roof Sheeting	Tata Bluescope/ Multicolor/ Jindal
45	Multiwall/ Plain Polycarbonate	Danpal/ DPI Daylight / Polygal / Coxiwell/GE lexon
	Flooring Works	
46	Vitrified Tiles	Nitco / Kajaria / Johnson / RAK / Somany / Restile
47	Tactile tile	Johnson / Somany / Restile
48	Tile Adhesive	Laticrete / Ardex Endura / Weber /Kera Bond/Asian Paints
49	Epoxy Filler Grout	Laticrete / Ardex Endura / Weber / Fosroc/ Sika/
50	Floor Surface Hardners	Fosroc/ BASF /Sika
51	Glass Fiber reinforcement	Recron/ UP Twiga/ Owenscorning
52	Acrylic emulsion cement modified and water based concrete bonding agent	Sika/ Fosroc/ Pidilite/ Soprema
53	Epoxy urethane joint Sealer	Fosroc/ Sika/ Laticrete / Ardex Endura / Weber / MYK Arment, Pidilite, Master builders Solutions
54	Road marking Paint	Asian PPG/ ITS coating/ Kataline
55	Self Levelling screed	Fosroc/ Dubond/ Neocrete
56	Bamboo plank Flooring & Cladding work	Epitome / equivalent
57	Heavy Duty Door Mats made with flexible vinyl (Virgin PVC)	3M or equivalent
	Specialized Sports Floorings	
58	Sports Flooring for Badminton	Robbins/ Action/ Apex/ Asian / Ebaco as per BWF norms & approved makes
59	Sports Flooring Matt for Badminton	Dongxings/ Gerflor/ Tarkett /Yonex as per BWF norms & approved makes
60	Sports Flooring for Basketball	Robbins/ Action/ Junkers / Haro as per FIBA norms & approved makes
61	Sports Flooring for Snooker room in Carpet	Flotex/ Milliken/ Modylus
62	Sports Flooring for Volley Ball in PU	Rephouse/ Casali/ Sika (pulastic) as per FIVB norms & approved makes
63	Sports Flooring for General areas in PU flooring	Ebaco / sunflex / Apex / Asian
64	Sports Flooring for Cricket Turf in 13mm thickness	Limonta/ Polton/ Domo / Tiger Turf
65	Sports Flooring for Gym, Arobics etc. in Rubber Flooring	Terrain/ Mirod/ Ecore / Durafit
66	Sports Flooring- Wrestling Mat	Stag/ Vinex/ Jinling / Freewill /knoxton / gravolite /x fit / as per WFI norms & approved makes
67	Sports Flooring- Judo mat	Stag/ Vinex/ Jinling as per IJF norms & approved makes

68	Sports Flooring- Kabaddi Mat	Stag/ Vinex/ Jinling / Gravolite /Gymnco / Grip as per AKFI norms & approved makes
69.a	Sports Flooring for Squash Court in wooden flooring	Acer / Haro / junkers as per WSF norms & approved makes
b	Sports Flooring for other areas wooden flooring	Apex/ Asian / Ebaco
70	Squash Court Glass	Saintgobain/ Syncotts International as per WSF norms & approved makes
71	Squash Hard Plaster	Syncotts International / equivalent as per WSF norms & approved makes
72	Squash Tin	as per WSF norms & approved makes
	Ceiling Works	
73	Gypsum board/Tiles ceiling	Saint Gobain Gyproc/ Lafarge Boral Gypsum/ USG Knauf/
74	Calcium silicate board/Tiles Ceiling	Ramco/ Aerolite/ Approved equivalent
75	Mineral fibre tiles Ceiling	Armstrong/ Saint Gobain/ USG Knauf/ Anutone
76	Open cell ceiling	Durlum/ Lindner /Hunter Douglas/ Armstorng
77	Acoustical Glass wool ceiling	Ecophone/ Armstrong/ USG Knauf/
78	Acoustical Baffle	Ecophone/ USG/ Knauf/ Armstrong
79	Acoustical Spray Plaster	Ecophone/ Asona/ Approved equivalent
	Door, Windows & Coverings	
80	Flush Doors	Duro/ Century/ Green/ Merino/ Mayur/ Kitply
81	Laminates	Greenlam / Merino/ Formica/ Century/kitlam
82	Veneer	Decowood Green/ Duro/ Century
83	Stainless Steel hardware	Ozone/ Geze/ Dorma/ haffele/ Hettich
84	Fire rated Doors hardware	Hormann/ Geze/ Dorma/ Assa Abloy/Dorset/ Ingersolrand
85	Aluminium Extrusion	Jindal/ Hindalco/ SAPA/ Bourka/ Century/ INDAL INFRA
86	Aluminium Hardware	Alualpha/ Lavaal/ Giesse/ Kinlong
87	Aluminium Louvers	Technal/ Fasado/ Vitrocsa/ Sapa/ VS1/ Wicona
88	Microwave Cured EPDM Gasket	Avigiri/ Kotwan/ Osaka
89	Aluminium Skirting, Corner, Groove, covering, transit profiles	Alucraft/ Baux/ Dural trims
90	Fire Rated Steel Door	Shaktihormann/ Navair/ TATA pravesh,Godrej
91	General Steel Door	Shaktihormann/ Navair/ Sukri/
92	Acoustical Steel Door	Shaktihormann/ Navair/ Sukri/
93	Fire rated Glazed Door	Shaktihormann/ Navair/ Sukri/
94	Toilet Partitions/ Cubicles	Greenlam/ Merino
95	Window Blinds	Hunter Douglas/ Vista/ De Décor/ MAC
96	Wood Adhesive	Fevicol / Jivanjor / Vamicol/Dunlop/Vamorganic
	Façade Work	
97	Aluminium Extrusions	Jindal / Bhoruka / Sapa /Hindalco
98	Reflective Glass	Saint Gobain /Guardian / Sisecam/ Asahi
99	Clear Float Glass	Saint Gobain /Guardian / Sisecam/ Asahi
100	Fire Rated Glass	Saint Gobain / Pilkington / Schott
101	Glass Processing	Saint Gobain / GlassTech / Sejal / FG / Fuso / Asahi / Impact Safety
102	PVB Lamination	Kuraray
103	SGP Lamination	Kuraray
104	Weather Sealant	Sika / DowCorning / Momentive

105	Structural Sealant	Sika / DowCorning / Momentive
106	ACP	Alpolic / Alucobond / Reynobond / Alstone / Virgo
107	Solid Aluminium Sheet	Novelis / DWALL Metallic
108	Anchor Fastners	Hilti / Fischer / Mungo
109	Anchor Channels (Cast in Channel)	Halfen / Hilti / Jordhal
110	EPDM & Silicon Gasket	Amee Rubber / Osaka / Eltech/ Bohra/Roop
111	Powder Coating	Jotun / Akzonoble
112	PVDF Coating	Valspar / PPG / Akzonoble
113	Powder & PVDF Processer	SP Coating / MJ Coaters / Aura International
114	Spacer Tape (Open PU	
115	Cell)	Norton / BOW
116	Glass wool (Insulation)	UP Twiga / Rockwool
117	Rock wool (Fire Stop)	Siderise / Hilti/
118	Smoke Seal Intumescent	Siderise / Hilti/ Promat/Raven
119	Baker Rod	Supreme Industries
120	SS Spider Fittings	Dorma /ozone/Hafele
121	SS Patch Fitting	Dorma / ozone/Hafele
122	Automatic Sliding doors	Dorma / Geze / Kaba
123	Revolving Doors	Dorma / Boonedam / Kaba
124	SS Clamps (Stone cladding)	Hilti / Blick
125	Mild steel	Jindal / Sail / Tata
126	Stainless Steel	Salem Steel
127	Façade Systems	Technal / Schueco / Aluk/ Fasado
128	Anodizing	Dow Chemicals
129	Accessories	
129.01	SS Friction Hinges	Giesse / Cotswold / Securistyle / Hettich/Dorma
129.02	Multipoint Locking sets	Giesse / Cotswold / Securistyle / system based
129.03	Handle	Giesse / Cotswold / Securistyle / system based
129.04	Rollers for Slidings	Giesse / Alualpha / Savio / Alutech / Lavaal
129.05	Flush lock for Slidings	Giesse / Alualpha / Savio / Alutech / Lavaal
130	Stainless Steel Cramps	Hilti / Fischer/ Canon
131	GRC Jali	Unistone/ Birla/ Everest/ Shenisha
132	Alumnium Expanded Metal Jali System	Citadel/ PEMPL /
133	Aluminium Louvered System	Hunter Douglas/ Durlum/ Lindner
134	Aluminium composite panel	Alucobond/ Eurobond/ Aludecor/ Reynobond/ Alstone/ Alstrong
135	SS wire grill system	Nitin Wire/ Satyam Impex/ Chirag Enterprises
	Road Work	
136	Bitumen	Aggarwal/ Tiki Tar/ Bitumen India/ Bitcol
137	Interlocking concrete Paver Block	Ultra/Hindustan tiles/nitco/Basant Benton
	Lifts (Elevators)	
138	Passenger Lift	Otis/ Kone/ Schindler/ Mitsubishi
139	Good Lift	Johnson/ TKE/ Otis

140	Aggregates (Course and Fine Aggregates)	As per IS and Mix design for concrete work or zone.
141	Anchor Fasteners / Rebar	Hilti, Fischer, Wurth.
142	PVC Water Stop	Dr fixit, Rubber Udyog (I) Ltd,Hydrolite/ Hydroswell,BASF
143	GI Pipe	Tata, Jindal, Zenith

144	Perforated Pipe	Astral , Supreme.
145	FRP Manhole Cover	Amrock, Fibrocast, Everlast
146	Fire Proof Spray (Vermiculite)	Newkem , Berger - Promat , Carboline
147	Primer Prior to Fire proof paint/Spray	Berger, AsianPPG, Jotun, Carboline
148	Damp Proof Material	FOSROC,SIKA,BASF
149	Plasticiser & Super Plasticiser	PLASTIMENT/ SIKAMENT, CONPLAST SP430, CHRYSO - HP / DELTA / OPTIMA, BASF
150	Water proof adhesive	Sika,Cico,Proofex
151	Ready mix concrete	Ultratech,ACC,
152	High Density (HDF) Prelaminated board	Pergo,Greenply,Marino
153	UPVC Doors, Door Frames and Windows	Fenesta,LG,Komaraling,Duroplast,NCL veka
154	Mild steel butt hinges	Jyoti,Amit,garg,Swift,Deepak,Saswat,Supreme,Jolly
155	Stainless Steel bolts, washers, nuts	Hilti,Atul,Pooja,Kundan
156	Stainless steel pressure plate screws	Hilti,Atul,Pooja,Kundan
157	False celing	Armstrong/Saint gobain Gyproc/Aerolite/USG Boral
158	False Ceiling Members (perimeter, Ceiling Section, Intermediates, angles etc.)	Armstrong/Saint Gobain/Aerolite
159	Pink primer	Asian/Berger/Dulex
160	Acrylic Emulsion	Asian/Berger/ICI Dulex
161	Ready mix Cement plaster	Gyproc/Ultratech/Ferrous crete
162	Melamine Polish	Asian/Melamine gold wufin/polycure
163	Anti corrosive Bitumastic paint	Shalimar/Asian/Berger
164	Cement primer	Asian/JK/Berger
165	Epoxy coating	BASF/FOSROC/sika
166	Soalr stud/Median marker	3M/Avery Dennison/Nikkalite
167	Vitreous Commodes / Washbasin	Hindware/Parryware/Jaquar
168	Flushing Cistern	Hindware/Parryware/Jaquar
169	Water supply fixtures like bibcock, shower panels, Health faucet and other fixtures	Jaquar/Parryware/Hindware/Cera/Euronics
170	Masking Tape	3M,sun,wonder polymer,Roop
171	PVC flooring	Armstrong,LG hausya,Ger flor
172	Grass Paver	Unistone, Ultra, NITCO, Besant Betons, Hindustan Tiles
173	FRP door frame and shutter	Duroplast, Polyline,Cactus
174	Non Metallic Floor Surface Hardeners	FOSROC/ SIKA/ BASF/ CICO/ Pidilite
175	PU Enamel Metallic Paints on MS Structure & Epoxy paints (Premium Quality)	Asian/ Berger/
176	Structural Glazing	Modi,Saint gobin

LIST OF APPROVED MAKES FOR EQUIPMENT & MATERIALS PLUMBING SYSTEM

S.No.		Details of Materials / Equipment
1.a	Vitreous China Sanitaryware	Hindware/ Cera/ Parryware /Jaquar
b	WC Connectors	Supreme/Ashirwad/ Poloplast
2	Stainless Steel Sink	Hindware/ Jyna/ Neelkanth/ Nirali
3	Auto Urinal Flush System	AOS Auto/ Robo Flushing System/ Euronics/ UTEC System Jaquar
4	Hand Drier	Blue Circle/ Euronics/ Kopal/ UTEC System
5	CP Brass Fittings	Jaquar/ Schell/ Grohe
6	Flow Control Devices	Con-Serv Jaquar RST Schell
7	Floor Drain Fixture, Rain Water Outlets	ACO GMGR Neer
8	Pre fabricated Car parking / Drain channel	ACO Viega
9	C.P. Grating for Floor Trap	Chilly Jayna Neer
10	GI / MS Pipes (IS : 1239 and IS : 3589)	Tata Steel Jindal (Hissar),Sail,,Tisco,vizag,Jindal
11	GI pipe sealent	Henkel - LOCTITE 55
12	UPVC Pipe	Finolex/ Supreme/ Astral/ Ashirwad
13	PP Pipe	Poloplast/ Hublot/ Astral/ Rehau
14	PERT pipes	George/ Fischer/ Viega/ Kantherm
15	CPVC Pipe	Prince/ Supreme/ Astral/ AKG
16	RCC Pipe	Indian Hume Pipe/Madurai spun/lakshmi sood & sood,Jain &co
17	Stoneware Pipes, Gully Traps	Perfect Potteries, Jabalpur Rajura/ Anand
18	GM / Forged Brass Ball Valves	Sant/ Zoloto/ Audco/ Leader
19	Butterfly Valve	Audco/ Castle/ Zoloto/ Sant/ SKS
20	Check Valve – WaferType	Audco Castle Zoloto Sant SKS
21	Check Valve – Dual Plate	Audco / Castle/ Zoloto / Sant/ SKS
22	Check Valve Forged Screwed	Sant/ Zoloto/ CIM/ RB
23	Pressure Reducing Valve	Sant/ Zoloto/ CIM/ Castle
24	Solenoid Valve	Avcon/ Zoloto/ Sant/ CIM
25	Thermostatic valve	Oventrop
26	Air Release Valve	Leader/ Zoloto / RBM/Kerloskar
27	Ball Float Valve	Esseti/ HBD / SKS/Leader/zoloto/IBP/Viking
28	Water Meter (Mechanical Type)	Actaris/ Capstan/ Kaycee/ Kranti
29	Electronic Flow Meter	Krohne (Forbes Marshall)/ Rockwin/ Cirrus Engineering
30	Paints	Asian Paints/ Berger/ ICI
31	MH / Water Tank Plastic Steps	KGM Patel/ Pranali Industries
32	Insulation for Hot Water Pipes	Armacell – Armaflex Eurobatex/ Union Foam K-Flex/ Thermaflex
33	Welding Rods	ADOR/ Esab/ Advani
34	Fastner	Fisher/Hilti/ Mupro
35	U.V. Sterlizer	ALFA/ Pentair/ Eureka Forbes
36	Pipe Protection Wrapping	IWL - Pypkote/ Rustech – Coatek/ STP
37	PP Traps	Viega
38	Fastners	Hilti/ Fischer/ Wurth
39	Welding Rods	ESAB/ Advani

40	Temperature Sensor / Gauge	Forbes/ Marshall/ Danfoss/ Wika
41	PHE	Alfa laval/ GE
42	Hot Water Pumps	Grundfos/ DP - Holland/ Xylem/ Wilo
43	Anti Vibration Mounting Connections	Cori/ Dunlop/ Easyflex/ Resistoflex/ NECO
44	D. I. Pipes	NECO/ Electrosteel/TATA/Jindal
45	Electric Hot Water Generator	Emerald/ Rapid Cool/ Olympia
46	Grease Traps	ACO/ Kessels
47	Centrifugally Caste (Spun) Iron	JINDAL/Electrosteel/
48	Spun Cast Iron Fittings	Electrosteel/Neco/Kartar/Hepco
49	SFRC Cover and grating	KK/ Advent/kutty/Nu tech/DEC
50	Plastic Encapsulated Foot Rest	KK India/KGM/Acurate buildcon
51	Spun cast iron covers & gratings	Neco/ Jagannath/ Kapilansh Centrifugal/ SKF brand

LIST OF APPROVED ITEMS (FIREFIGHTING WORKS)		
S No.	MATERIAL	APPROVED MAKES
1	Fire / Sprinkler Main Pump / Jockey	Kirloskar/ Wilo - Mather & Platt/ Xylem/ Lubi
2	Diesel Engine	Cummins/ Greaves/ Koel
3	Motor	ABB/ Bharat Bijlee/ Kirloskar/ Siemens
4	G.I. / M.S. Pipes (IS : 1239 / IS : 3589)	Jindal (Hissar)/ TATA/SAIL
5	Standard M.S. Fittings	Seamless Fittings Pipeline Products
6	DI / CI / Forged Steel Fittings	Jainsons Industries/ VS/ BM Fittings/ Bharat Forge
7	C.I. (Class L.A.) Pipes	Electro Steel Culcutta/ NECO/ Kesoram Calcutta
8	RCC Pipe	K K/ Pranali/ Pragati
9	DI MH Cover & Frame	Kartar Pipe and fittings/ NECO/ Raj Iron Foundry, Agra
10	Paints	Asian Paints/ Berger/ ICI/ Shalimar Paints
11	Double / Single Headed Landing Valve	Safeguard/ Lifeguard/ Kalpex/ Omex/ Exflame
12	Fire Hose	Safeguard/ Lifeguard/ Kalpex/ Omex/ Exflame
13	First Aid Hose Reel (LPCB Approved)	Safeguard/ Lifeguard/ Kalpex/ Omex/ Exflame
14	Branch Pipe	Safeguard/ Lifeguard/ Kalpex/ Omex/ Exflame
15	Fireman Axe	Safeguard/ Lifeguard/ Kalpex/ Omex/ Exflame
16	Installation Control Valve	Victaulic/ Tyco/ Viking/ HD
17	Sprinkler Heads	Victaulic/ Tyco/ Viking/ Reliable
18	Flexible Drop Connection (UL Listed)	Victaulic/ Exflame/ Tyco/ Easyflex
19	Fire Extinguishers	Safeguard/ Lifeguard/ Kalpex/ Omex/ Ceasefire
20	Water Flow Switch	Honeywell/ Potter/ System Sensor/ Indfoss
21	Pipe Protection Wrapping	IWL - Pypkote/ Rustech – Coatek/ STP
22	Pipe clamp & supports	Chilly/ Euroclamp/ Kanwal/ Mupro
23	GM / Forged Brass Valves	Zoloto/ CIM/ Honeywell/ Sant/ leader
24	Sluice Valves	AIP/ Kirloskar/ Kalpana
25	Butterfly Valve	Zoloto/ Castle/ Advance/ Sant/ SKS
26	Check Valve – Wafer Type	Zoloto/ Castle/ Advance/ Sant/ SKS
27	Check Valve – Dual Plate	Zoloto/ Castle/ Advance/ Sant/ SKS
28	Pressure Reducing Valve (Listed)	Tyco/ Victaulic
29	Air Release Valve	CIM/ Sant/ Castle/ Zoloto
30	Ball Float Valve	Esseti/ HBD/ Zoloto

31	Y Strainer	Emerald/ Sant/ Zoloto/ SKS
32	Hose Reel Drum (ISI marked)	Exflame/ Safeguard/ Lifeguard/ Omex
33	Siamese breaching connection/Fire service inlet draw out connection	Exflame/ Safeguard/ Lifeguard/ Omex
34	Inspector's test assembly	Victaulic/ Giacomini/ Viking
35	Fire Buckets	Exflame/ Safeguard/ Lifeguard/ Omex
36	Mechanical Seal	Burgmann/ Sealol
37	Couplings	Lovejoy/ Dunlop
38	Pressure Gauge	Fiebig/ H Guru
39	Level Controller & Indicator (Water)	Auto Pump/ Cirrus Engineering /Technika/ Techtrol
40	Welding Rods	ADOR/ Esab
41	Fastner	Fisher/ Hilti/ Wurth
42	Fire Sealant	Birla/ 3 M/ Hilti/ Promat
43	Tamper switch	Honeywell/ Infoss/ Potter/ System Sensor
44	Foot valve	Kirloskar/ Normex

LIST OF APPROVED MAKES

THE MENTIONING OF PARTICULAR MAKE UNDER APPROVED MAKES DOES NOT FULFIL AUTOMATICALLY FOR ACCEPTANCE. THE MAKE SHALL COMPLY ALL THE PARTICULAR SPECIFICATIONS, ITEM OF WORK AND OTHER CONDITIONS OF THE CONTRACT.
IF THE ABOVE ANY BRAND OR NON AVILABILTIY OF MATERIAL IN THE APPROVED MAKE LIST THE EQUIVALENT MATERIAL TO BE APPROVED BY THE ENGINEER-IN-CHARGE.

S.No	ITEM	APPROVED MAKE
	ELECTRICAL WORK	
1	LT Switchboards other than TTA panel	Any CPRI Tested Panel Manufacturer With 7 Tank Process
2	Main LT panel as per IEC 61439 (TTA/ DESIGN VERIFIED PANELS)	L&T/Siemens/Schneider/ABB
3	Sandwich bus duct	Schenider / Siemens / C&S / Legrand
4	PLC & SCADA	Siemens / Schneider / Rock well Automation/Honeywell
5	Energy Billing software	Schneider / Legrand/Honeywell
6	ACB	ABB T- MAX / SIEMENS -3 WL / SCHNEIDER ELECTRIC MASTERPACT NW/ LEGRAND DMX3/L&T(U-Power)
7	MCCB	ABB (T-MAX) / SIEMENS (VL) / SCHNEIDER COMPACT NSX / LEGRAND (DX3) /L&T (D- Sine)

8	MPCB	ABB (T-MAX) / SIEMENS (VL) / SCHNEIDER COMPACT NSX / LEGRAND (DX3) /L&T (D- Sine)
9	Contactor (Type-2 coordinated)	Schneider / ABB / Siemens / Legrand / L&T
10	MCB/RCCB, RCBO, SPD/Distribution board	Schneider / ABB / Siemens / Legrand / Hager
11	Auto transfer switches with over ing neutral (7000, 300 & 230 Series)	SCHNEIDER / ABB/ Legrand / Hager
12	On-load changeover switches	Socomec / ABB / Siemens/HPL
13	Transient voltage surge suppressors	SCHNEIDER / ZOTUP/OBO/Legrand
14	Indicating meters - Digital	Conserv / Secure/L&T/AE/ EL-MEASURE
15	Indicating meters - Analog	Conserv / Secure/L&T/AE/ EL-MEASURE
16	Power Monitor with RS-485 Port	Schneider / Circutor / Secure
17	Digital Load Monitor with RS-485 Port	Schneider / Circutor / Secure
18	KWH Meters - ETVM	L & T / Secure/Conserve/HPL
19	Dual KWH Meters with RS-485	Schneider / Circutor
20	Current transformer	BCH /C&S/AE/ Kappa
21	Potential transformer	BCH /C&S/AE/ Kappa
22	APFC relay/ Numeric Type Protection Relays	Epcos / Schneider / Neptune/Siemens/ L&T/ ABB GE
23	Capacitor Banks	Epcos / Schneider / Neptune
24	Series reactors (tuned filters), Capacitor duty contactors/ Thyristor Switching Module	Epcos / Schneider / Neptune
25	Push button stations/	Schneider / Siemens / L&T/ABB/Legrand
26	Selector switches	Salzer / Kaycee / BCH
27	LED Indicating lamp	Siemens / Schneider/ ESBEE/Vaishno
28	Terminals	Wago / Phenonix / Connect well/Elemex
29	LT/HT Cables	Poly Cab / KEI /Havells/Finolex
30	FRLS/FS/ZHFR PVC Insulated PVC sheathed multistrand copper	Polycab / Finolex / KEI/ Havells /RR Kabel

	conductor cables (Single & multi core)	
31	Glands & Lugs	COMMET / GRIPWEL / DOWELL / RAYCHEM/ BRACO
32	HT Panels	Schneider/ Siemens/ ABB/C&S
33	Dry Type Cast Resin Distribution Transformer	KIRLOSKAR / VOLTAMP / HITACHI / RAYCHEM
34	11/0.415 kV Compact Substation (CSS)with Dry type Transformer	Schneider/Siemens/ABB
35	Bus bar	Hindalco
36	OLTC/RTCC	OLGR/ESAUN/CTR
37	Outdoor Enclosures	Hensel / Schneider /Neptune/ Mennekes
38	Lighting Inverters (Hybrid with Solar Type)	Emerson / Delta / Tmec / Microteck /As Per Oem/ Zenner
39	Modular Switch & Socket, Industrial Socket, Fan Regulator, Metal Boxes, RJ 11, Standalone RJ 45, TV Outlet, Etc	Northwest (Artisa)/ Anchor Panasonic (Vision)/ Crabtree (Murano)/ Legrand (Arteor) / Schneider (Zen Celo)
40	Occupancy Sensors	Lutron / Crestron / Leviton / Honeywell / Philips
41	Industrial Type Socket with Plug Top	Mennekes / Hensel / Schneider / Neptune
42	Cable Trays	Profab / Obo / Legrand /Indiana/Ricoh
43	Floor / Ceiling Wire Ways	Profab / Obo / Legrand /Indiana/Ricoh
44	PVC Conduits - Frls	VIP / Precision / Polycab/AKG/BEC
45	Conduits - Ms	Gb/BEC/AKG/Rm-CON
46	Lightning Arrester	Obo / Jeff / Cape/Erico/L&T
47	Plate and Pipe Electrodes	Class B – Tata /Jindal./SAIL
48	Pipe – Galvanized for Plate & Pipe Electrodes	Class B – Tata /Jindal./SAIL
49	Maintenance Free Electrode	Erico / Obo / Jeff / Cape
50	Network switches	CISCO/ JUNIPER / EXTREME / HPE (ARUBA)
51	Monitor	Bosch/Honeywell/Pelco/Siemens
52	Computer	HP/Dell/IBM
53	Earth Strips	Hot Dip Galvanised
54	Earth Bus with Insulators	Electrolytic Grade Copper / Aluminium / Hot Dip Galvanised

55	OFC Cable, LIU, Jack Panel, Patch Panel, Patch Cord, Face Plate, Cat – 6A Cable, Cat6A I/O, Cable Manager	SIEMON/ SCHNEIDER/ MOLEX/ LEGRAND/BELDEN/ COMMSCOPE
56	Cat – 6A Cable, Cat6A I/O, Cable Manager	SIEMON/ SCHNEIDER/ MOLEX/ LEGRAND/BELDEN/ COMMSCOPE
57	Ceiling/exhaust Fan	Cromtron/Almonard/ Havells / Polycab / Atomberg
58	Luminaries	Philips/Trilux/Havells/Crompton/ Lighting Technology/
59	Active Harmonic Filter	Schneider / Abb / Neptune / Epcos / Circutor
60	Explosion Proof Sockets	Baliga / Abb/ Legrand / Stall
61	Lighting poles	Bajaj /Philips/K-lite/Wipro/Twinkle
62	Aviation obstruction light	Bajaj/Binay/Actos
63	Lighting control	Lutron/Philips/ Crestron
64	DWC Pipe (Double wall corrugated pipe)	Ashirwad/Supreme/Astral/Duraline/Nocil
65	Diesel Genset/Engine	Caterpillar / Cummins India / Perkins / Mitsubishi/Kirloskar
66	Alternator	Leroy Somer / Stamford/Kirloskar
67	Synchronizing panel / AMF panel,Auxiliary Panel and Motor Control Centre	Any CPRI Tested Panel Manufacturer With 7 Tank Process
68	PLC & SCADA	Allen Bradley / Larsen & Toubro / Modicon (Schneider Electric) / Siemens
69	Cooling Towers	Paharpur/Bell
70	Power Monitor with RS-485 Port	Schneider / Siemens / ABB / Circutor
71	Digital Load Monitor with RS-485 Port	Schneider / Siemens / ABB / Circutor
72	Terminals	Wago / Phenonix / Connect well
73	HRC fusses for PT protection	Alstom / L&T / Pentagon / Cooper Busman
74	Terminaiton kits	3M/Raychem/M Seal
75	Glands & Lugs/Bimetalic lugs	HMI / Dowells / SMI/Comet
76	Fire Sealant & Fire-Retardant Paint	Jotun/HILTI /Asian/STPL
77	M.S. Pipe upto 200 MM Dia.	Jindal / Tata Steel / SAIL
78	MS PIPES above 200 mm dia factory rolled	TATA / JINDAL / SAIL

79	Pot Strainer	Emerald / Sant
80	Vibration Isolators	Cori / Dunlop / Kanwal Industries Corporation / Flexionics / Resistoflex / GERB
81	Noise Control Silencer / Muffler (Residential Type Silencer)	Intertec / Sound Control India
82	HSD Fuel Transfer Pumps	Rotodel / Kirloskar/Grundfos
83	Insulation / Fiberglass	Polyond / Rockwool india
84	Pressure Gauge	Emrald / Fiebig /H Guru.
85	Thermometer	Emerald / H Guru / Taylor
86	Alarm Annunciator	Advani Oralikon / Larsen & Toubro / Minilec
87	Pumps	MATHER&PLATT/ FRANKLIN/ KSB/ GRUNDFOS/ XYLEM/ ARMSTRONG/ KIRLOSKAR
88	Motors	Siemens / ABB / Kirloskar/Crompton
89	Plug Valve	AUDCO/ ADVANCE/ TYCO/ ZOLOTO/ VICTAULIC/ KIRLOSKAR
90	Butterfly valves	AUDCO/ ADVANCE/ TYCO/ ZOLOTO/ VICTAULIC/ KIRLOSKAR
91	Gate / NRV / Check valves	Danfoss / Honeywell / Johnsons Control / Belimo/ Flowcon/Zoloto
92	Flexible Pipe Connections	Flexionics / Resistoflex
93	Pypcoat (AW4) for fuel tank & Burried oil piping	IWL
94	Temperature sensors, pressure gauge, flow switch, pressure switch, differential pressure switch, actuators, room thermostat, humidity sensor, flow meter, hardness analyzer, ph, chlorine, tds, co, co2 sensors etc.	Honeywell/ Schneider Electric/ Siemens / Johnson Control / Danfoss/ Trane/ H-Guru / Belimo
95	Level Indicator (Oil)	Forbes Marshall
96	Anchor Fastner	Fisher / Hilti/ Mungo
97	GI Pipe Fittings	Unik / Zoloto M/TATA

98	Welding Rod	ADOR / Advani / Cosmos / Esab
99	Battery Charger & Batteries	Exide / Hitachi / Panasonic /Amar Raja / Amaron
100	Insulating Mats (as per local state electricity board) Portable Fire Extinguishers	Commercial Enterprises / DL Miller & Co. Ltd. /Premier Polyfilm Ltd./ RMG Polyvinyl India Ltd Steelage / Minimax / Vijay fire / TYCO

101	UPS systems	Schneider / Socomec / Delta / Emerson / Tmeic/Eaton
102	Battery	Exide / Hitachi / Panasonic /Amar Raja / Amaron
103	K13 Isolation transformer	MGM / Datson / Elmas
104	SECURITY SYSTEMS IP Camera (Multi Sensor, Dome, Multii)	SONY/BOSCH/ AXIS / PELCO/HONEYWELL
105	Sensor & Bullet Camera	SONY/BOSCH/ AXIS / PELCO/HONEYWELL
106	Video Management Software	Honeywell / Qognify/ Genetec / Camera Oem
107	Network Video Recorder	Honeywell / Ibm, Dell, Hp, Camera Oem
108	Central Management Server	Ibm, Dell, Hp, Camera Oem
109	Housing, Lens	Honeywell / Siemens / Schneider / Bosch / Arecont Vision / Mobotix
110	Joystick	Honeywell / Siemens / Schneider / Bosch / Arecont Vision / Mobotix
111	Industrial Grade Monitor	Sony / Lg / Samsung
112	Client Workstation	Dell / Hp / Compaq / Ibm
113	Networks Switches	Cisco/ Juniper / Extreme / Hpe (Aruba)
114	Network Components(Server Racks,Connectors)	Val Rack / Rittal / Apw / Net Rack / D Link
115	Sc Connectors	Amp / Digilink/Honeywell / Siemens
116	Acs Controller	Honeywell / Siemens / Schneider / Hid
117	Acs Software	Honeywell / Siemens / Schneider / Hid/Onguard / Ccure
118	Panic Bar	Dorma / Trimec / Locknetics

119	Card/ Card Reader	Hid / Indala / Exceed/cardex/GE/Kaba
120	Magnetic Door Lock	Bel / Locknetics / Abloy/Ebelco/Siemens/ Dorma/Dynalock
121	Housing, Power Supply	Honeywell / Bosch / Ge / Lenel
122	Industrial Grade Monitor	Sony / LG / Samsung
123	Door controller & software	American Dynamics/Bosch/Automatic Systems /CardKey GE – Casirusco/Honeywell – Prowatch Series/Kaba Siemens/Tyco
124	Electric Door Strikes	Kaba/Lock netics/Miwa Lock/Rutherford/Trimec
125	Boom Barriers/ Half Height Swing /Retractable /Flap type Barriers (Imported)	Automatic Systems (Belgium)/FAAC (ITALY)/Gunnebo Kaba /Magnetic/Somfy India
126	Door Frame Metal Detectors	Metor/Garett/Godrej
127	Authorized System Integrators for Fire Alarm & CCTV System	Honeywell/UTC/Prudential/L&T/Percept Devices Marketing Sterling & Wilson
128	Solar PV Modules	Approved As Per Prevailing Om /Almm List Of Mnre /Approved By Engineer Incharge As Per Tender Specifications
129	Power Conditioning Unit	Fronus/ SMA/ Delta/ Fimer / Emerson/ Growatt/ Goodwe /Solis/ OEM of SPV Module
130	Accessories / Connectors	MC / Tyco solar/HENSEL GERMANY / ELTSO /VNT/ TECHSER/ OEM OF SPV MODULES.
131	Data logger / System Performance	ABB / Electro industries / Energy / Recommence / Energy tracking IIC / Schlumberger
132	PHE WORKS CPVC pipe	Astral pro, Ashirwad, Supreme, Finolex
133	CPVC fittings	Astral pro, Ashirwad, Supreme, Finolex
134	GI fittings	R' Brand, Unik, HB / NVR
135	GI pipes	TATA/ Jindal/SAIL
136	CI pipes and fittings	Neco/ BIC/SAIL
137	Butterfly valve (50mm to 100mm)	Intervalve, Audco, L &T
138	Kurra CI / SS	Neer, Kessel, Aco

139	Kurra UpVC	Supreme or Approved equivalent
140	Non return valve	Intervalve, Audco, L &T
141	Ball valve (15mm to 40mm)	Lehry, RB, Legris, Conex
142	Air release valve	Zoloto, RB, Lehry, Legries / Conex/Itap
143	Water meter	Dasmesh, Acteris, Krnati, Kaycee
144	Anchor fastner	Hilti, Fischer/Mungo
145	U' Clamps	Hitech supports & hangers pvt ltd, Itech
146	RCC hume pipes	Indian hume pipe, Sudarshan hume pipe, Approved equivalent
147	UPVC pipes (SWR Quality)	Astral pro, Ashirwad, Supreme
148	UPVC pipes (Agriculture series)	Astral pro, Ashirwad, Supreme
149	PVC fittings (Fabricated)	Clarion or approved equivalent
150	PVC fittings (Moulded)	Astral pro, Ashirwad, Supreme
151	PVC floor traps (Moulded)	Astral pro, Ashirwad
152	Manhole cover - Cast iron	BIC, Jayaswal Neco Industries Ltd/Hepco
153	Manhole cover - (RCC Precast)	Rajvaibhav, SFRC, DM precast, Sobha concrete products/Southern concrete
154	Level Controllers	Aqua inteltech, Vinayaka
155	Insulation for GI buried pipes	Pypkote, Tapex, IWL
156	Enamel paint	Asian paints, Apcolite, Berger,
157	Hot water pipe insulation	Vidoflex, Armaflex
158	Air admittance valve	Studor, Din Certo, Essenco
159	Pressure reducing valve	Hawk, TBS, Cimberio, RB / Varie
160	Y' Strainer	RB, TBS, Cimberio, Energy/Sant/Leader
161	UPVC - SCHEDULE 80 Pipe &Pipe fittings	Astral pro, Ashirwad, Supreme
162	HDPE pipe	Astral pro, Supreme or approved equivalent
163	DWC Pipe (Double wall corrugated pipe)	Ashirwad, Supreme/Astral/Duraline

164	Motorised valve	HONEYWELL/ SCHNEIDER ELECTRIC/ SIEMENS / JOHNSON CONTROL / DANFOSS/ TRANE/ H-GURU / BELIMO
165	FRP/GRP covers	Thermodrain
166	Pumps	MATHER&PLATT/ FRANKLIN/ KSB/ GRUNDFOS/ XYLEM/ ARMSTRONG/ KIRLOSKAR
167	Fire protection PUMPS	KIRLOSKAR / MATHER & PLATT (WILO) / GRUNDFOS/ Armstrong
168	G. I PIPES	TATA/ JINDAL (HISSAR)/ SAIL/ VIZAG STEEL Note: Pipe shall be ISI mark.
169	PIPE FITTINGS	MONTEX FORGE / B&M / JAINSONS / SANT
170	ANTICORROSIVE MATERIAL	IWL / RUSTECH
171	FIRE EXTINGUISHERS	CEASEFIRE / KANEX / SUPREMEX / MINIMAX
172	BUTTERFLY VALVE	L&T / SANT / ZOLOTO / INTERVALVE
173	PAINT	ASIAN / BERGER
174	ANCHOR FASTENERS	HILTI / FISCHER / MUPRO
175	SUPPORTS	MUPRO / FISCHER / HI TECH
176	Balancing Valve, Butterfly Valve, Sluice Valve, Nrv/Check Valve, Strainer And Other Type Of Valves	AUDCO/ ADVANCE/ TYCO/ ZOLOTO/ VICTAULIC/ KIRLOSKAR
177	FLOW METER	FEDRAL / TELEFLO / EUREKA
178	PRESSURE SWITCH	INDFOS / SWITZER / DANFOS
179	THERMOMETERS/ PRESSURE GAUGE	H. GURU / FIEBIG / GENERAL INSTRUMENTS
180	FIRE BRIGADE CONNECTION, AIR RELEASE VALVE, HYDRANT VALVE, FIRST AID HOSE REEL (DRUM AND BRACKET), FIRE HOSE, BRANCH PIPE, FIREMAN AXE, RRL HOSE, HOSE CABINET	SAFEX/ NEWAGE/ GETECH/ VICTAULIC/ TYCO

181	FIRE SEALANT	HILTI / 3M / STI
182	SPRINKLER ALARM VALVE	MONSHER (SHARP) / NEWAGE PLUS / RAPIDROP / VIKING
183	SPRINKLER	TYCO / HD / NEWAGE/ EVERSAFE/ GETECH/ VIKING /SAFEX
184	FLOW SWITCH	HONEYWELL / SYSTEM SENSOR / POTTER
185	FLEXIBLE DROP	RESISTOFLEX / DUNLOP / EASYFLEX/NEWAGE/SAFEX
186	ROSETTE PLATES	VIKING / RAPIDROP / EQUIVALENT
187	EXPANSION BELLOWS	EASYFLEX / RESISTOFLEX / CORI
188	HUME PIPES	INDIAN HUME PIPES / EQUIVALENT
189	DIESEL ENGINE	KOEL / CUMMINS / GREAVES / ASHOK LEYLAND
190	PHOTOLUMINESCENT SIGNAGES	PROLITE / AUTOLITE
191	BATTERY OPERATED SIGNAGE'S	TEKNOWARE / PROLITE / EATON
192	FIRE ALARM AND EMERGENCY VOICE EVACUATION PANEL	Honeywell(Notifier)/BOSCH/Siemens
193	DETECTION DEVICES	Honeywell(Notifier)/BOSCH/Siemens
194	ANNUNCIATION DEVICES	Honeywell(Notifier)/BOSCH/Siemens
195	MODULES	Honeywell(Notifier)/BOSCH/Siemens
196	CONTROL / POWER CABLES	POLYCAB / Havells/KEI
197	SPEAKERS	EST / SECUTRON (MIRCOM) / SIEMENS
198	DIGITSL VOICE COMMAND	EST / SECUTRON (MIRCOM) / SIEMENS
199	AMPLIFIERS & ACCESSORIES	EST / SECUTRON (MIRCOM) / SIEMENS
200	FIRE CURTAIN	ORIENT FIRE / KENT / PACIFIC FIRE CONTROLS

201	NOVEC 1230 AGENT	KIDDE (UTC) / ANSUL / CRYPTZO
202	SEAMLESS CYLINDERS	RAMA / EKC
203	SEAMLESS PIPES	TATA/ JINDAL (HISSAR)/ SAIL/ VIZAG STEEL Note: Pipe shall be ISI mark.
204	DISCHARGE NOZZLES	KIDDE (UTC) / ANSUL / CRYPTZO
205	DISCHARGE / ACTUATION HOSE	KIDDE (UTC) / ANSUL / CRYPTZO
206	ELECTRIC ACTUATOR	KIDDE (UTC) / ANSUL / CRYPTZO
207	PRESSURE SWITCH	KIDDE (UTC) / ANSUL / CRYPTZO
208	MANUAL ACTUATOR	KIDDE (UTC) / ANSUL / CRYPTZO
209	MANIFOLD CHECK VALVE	KIDDE (UTC) / ANSUL / CRYPTZO
210	AGENT RELEASE PANEL	RAVEL / FIRE FITE / VIGNAHARATA
211	CONVENTIONAL DETECTORS	SYSTEM SENSOR / SIEMENS / RAVEL
212	TALK BACK SYSTEM	GST / A^2 / ROYAL ELECTRONICS
213	PANEL PROTECTION SYSTEM	CEASEFIRE / KANEX / FIRE DETEC
214	PA RACK	NETCAB / NET RACK
215	HVAC BAFFLES SYSTEM	Oorja/ Cani
216	CHILLER UNIT	CLIMAVENETA / TRANE / DAIKIN / CARRIER / BLUE STAR
217	AIR COOLED SCREW CHILLER LOW TEMPERATURE	CLIMAVENETA / TRANE / DAIKIN / CARRIER / BLUE STAR
218	AIR COOLED SCREW CHILLER MEDIUM TEMPERATRE	CLIMAVENETA / DAIKIN / VOLTAS
219	VARIABLE FREQUENCY DRIVE STARTER PANEL	Danfos / Siemens / Schnider / ABB / L&T
220	VARIABLR PRIMARY CHILLED WATER PUMPS	ARMSTRONG / GRUNFOS / XYLEM
221	VFD LOGICAL CONTROL PANEL (FOR VARIABLE PRIMARY FLOW OPERATION)	ARMSTRONG / GRUNFOS / XYLEM
222	PAC UNIT	Climaventa / Flakt wood / schinder / Blue Box / Vertive

223	CHILLED WATER PAC	Climaventa / Flakt wood / schinder / Blue Box / Vertive
224	DX PAC	Climaventa / Flakt wood / schinder / Blue Box / Vertive
225	Split Unit (5 Star as per BEE) /	Daikin, Mitsubishi, Toshiba,O-General, Blue Star, Hitachi Midea, LG
226	Double Skin Floor Mounted Doas - Chilled Water Type	VTS / Systemair / Zeco/Vayhan/Citizen
227	IDEC-UNIT	HMX / HUMIDIN
228	AIR HANDLING UNITS, FAN SECTION UNITS	ZECO / EDGETECH / SYSTEMAIRE / FLAKTWOOD/ NUTECH/ YORK/ VTS/ HUMIDIN/ CASILICA
229	COPPER REFRIGERANT PIPING	Janaya / Nippon / Mandev / Mexflow / PTP-K-Series
230	LADDER TYPE CABLE TRAY	Profab / EAE / Indiana / Patny
231	PERFORATAED TYPE CABLE TRAY	Profab / EAE / Indiana / Patny
232	CONDENSATE DRAIN PUMP	Aspen / Cruise/Ashirwad
233	MAKE UP WATER PIPE	Supreme/ Ashirwad / Finolex / Prince
234	EGG CRATE GRILLE	Systemair / Airmaster / Mapro / Carryiare / Dynacraft
235	PERFORATED FLOOR TILE WITH OPPOSED BLADE DAMPER (OBD)	Unitle / Yemag
236	VENTILATION UNITS FANS - INLINE, CABINET, CENTRIFUGAL, TUBE AXIAL, WALL MOUNTED, MIXED FLOW, ETC	Nictora / Flakt /Greenheck / Carryaire / Airflow / Kruger / Maico Dynair
237	KITCHEN DRY SCRUBBER WITH SISW FAN	Rydair / Espair /Trion /Emerald
238	NRV VALVE	Audco / Danfoss / UTAM / Advance / Zoloto / Sant
239	WATER SIDE MS PIPING - CLASS C	Tata/Jindal/SAIL
240	BUTTERFLY, BALANCING,	Audco / Danfoss / UTAM / Advance / Zoloto / Sant
241	Y'-STRAINER	Sant/Emerald/UTAM/Advance / Zoloto / Sant
242	BALL VALVE FOR Y-STRAINER	Leader/R.B. Italy/UTAM / Zoloto / ITAP / Sant / Danfoss / Advance
243	BALL VALVE WITHOUT STRAINER	Leader/R.B. Italy/UTAM / Zoloto / ITAP / Sant / Danfoss / Advance
244	PRESSURE INDEPENDENT TYPE DYNAMIC	Flowcon / Danfoss / Delta - P/ Frese / Beilimo / Advance / Siemens

	BALANCING CUM FLOW CONTROL VALVE.	
245	BTU METER FOR METERING	Kamstrup/Siemens/Sharky / Danfoss FORBMARSHALL / Shanitech / Sontay / Omricorn / DIEHL/ Belimo / Landis / Gyre
246	FLOW METER	Kamstrup/Siemens/Sharky / Danfoss FORBMARSHALL / Shanitech / Sontay / Omricorn / DIEHL/ Belimo / Landis / Gyre
247	AUTOMATIC AIR VENT.	Anergy / ITAP / RB
248	THERMOMETER	Waree/Acutherm Italy/Dwyer / Omricron
249	THERMOWELL	Anergy / ITAP / RB
250	PRESSURE GAUGE (GLYCERINE FILLED)	Fieldmarshell / H-Guru / Fibig / Dwyer/Waree / Baumer
251	CONDENSATE DRAINPIPE	Supreme/ Ashirwad / Finolex / Prince
252	PRESSURE REGULATING VALVE	RB / Danfoss
253	FLEXIBLE RUBBER BELLOWS	Cori / Easyflex
254	PRESSURE MAINTAINING STATION	Anergy / Savcon / K D Agencies
255	LOWSIDE G.S.S DUCTING AS PER SMACNA STANDARDS	Rolastar / Camduct / Zeco / Vedha / Westerair Air / Devduct
256	ROUND DUCT	G.P. Spiro/Westerair Ducts / Sevenstar / Spiral Tube / Devduct
257	MS DUCT FOR KITCHEN EXHAUST	Devduct / Kanva cooling / Sree Fabricators
258	ALUMINIUM DUCTING FOR MRI	G.P. Spiro/Westerair Ducts / Sevenstar / Spiral Tube / Devduct
259	FRP DUCTING	QMAX Composites / FRP lining services /
260	DOUBLE SKIN PLENUM	ZECO / EDGETECH / SYSTEMAIRE / WAVES / AIRCOIL
261	ACOUSTIC INSULATION	Armacell/ K-Flex/Aeroflex/Durkflex
262	THERMAL INSULATION	Armacell / K-Flex / Aeroflex / Thermobreak / Trocilin / Durkflex
263	BUTTERFLY DAMPER - CIRCULAR - SINGLE FLAP-GI	Systemair / Airmaster / Carryaire / Vedha / Syncro / Cosmos
264	ROUND FLEXIBLE DUCTS WITH INSULATION	ATCO/Supaflex/Sevenstar/Ductmaster / Cosmos
265	SPILL AIR PLENUM BOX.	Syncro / Vedha / Kanva Cooling
266	VOLUME CONTROL OPPOSED BLADE DAMPER (QUADRANT TYPE)	Systemair/ Airmaster/Carryaire / Vedha / Syncro / Cosmos

267	BACK DRAFT DAMPER	Systemair/ Airmaster/Carryaire / Vedha / Syncro / Cosmos
268	COLLAR DAMPER - OPPOSED BLADE TYPE	Systemair/ Airmaster/Carryaire / Vedha / Syncro / Cosmos
269	HIT & MISS DAMPER - AL.	Systemair/ Airmaster/Carryaire / Vedha / Syncro / Cosmos
270	PLAQUE TYPE SQUARE DIFFUSER - AL.	Systemair / Airmaster / Mapro / Carryiare / Dynacraft / Cosmos
271	ROUND DIFFUSER - AL.	Systemair / Airmaster / Mapro / Carryiare / Dynacraft / Cosmos
272	MOTORIZED VOLUME CONTROL OPPOSED BLADE DAMPER - STANDARD TYPE	Systemair/ Airmaster/Carryaire / Vedha / Syncro / Cosmos
273	FIRE DAMPER WITH OPPOSED BLADE (FUSIBLE LINK TYPE) -EXTENDED SLEEVE TYPE - WITH 450 MM SLEEVE	Greenheck/ Ruskin Titus / Systemair / Airmaster / Carryiare
274	MOTORISED FIRE & SMOKE DAMPER WITH OPPOSED BLADE - EXTENDED SLEEVE TYPE - WITH 600 MM LONG	Greenheck/ Ruskin Titus / Systemair / Airmaster / Carryiare
275	SLOT DIFFUSERS	Systemair/Airmaster/Sachin / Vedha / Mapro / Cosmos
276	GRILLES - AL.	Makes: Systemair/Airmaster/Sachin / Vedha / Syncro / Mapro / Cosmos
277	JET NOZZLE - AL.	Systemair/ Airmaster/Carryaire / Vedha / Cosmos
278	LOUVERS - AL.	Systemair/ Airmaster/Carryaire / Vedha / Cosmos
279	VARIABLE AIR VOLUME BOXES (VAV)	Eneffen/Neptronics / Syncro / Cosmos
280	EXHAUST VALVE - AL.	Systemair/ Airmaster/Carryaire / Syncro / Vedha / Cosmos
281	TERMINAL HEPA FILTER MODULE	AAF/Spectrum/Camfil /Pyramid
282	FILTERS FOR FRESH AIR FAN	AAF/Spectrum/Camfil /Pyramid
283	CO (CARBON MONOXIDE) DETECTOR / SENSORS	Greystone /Johnson Controls / Siemens / Produal / Omricorn / MSR
284	TEMPERATURE SENSOR FOR AHUS	Greystone/Johnson Controls / Siemens / Produal / Omricorn
285	HYDROGEN DETECTOR / SENSORS	Greystone / Siemens / Produal / Omricorn/Ambitronics
286	Temperature / Rh Sensor For Ot Touch Panel	Schnieder / Siemens / JCI / DIGISENSE
287	VRF Type Varaiable Refrigerant Flow System	Daikin/Toshiba /Blue star/Voltas/carrier
288	UV lamp (UL Listed)	Honeywell Edgetech (American Collaboration) IAQURE Ultrafresh Lynserve

289	Motor	ABB/Siemens/ Kirloskar
290	Variable Frequency Drive (VFD)	ABB,Danfoss, Fuji Electric, Siemens, Yaskawa
291	IBMS	SIEMENS/ JCI / CARRIER AUTOLOGIC / ENEFFEN
292	Operator Workstation	HP / DELL / LENOVA
293	Printer	HP/SAMSUNG/CANON
294	Color Monitor/Multicolor Graphics	HP / DELL / LENOVA
295	monitor Mouse (Optical)	LG / SAMSUNG / MICROSOFT SIEMENS / CARRIER
296	GUI Software	HONEYWELL-TREND / TRANE / SIEMENS-PXC.MODULAR, / JCIMETASYS NCE
297	DDC Controller	HONEYWELL-TREND / TRANE / SIEMENS-PXC.MODULAR, / JCIMETASYS NCE
298	Interfaces / Router / Gateways / Network	HONEYWELL-TREND / TRANE / SIEMENS-PXC.MODULAR, / JCIMETASYS NCE
299	Controllers Immersion type temperature sensor	HONEYWELL-TREND / TRANE / SIEMENS-PXC.MODULAR,/ JCIMETASYS NCE
300	Grill, Diffuser, Fire Damper, Fire Damper, Volume Control Damper	SYSTEM AIR /CARRYAIRE/ AIRMASTER/ AIR FLOW/ CONAIR/ DYNACRAFT
301	Hydrogen Sensor	MSR / PRITECH/AMBETRONICS/OMICRON
302	VERTICAL TRANSPORTATION/Lifts	Johnson Lifts/ Schindler/ Thyssen Krup/ Mitsubishi Electric

NOTE :- In Case of non-availability of material in the preferred make list, Prior approval of the Engineer-in- Charge shall be taken for material of other make.

BOQ

	Item Description	Unit	Quantity
1	Monthly O&M charges for Water Supply and Distribution System	Month	12
2	Monthly Sample test of drinking water for following parameters. Color, odour, Turbidity (NTU), pH value, Total Hardness as CaCO3, Calcium as Ca, Magnesium as Mg, Chloride as Cl, Total Dissolved Solids, Sulphate as SO4, Nitrate as NO3, Fluoride as F, Iron as Fe, Chromium as Cr 6+, Zinc as Zn, Copper as Cu, Manganese as Mn, Aluminium as Al, Boron as B, Total Alkalinity as CaCO3, Total Coliform MPN/100 ml, E Coli MPN/100 ml. **from NABL accredited lab**	No	60
3	20mm Brass float valve	No	1
4	Providing and fixing chlorinated polyvinyl chloride (CPVC) pipes, having thermal stability for hot and cold water supply including all cpvc plian and brass threaded fittings this includes jointing of pipes anf fittings with one step cpvc solvent cement ,trenching,refilling,testing of joints complete as per direction of engineer in charge.external work 20 mm nominal dia pipes	M	1
5	20mm cpvc ball valve	No	1
6	20mm collar	No	1
7	20mm MTA	No	1
8	20mm FTA	No	1
9	20mm union	No	1
10	20mm TEE	No	1
11	20mm End cap	No	1
12	20mm Tank nipple ST	No	1
13	20mm Tank nipple DT	No	1
14	20mm Elbow	No	1
15	20x15MM cpvc reducer MABT (brass)	No	1
16	20mm brass qatevalve	No	1
17	20x15MM cpvc brass elbow	No	1
18	25mm Brass float Valve	No	1
19	Providing and fixing chlorinated polyvinyl chloride (CPVC) pipes, having thermal stability for hot and cold water supply including all cpvc plian and brass threaded fittings this includes jointing of pipes anf fittings with one step cpvc solvent cement ,trenching,refilling,testing of joints complete as per direction of engineer in charge.external work 25 mm nominal dia pipes	Mtrs	1

20	25mm CPVC ball Valve	No	1
21	25mm cpvc Collar	No	1
22	25mm cpvc FTA	No	1
23	25mm cpvc MTA	No	1
24	25mm cpvc TEE	No	1
25	25x15mm reducer threaded elbow	No	1
26	25mm cpvc Elbow	No	1
27	25mm CPVC sweep bend	No	1
28	25mm cpvc Union	No	1
29	25mm End cap	No	1
30	25mm Tank nipple	No	1
31	25mm Brass MABT	No	1
32	25mm brass qate valve	No	1
33	25mm brass NRV	No	1
34	25X20mm cpvc reducer collar	No	1
35	32mm brass float valve	No	1
36	Providing and fixing chlorinated polyvinyl chloride (CPVC) pipes, having thermal stability for hot and cold water supply including all cpvc plian and brass threaded fittings this includes jointing of pipes anf fittings with one step cpvc solvent cement ,trenching,refilling,testing of joints complete as per direction of engineer in charge.external work 32 mm nominal dia pipes	Mtrs	1
37	32mm CPVC FTA	No	1
38	32mm CPVC MTA	No	1
39	32mm CPVC Tee	No	1
40	32mm CPVC collar	No	1
41	32mm cpvc elbow	No	1
42	32mm cpvc ball valve	No	1
43	32mm Brass qate valve	No	1
44	32X25mm Cpvc reducer	No	1
45	32mm cpvc Union	No	1
46	32mm cpvc plug	No	1
47	32mm cpvc Tank Nipple	No	1
48	Providing and fixing chlorinated polyvinyl chloride (CPVC) pipes, having thermal stability for hot and cold water supply including all cpvc plian and brass threaded fittings this includes jointing of pipes anf fittings with one step cpvc solvent cement ,trenching,refilling,testing of joints complete as per direction of engineer in charge.external work 40 mm nominal dia pipes	Mtrs	1
49	40mm Brass float valve	No	1
50	40mm cpvc FTA	No	1
51	40mm CPVC MTA	No	1
52	40mm cove collar	No	1

53	40mm cpvc Elbow	No	1
54	40mm CPVC plug	No	1
55	40X25 CPVC reducer	No	1
56	40X32 CPVC reducer	No	1
57	40mm CPVC ball valve	No	1
58	40mm Brass aate valve	No	1
59	40mm CPVC Union	No	1
60	40mm brass foot valve	No	1
61	40mm Cl foot valve ball type	No	1
62	40mm CPVC Tank Nipple	No	1
63	40X40X40 cove Tee	No	1
64	50mm brass float valve	No	1
65	Providing and fixing chlorinated polyvinyl chloride (CPVC) pipes, having thermal stability for hot and cold water supply including all cpvc plian and brass threaded fittings this includes jointing of pipes anf fittings with one step cpvc solvent cement ,trenching,refilling,testing of joints complete as per direction of engineer in charge.external work 50 mm nominal dia pipes	Mtrs	1
66	50mm CPVC FTA	No	1
67	50mm CPVC MTA	No	1
68	50mm CPVC collar	No	1
69	50mm cpvc Union	No	1
70	50mm cPVC Elbow	No	1
71	50mm cPVC Long Elbow	No	1
72	50mm cpvc ball valve	No	1
73	50mm brass gatevalve(wheel)	No	1
74	50mm brass foot valve	No	1
75	50mm Cl foot valve	No	1
76	50mm Brass NRV- Horizantal	No	1
77	50mm Brass NRV- Vertical	No	1
78	50mm cpvc Tee	No	1
79	50X40 Cpvc reducer	No	1
80	50mm cpvc end cap	No	1
81	50X32 CPVC reducer	No	1
82	50X25 Cpvc Reducer	No	1
83	50mm Tank Nipple	No	1
84	Providing and fixing chlorinated polyvinyl chloride (CPVC) pipes, having thermal stability for hot and cold water supply including all cpvc plian and brass threaded fittings this includes jointing of pipes anf fittings with one step cpvc solvent cement ,trenching,refilling,testing of joints complete as per direction of engineer in charge.external work 65 mm nominal dia pipes	Mtrs	1
85	65mm cpvc Collar	No	1

86	65mm cpvc FTA	No	1
87	65mm cpvc MTA	No	1
88	65mm cpvc Union	No	1
89	65mm cpvc Ball valve	No	1
90	65mm Brass footvalve	No	1
91	65mm Brass NRV- Horizantal	No	1
92	65mm Brass NRV- Vertical	No	1
93	65x50rnm Gi reducer collar	No	1
94	65mm Cl footvalve flange end	No	1
95	Providing and fixing chlorinated polyvinyl chloride (CPVC) pipes, having thermal stability for hot and cold water supply including all cpvc plian and brass threaded fittings this includes jointing of pipes anf fittings with one step cpvc solvent cement ,trenching,refilling,testing of joints complete as per direction of engineer in charge.external work 80 mm nominal dia pipes	Mtrs	1
96	80mm cpvc Collar	No	1
97	80mm Brass NRV- Horizantal	No	1
98	80mm Brass NRV- Vertical	No	1
99	80mm cpvc MTA	No	1
100	80mm cpvc Elbow	No	1
101	80X65mm cpvc Reducer collar	No	1
102	100mm Cl foot valve flange end	No	1
103	U-clamp	No	1
104	118ml cpvc Solvent	No	1
105	Tefflon Tape	No	1
106	M-seal-Small-25gms	No	1
107	M-seal-Large-100gms	No	1
108	Thread Ball	No	1
109	Hexa Blade	No	1
110	8mm gland rope-1 role	Mtrs	1
111	10mm gland rope-1 role	Mtrs	1
112	12mm gland rope-1 role	Mtrs	1
113	Grease	Kg	1
114	**Motor winding-Submerssible pump** Rewinding of submergible pumpset with copper winding wires of appropriate guage, as per specifications and / or directions of the departmental officials, including all materials, labour, equipment and testing. for all types of submergible pumpsets etc.(with guarantee period not less than 6 months) forFor all types of **submergible pumpsets upto 3.0 H.P.**	No	1
115	**Above 3 H.p upto 5 H.P**	No	1
116	**Above 7 H.P upto 7.5 H.P**	No	1

117	**Above 9.5 H.P upto 10.0 H.P**	No	1
118	**Above 12 HP and upto 13 H.P.**	No	1
120	**Above 14 HP and upto 15 H.P.**	No	1
121	**Above 15 HP and upto 20 H.P.**	No	1
122	**Motor winding-Monoblock** Motor Rewinding of monoblock motor with copper insulaton wire suitable gauge as per ISI specification with all necessary materials and labour,tools and equipments with guarantee period of not less than 12 months **7.5 HP monobloc motor rewinding**	No	1
123	**10 HP monobloc motor rewinding**	No	1
124	**12.5 HP monobloc motor rewinding**	No	1
125	**15 HP monobloc motor rewinding**	No	1
126	**20 HP monobloc motor rewinding**	No	1
127	**30 HP monobloc motor rewinding**	No	1
128	E**arth work excavation for pipelines/cables by Manual** means upto 600 mm trench width, as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, removal of stumps and other deleterious matter, including dressing of excavated surfaces, disposing off or leveling the excavated earth or sorting & stacking the selected earth for reuse in a radius of 50 m. **Filling available excavated earth** (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering and lift upto 1.5 m including cost of labour, tools, usage& other appurtenances required to complete the work	Cum	1

Part -III Drawings

The information given in this section is purely indicative and for reference and understanding of the work only.

General Information

The Indian Institute of Science (IISc) is a public, deemed, research university for higher education and research in science, engineering, design, and management. The institute was established in 1909 with active support from Jamsetji Tata and thus is also locally known as the "Tata Institute". It is located in Bangalore (Bengaluru), in the Indian state of Karnataka. IISc is located at 13°01' North Latitude and 77°34' East Longitude.

(a) Linkages and Accessibility

The IISc campus is located in the north of Bangalore, about 6 kilometers from Bangalore City Railway Station and Kempegowda Bus Station, on the way to Yeshwantpur. The Institute is about 35 kilometers from Kempegowda International Airport. The nearest railway station is Yeshwantpur Railway Station which is about 2 km from the campus. A number of other research institutes, Raman Research Institute, Indian Space Research Organization (ISRO), Wood Research Institute and Central Power Research Institute (CPRI), are close to IISc. Most of these institutes are connected to IISc by a regular shuttle bus service

(b) IISc Campus

The campus houses more than 50 academic departments, student hostels accommodating more than 4000 students and residential buildings accommodating more than 4000 residents. The Institute is fully residential and is spread over 450 acres of land in the heart of Bangalore city. Apart from main campus there is another residential campus at Vigyanpura, 4 km (approximately) away from main campus.

EXISTING WATER SUPPLY SYSTEM

Majority of existing water supply network in IISc campus is more than 50 years old with periodic improvements to meet the increasing demands. Details of existing water supply assets, their operations, condition, analysis and assessment are explained below.

SCADA: Most of the major pump houses and connected sumps are fitted with ultrasonic level transmitter, level sensor , pressure gauges and EM flow meters. All these instruments are connected to centralized SCADA station through remote PLC. Levels are monitored and pump operations of some pump houses being done from SCADA station.

SOURCES OF WATER

Main source of water to IISc campus is from Bangalore Water Supply and Sewerage Board (BWSSB). There are nine tapping points to IISc from BWSSB's two main feeder lines for which water is being pumped from Malleshwaram pumping station. Schematic drawing of IISc Existing water supply system is presented in drawing TCE.11987A-CV-3081-WS-30002.

Apart from BWSSB source, some of the departments, hostels and hotels are served from individual and local bore wells drilled inside the campus. The total numbers of bore wells are 55. The bore well water supply is mainly used for gardening and for specific non-potable uses

in some departments. IISc has about 55 bore wells and on an average the water extracted from groundwater is about 0.3 MLD which is about 10% of the piped water supply.

There exists two no's of 0.5 MLD Sewage Treatment Plant (STP), one is near Archives and Publication cell and the other is near swimming pool inside the IISc campus and the recycled water being generated from this STP is another source of water for nondrinking purposes. There is an exclusive recycled water distribution network from where the recycled water is tapped and used for gardening, car washing etc.

The details of feeder pipelines which feed water from the existing BWWSB source points (i.e., from bulk water meter location) to the respective service reservoirs within the IISc campus are as shown in below table 1.

TABLE 1 SUPPLY DETAILS FROM BWSSB SOURCE

Sl. No.	Zone No.	From (Tapping Location)	To (Inlet Location)	Pipe Material	Size of Feeder Pipe (mm)	Length of pipe from bulk meter (m)	Inlet diameter to the reservoir (mm)	Hours of Supply, (hr)	Duration of Supply	Frequency of Supply
1	2	Maramma Circle	Thermal Pumping Station	CI	300	500	200	7 to 8	9 AM to 5 PM	Daily
2	1	Maramma Circle	ICE Pump House	CI	100	1	100	4	9 AM to 5 PM	Daily
3	3	Toll Gate Road	D Gate (E - 60 Quarters)	CI	150	785	100	1 to 1.5	Any time between 11 PM to 2 AM	Alternate Day
4	3	Toll Gate Road	D Gate (A Type Quarters)	CI	150	280	150	1 to 1.5	Any time between 11 PM to 2 AM	Alternate Day
5	3	Toll Gate Road	D Gate (PS & Aerospace)	CI	100	325	100	1 to 1.5	Any time between 11 PM to 2 AM	Alternate Day

Sl. No.	Zone No.	From (Tapping Location)	To (Inlet Location)	Pipe Material	Size of Feeder Pipe (mm)	Length of pipe from bulk meter (m)	Inlet diameter to the reservoir (mm)	Hours of Supply, (hr)	Duration of Supply	Frequency of Supply
6	4	Toll Gate Road	Behind Tunga / R Block	CI	150	1698	75	1 to 1.5	Any time between 11 PM to 2 AM	Alternate Day
7	5	Malleshwaram Main Road	P D Block	GI	50	4	50	1 to 1.5	Any time between 11 PM to 2 AM	Alternate Day
8	3	New BEL Road	Centenary Visitors Guest House	CI	100	145	100	1 to 1.5	Any time between 11 AM to 1 PM	Alternate Day
9	4	Subedrapalya Road	Yeshwantpur Quarters	GI	20	6	20	1 to 1.5	Any time between 11 PM to 2 AM	Alternate Day
10	5	Malleshwaram Main Road	Gymkhana Ground / P block	GI	20	-	20	1 to 1.5	Any time between 11 PM to 2 AM	Alternate Day
11	-	-	Vijnanpura Campus	CI	150	-	150	-	-	-

**Note: Vijnanpura Campus Connection is outside the campus*

STORAGE RESERVOIRS IN THE IISC CAMPUS

There are 12 GLRs and 8 OHTs and their total capacity is about 5.2 ML and 1.5 ML, respectively. The water stored in GLRs is pumped to the Overhead Tanks (OHT's) and supplied to the distribution mains. Individual Departments, hostels and housing blocks have small sumps with pumping facility to the roof tanks above their respective buildings.

91 sumps are identified and total capacity of all the sumps is assessed to be about 3.023 ML. The capacity of the sumps ranges from 3 Cum to 210 Cum. Water from the sumps is fed into the roof tanks of individual departments. These tanks are either of reinforced concrete or of PVC. The capacity of the roof tanks varies from 3 Cum to 100 Cum at different locations.

The details of Overhead tanks are as given below in the Table – 2

DETAILS OF OVER HEAD TANKS IN IISC CAMPUS

OHT	Location/identifying landmark	Capacity (ML)	No of staging	Inlet Dia (mm)	Inlet Pipe Material	Outlet dia (mm)	Outlet Pipe Material	Structure condition	Type
OHT1	NSSC OHT (ICE)	0.100	12	100	CI	75	GI	GOOD	Circular
OHT2	TPS OHT	0.200	15	200	CI	150	CI	GOOD	Square
OHT3	Library OHT	0.100	15	150	CI	150	CI	GOOD	Triangular
OHT4	A Type quarters	0.20	12	100	CI	100	CI	GOOD	Circular
OHT5	C Mess OHT	0.470	15	100	CI	150	CI	GOOD	Taper Circular
OHT6	Near Chemical Engineering / Main Pump House	0.112	15	200	CI	150	CI	GOOD	Taper Circular
OHT7	E type quarters (near A-Type PH)	0.067	12	100	CI	75	GI	GOOD	Circular
OHT 8	NNE OHT	0.100	12	100	CI	75	GI	GOOD	Circular
Total		**1.562**							

The details of the Ground Level Reservoirs existing in the IISc Campus are as provided in the table below.

DETAILS OF GROUND LEVEL RESERVOIRS IN IISC CAMPUS

GLR	Location	Capacity (ML)	Shape	Length (m)	Width (m)	Depth (m)	Dia (m)	Inlet Pipe (mm)	Outlet Pipe (mm)
GLR-1	ICE	0.227	Rectangular	8.7	5.3	5.2	-	100	75
GLR-2	TPS	2.550	Rectangular	27	27	3.5	-	300	200
GLR-3		0.134	Circular	-	-	3.5	12	300	150
GLR-4		0.134	Circular	-	-	3.5	12	300	150
GLR-5	Main Pumphouse	0.234	Rectangular	9	-	4.3	-	200	100
GLR-6	Ols Aerospace PH	0.444	Rectangular	20	6	4	-	200	200
GLR-7	New E Type quarter	0.100	Rectangular	8	5.6	2.7	-	100	100
GLR-8	Near C Mess	0.100	Circular	-	-	3.5	6	100	100
GLR-9	Near A-Type PH	0.266	Circular	-	-	10	5	150	75

GLR	Location	Capacity (ML)	Shape	Length (m)	Width (m)	Depth (m)	Dia (m)	Inlet Pipe (mm)	Outlet Pipe (mm)
GLR-10	Junta Bazar -1	0.150	Circular	-	-	1.5	4	150	75
GLR-11	Junta Bazar 2	0.150	Circular	-	-	1.5	4	150	75
GLR-12	Near R-Block	0.450	Circular	-	-	4	12	150	75
GLR-13	D gate PH	0.6	Circular	-	-				
GLR 14	Library								
Total		**4.868**							

PIPED WATER SUPPLY

The average quantity of water received by IISc from BWSSB is about 2.2 MLD approximately. The supply is mainly from CJF (Combined Jewel Filter) and from 11 inlets spread over at various locations around the campus. The transmission lines comprise 300, 150(4no), 100(3no), 50 and 20(2no) mm diameter pipelines. The total pipe network is about 25Kms.

The main supply to the Campus is through the 300mm pumping main from CJF, which enters the campus near the 'Security gate ATM' and flows into GLR near Thermal Pumping Station (TPS). This supply is on a daily basis, with the average supply hours ranging from 5-6 hours a day. The 300mm diameter pipe laid inside the campus is 835m in length. A 150mm diameter line is tapped from 600mm diameter BWSSB main located along the Mathikere main road near R-Block. The 150mm diameter pipe laid inside the campus is 10m long. Two 150mm diameter line is tapped from the same source near D-Gate. The total length of 150mm diameter pipes laid inside the campus is 847m. There is also one 100mm diameter DI pipeline from BWSSB is supplying the water to GLR near D-Gate. The 100mm diameter supply line from BWSSB is near the Maramma circle to IC Tank, but there is no supply from this line and the pipeline is made as dummy. The 75mm tapping is taken from the main pipeline to the sump in IC Tank location. But the tapping has to be identified whether is from BWSSB main pipeline or it is from the tapping from 300mm pipeline near Security gate ATM. The minor sources of supply are one 50mm diameter and two 20mm diameter tapings on the BWSSB main on 8th main road near Yeshwantpur. The 50mm diameter pipeline inside the campus is 1142m long and the 20mm pipeline is 48m long. All these supplies are on alternate days (except 300mm dia source) for about 6-8 hours.

The distribution network in the campus is a tree type development. Though there are interconnections between the supply mains to various reservoirs, the system does not have a loop connection. The supply to the distribution network is from OHT or by direct pumping. Bulk Mechanical water meters are installed at all the inlet locations, read once in every month and bills are issued by BWSSB. As the campus consists of both domestic and non-domestic consumption some of the connections are on domestic tariffs while most of the other connections are on non-domestic tariffs.

The details of transmission pipeline and distribution pipelines are as given in the below tables.

TABLE 2 DETAILS OF TRANSMISSION PIPELINE IN IISC CAMPUS

Pipe dia (mm)	Length (m)	Material
300	1173	Cast Iron
200	10	Cast Iron
150	847	Cast Iron & MS
100	1123	Cast Iron

75,50,25,20	2152	Galvanized Iron
Total	**5305**	

TABLE 3 DETAILS OF DISTRIBUTION PIPELINE NETWORK IN IISC CAMPUS

Pipe dia (mm)	Length (m)	Material
200	714	Cast Iron
150	1768	Cast Iron & MS
100	6656	Cast Iron
75	2720	Galvanized Iron
50	4965	Galvanized Iron
25	3223	Galvanized Iron
20	120	Galvanized Iron
Total (m)	**20166**	

Treated water network is of with HDPE pipe of dia 160 mm and below.