TENDER DOCUMENT

(e-Procurement)

Tender No: IISc/MBU/Laboratory-Furniture/2024/001

For "Supply, Installation, Testing and Commissioning of laboratory furniture, Modular furniture & Unified AV solution for MBU, IISc Bangalore

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LIST OF DOCUMENTS TO BE SUBMITTED IN PRE-QUALIFICATION (Technical Bid)

1	Copy of Company or Firm Registration Certificate	
2	Certificate copies of GST, PAN, Contractor's Registration passbook	

3	Details of Past works performed reports and Single work performed in Govt. / Semi Govt. in prescribed format	
4	Satisfactory work completion report from the Authorities	
5	Profit and Loss Statement, auditor's report (Audited balance sheet) for the last five years and Income tax clearance certificate for the last 5 years	
6	Banker Certificate	

III. FINANICAL BID

	DESCRIPTION	PAGE NO.
	Bill of Quantities (COMMERCIAL BID)	

1. **Tender Notification**

Tender No: IISc/MBU/Laboratory-Furniture/2024/001

Scope of Work	"Supply, Installation, Testing and Commissioning of laboratory furniture, Modular furniture & Unified AV solution for MBU, IISc Bangalore''
Estimated value of work	Rs 6 crores
Period of Work Completion	120 days
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 3688
Tender Fee	As per e-procurement portal
Submission of Tender Document	e-tender mode only through e-procurement portal- https://eprocure.gov.in/eprocure/app Helpline no: 0120-4001005
Tender Date	December 13, 2024
Earnest Money to be deposited with the tender	**Rs. 12,00,000** **EMD should be deposited in the form of Demand Draft Necessary bank details of IISc is enclosed with the tender**
Last date and Time for submission of tender	3rd January 2025
Date and Time of opening of Tender (Technical Bid)	6th January 2025
Date and Time for Technical presentation by the Bidder/OEMs	8th January 2025
Date and Time of opening of Tender (Financial Bid)	Shall be intimated to technically qualified Bidder/OEMs through CPP portal.

2. Notice Inviting Tender

The Registrar, Indian Institute of Science invites tenders from eligible Bidder/OEMs, for "**Supply, Installation, Testing and Commissioning of laboratory furniture, Modular furniture & Unified AV solution for MBU, IISc Bangalore.**

The Bidder/OEMs who fulfil the following requirements are eligible to apply.

Bidder/OEMs 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.

All Bidder/OEMs shall provide the required information accurately and enough as per details in Section 4: Eligibility Criteria

2.1 The Bidder should belong to either Class-1 or Class-2 suppliers distinguished by their "local content" as defined by recent edits to GFR. They should mention clearly which class they belong to in the cover letter. a) Class-1 supplier: Goods and services should have local content of equal to or more than 50%. b) Class-2 supplier: Goods and services should have local content of equal to or more than 20 % and less than 50%.

2.2 Quote should come only from Indian Original Equipment Manufacturer (OEM) or their Indian authorized distributor.

2.3 The quotations should be on FOR-IISc Bangalore basis in INR only.

2.4 Bidders offering imported products will fall under the category of non-local suppliers. They cannot claim themselves as Class-1 local suppliers/Class-2 local suppliers by claiming the services such as transportation, insurance, installation, commissioning, training, and other sales service support like AMC/CMC, etc., as local value addition.

2.5 Purchase preference as defined by the recent edits to GFR (within the "margin of purchase preference") will be given to the Class-1 supplier.

2.6 MSMEs can seek an exemption to some qualification criteria. IISc follows GFR2017 for such details.

2.7 The Tenderer shall submit the valid certificate 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/OEM shall produce all the Attested /original documents for verification.

2.8 The work shall be carried out as per the directions of the Project Manager identified by the purchase committee, IISc.

2.9 Blacklisted contractors in State / Central Govt. Departments / Autonomous bodies / Institutions are not eligible to quote, if found such tenders will be rejected. The contractors who are penalized due to delay in completion of the previous works will be rejected.

2.10 The successful Bidder/OEM 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.

2.11 The material shall be approved by the Purchase Committee, IISc before execution of the work.

2.12 Further details of the work can be obtained from the purchase committee.

2.13 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.

2.14 The work shall be commenced with all men and machinery within 30 days from the date of purchase 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.

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

2.16 Bidder/OEMs who meet the above specified minimum qualifying criteria, shall be eligible.

2.17 Even though the Bidder/OEMs meet the above criteria, they are subject to be disqualified if they have:

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

2.18 Site visit:

The Bidder/OEM 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 a contract for the project. The cost of visiting the Site shall be at the Bidder/OEM's own expense.

2.19 Tender document

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. Bidder/OEMs are advised to visit e-procurement portal and get familiarized with the procedure for submission of the tenders.

2.20 Content of Tender documents

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

2.21 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 at e-Procurement portal.

IISc reserves the right to extend the dates, if required.

2.22 Documents comprising the Tender

The Technical Bid submitted by the Bidder/OEM shall contain the documents in a sealed envelope 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/OEM.

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

The Bidder/OEM shall submit the hard copies of the documents / credentials which were uploaded in the tender portal. The tender documents shall reach the designated office within 3 days of the tender opening deadline.

The hardcopies should be sent to the following address:

Assistant Registrar, Purchase Section,

Indian Institute of Science,

Bengaluru, India – 560012

The Financial bid shall be submitted by the Bidder/OEM 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/OEM.

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/OEM.

2.23 Tender validity

Tenders shall remain valid for a period of 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, IISc may request that the Bidder/OEMs may extend the period of validity for a specified additional period. The request and the Bidder/OEMs' responses shall be made in writing or by email (ar.purchase@iisc.ac.in). A Bidder/OEM may refuse the request without forfeiting his earnest money deposit. A Bidder/OEM 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 extension, and in compliance with Clause 2.18 and 2.22 in all respects.

2.24 **Earnest money deposit:**

The Bidder/OEM shall furnish, as part of his tender, earnest money deposit (EMD) of 1200,000 (Rupees 12 lakhs only). The Bidder/OEM must pay the Earnest Money Deposit (EMD) in the form of Demand draft drawn on "The Registrar, IISc" payable at "Bangalore".

The Bidder/OEM must scan the demand draft and submit it with Technical Bid Documents for our reference. The original DDs must 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 and tender fee will have to be submitted by the Bidder/OEM considering the following conditions:

a) The entire amount must be paid in a single transaction.

b) The earnest money deposit of unsuccessful Bidder/OEMs will be returned after awarding the contract to the successful Bidder/OEM.

The earnest money deposit may be forfeited:

a) If the Bidder/OEM withdraws the tender after tender opening during the period of tender validity,

b) If the Bidder/OEM fails within the specified time limit to

i) Sign the Agreement; or

ii) Furnish the required Security deposit

2.25. Provisions for Micro, Small and Medium Enterprises (MSME):

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

Policy is meant for the procurement of only goods produced and services rendered by MSMEs. However, traders are excluded from the purview of Public Procurement Policy. The Bidder/OEM must mention clearly if they are the manufacturer or a trader.

Participating in 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.

2.26. Format and signing of Tender

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

2.27. Submission of Tenders

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

2.28 Deadline for submission of the Tenders

The Bidder/OEM 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.

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 Bidder/OEMs previously subject to the original deadline will then be subject to the new deadline.

2.29 Late Tenders

In e-procurement system, Bidder/OEM 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.

2.30 Modification and Withdrawal of Tenders

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

The Bidder/OEM may modify or 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.

2.31 Tender Opening:

The IISc will open all the Tenders received through online mode, in the presence of the Bidder/OEMs 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/OEM 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.

2.32 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 Bidder/OEMs or any other person not officially concerned with such process until the award to the successful Bidder/OEM has been announced.

2.33 Clarification of Tenders

To assist in the examination, evaluation, IISc may, at his discretion, ask any Bidder/OEM 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/OEM shall contact 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/OEM wishes to bring additional information to the notice of the IISc, he/she should do so in writing.

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

2.34 Examination of Tenders and determination of responsiveness

Prior to the detailed evaluation of Tenders, 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/OEM's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other Bidder/OEMs 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.

2.35 **Correction of errors**

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

2.36 **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/OEM. Evaluation of the Prequalification Offer will be done by the Evaluation Committee constituted for this purpose. After evaluation is completed, all the Bidder/OEMs who are qualified will be notified and will be intimated at the 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/OEM.

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.

2.37 **TECHNICAL EVALUATION CRITERIA:**

Evaluation of performance: Evaluation of the performance of the Bidder/OEMs for eligibility shall be done by the committee constituted by the Registrar, IISC Bengaluru. All the eligible similar works executed and submitted by the Bidder/OEMs may be got inspected by a committee. The marks for the Performance of Works (Quality) shall be given based on this inspection or based on the performance report given by the client.

Even though a Bidder/OEM may satisfy the above requirements, he would be liable for disqualification if he has:

(a) Made misleading or false representation or deliberately suppressed the information in the forms, statements and enclosures required in the pre-qualification document.

(b) Records of poor performance such as abandoning work, not properly completing the contract, or financial failures /weaknesses etc.

2.38 **Negotiations**

The Bidder/OEM 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/OEM intimated accordingly.

2.39 **Award criteria**

Subject to Clause 23, the IISc will award the Contract to the Bidder/OEM whose Tender has been determined to be substantially responsive to the Tender documents and who has offered the lowest evaluated Tender Price. Only the technically qualified will be taken forward to the financial bid opening stage, and among the technically qualified Bidder/OEMs, the Bidder/OEM with the lowest bid in the financial stage will be designated as L1.

2.40 **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/OEM or Bidder/OEMs or any obligation to inform the affected Bidder/OEM or Bidder/OEMs of the grounds for the IISc's action.

2.41 **Notification of award and signing of Agreement**

The Bidder/OEM 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/OEM /Bidder/OEMs. It will be kept ready for signature of the successful Bidder/OEM in the office of IISc. Following the notification of the award along with the Letter of intent. The successful Bidder/OEM will sign the Agreement and deliver it to the IISC.
Upon the furnishing by the successful Bidder/OEM of the Security deposit, the IISc will issue formal purchase order.

The successful Bidder/OEM 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.

2.42 **Further Security deposit (FSD)**

Further percentage on the running bills and final bill in addition to Earnest Money Deposit shall be levied by the contractor. When the FSD deducted from R.A Bills of the contractor @ **5.5**% 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/OEM, be released to him against the production of the bank guarantee issued from a Scheduled Commercial 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/OEM in the form of a Bank Guarantee, it shall be issued by a Scheduled Commercial bank.

Failure of the successful Bidder/OEM 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.

2.43. **Corrupt or Fraudulent practices**

The IISc requires that the Bidder/OEMs 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/OEM 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.

2.44 **Payment Terms**

a. First 80% against the supply of material on prorate basis in 30 days.

   - All material (electronic or otherwise) must be supplied within 140 days of the generation of Purchase Order (PO).
   - If the material is not supplied within 80 days, the Bidder/OEM must provide a written explanation of the causes of the delay.
   - The purchase committee may provide a 10-day extension for delivery of any material that remains undelivered after review of the explanation and if they are satisfied with the reasoning. The committee may do this at its discretion.
   - Further delays beyond the extension period will result in a penalty fee, which will be 1% of tender value for every week of delay.

b. Next, 20% will be paid after installation, testing and commissioning of all items in the tender, within 30 days.

c. A maximum of 3 Running Bills for the duration of the project is allowable. These can be submitted against supply of material, wherein within 30 days of the supply of material (and approval from our side of receipt of material) payment will be made.

d. It may be noted that payment from IISc may take up to 1 month after provision of an appropriate invoice (such as for supply of material)

2.45 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.

2.46 In case of authorized dealers submitting their bids with due authorization from the Manufacturer, such Manufacturer's credentials will be considered for the purpose of evaluating their authorized dealer's bidder's technical bids.

2.47 Bidder's offer is liable to be rejected if they don't upload any of the certificates / documents sought in the Bid document, ATC and Corrigendum if any.

3 Declaration of Tenderer

Name of Work: "**Supply, Installation, Testing and Commissioning of laboratory furniture, Modular furniture & Unified AV solution for MBU, 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, labor 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 work 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 The Bidder/OEM should have satisfactorily completed as a Prime contractor during the last seven years, ending March 2023 in any State / Central Govt. Departments (including PSUs) / and similar organizations of repute.

a) The BIDDER / MANUFACTURER should have executed ONE SINGLE ORDER for the tendered item [Modular Furniture , Laboratory Furniture, Fume Hoods] etc., to the extent of minimum 80% of the value of the amount put to tender in ANY ONE OF the immediately preceding 3 years 2018 – 19 to 2022 – 23, and such supplies should have been made to any State / Central Govt institutions.***Similar work means: Supply and Installation of laboratory furniture, Modular furniture & AV solution. Works executed abroad shall also be considered for the purpose of experience in similar works provided documentary evidence is submitted from the competent authority. Documentary evidence cannot be just the certification from some agency. Only purchase orders without installations shall not be considered for the purpose of experience in similar works. Documentary evidence in the form of work completion certificate is required to be produced to get the tender issued and should include the institute's name and contact information, where the work was completed**.

b) Work completion certificate for having completed work of similar nature of contract certified from the competent authority not below the rank of Executive Engineer or equivalent shall be uploaded. The work completion certificate shall mention the nature of work, items of work executed, the agreement number & date, the value of work, the date of commencement, the stipulated date of completion, the actual date of completion of the work and reason for delay (if any).

c) 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. (Submit duly filled Annexure-I for the same).

d) Tenderer should be the manufacturer / authorized dealer of all the items as per Annexure-II. A letter of Authorization from the original equipment manufacturer (OEM) specific to the tender should be enclosed for all these mentioned items as per the format given in Annexure III.

e) Non-compliance with tender terms, non-submission of required documents, lack of clarity of the specifications, contradiction between tender specification and supporting documents etc. may lead to rejection of the bid.

f) The Bidder/OEM / parent company should be an Official member with SEFA (Scientific Equipment and Furniture Association) for the preceding greater than 5 years on a continuous basis.

g) The Bidder/OEM or its OEM should be an ISO certified organization and considering growing concern on environment and human resources, the Furniture Manufacturer should also have Environmental Certificate. All these should be submitted with the Tender. The following support documents are to be enclosed:

- ISO9001:2015 (For Quality Management System- QMS)

- ISO 14001:2015 (for Environment Management System- EMS)
- ISO 45001:2018 (For Occupational Health and Safety Management System)
- Manufacturer should be a member of BIFMA -Business and Institutional Furniture Manufacturers Association for preceding greater than 5 years along with Products certifications of different levels wherever applicable. All the ISO certifications should be given by NABCB approved lab.

h) Testing of Laboratory Furniture: The bidder / manufacturer shall quote Laboratory furniture that is tested as per SEFA-8M and SEFA 10 Standard from the SEFA approved Lab which should be mentioned on SEFA's website for carrying out these - SEFA 8M and SEFA 10. The bidder / manufacturer shall quote Laboratory furniture that is tested as per EN-14727 and EN-13150 from NABL Accredited Labs.

Third party 49 Chemical test as per SEFA for ACID storage cabinet must be available.

i) Welded Cabinets should be tested for SEFA 8M from a SEFA approved lab and EN-14727 from a third-party NABL accredited Lab & adaptable workbench should be tested for SEFA 10 from a SEFA approved Lab and EN-13150 from a third-party NABL accredited Lab. The quoted product should be listed under the listed category of SEFA 's website & test documents to submitted. **The NABL Accreditation of testing lab should be valid & enclosed.**

j) OEM must have SEFA Membership Certificates for at least the last eight years on a continuous basis.

k) The Bidder/OEM should submit the NIL Deviation statement as per Annexure III of the tender.

l) Testing of Fume Hoods: The quoted model shall be tested as per ASHRAE-110-2016 & EN – 14175. The make & model of the product quoted shall also be mentioned on both SEFA's Website & OEM's Website. The bidder / manufacturer shall quote Fume hood that is tested as per ASHRAE-110-2016 and EN-14175 standard for all tests specified. The bidder has to ensure that supplies are made from the approved & tested standards of ASHRAE-110-2016 and EN-14175. The make & model no of the product quoted shall also be mentioned on SEFA's website.

m) The BIDDER/OEM / MANUFACTURER should have the latest valid ISO 9001: 2015 ,ISO 14001:2015.

BSO OHSAS 45001:2018. Certificates. AIOTA, BIFMA level 02, Green Guard , Green Pro , GRIHA,BIFMA & IGBC Membership Certificate: The Bidder/OEM / manufacturer shall be a member of IGBC for preceding greater than 5 years consecutively.

n)Bidder/OEM should have enough Technical and Administrative employees for the proper execution of the contract. The Bidder/OEM shall have to submit a list of Key personnel available and proposed to be engaged for management and supervision of this project, their qualifications and experience.

o) The list of specialized agencies who are to partner with the Bidder/OEM, along with their experience complying with the clause laid out under special conditions of contract along with Project planning and quality control procedures to be adopted, installation and commissioning methodology to be submitted along with the tender.

4.2 The Bidder/OEM should have a presence in the city of Bangalore, with at least 2 technical engineers and 2 more technical support staff present locally to perform periodic maintenance, corrections under

warranty period, and fix any other issues that may arise following the testing and commissioning of the audio-visual systems. A declaration to this effect with name and contact information of the engineer and support staff must be provided in a separate document on company letterhead.

4.3 Should be solvent for a minimum of **Rs 1.00 Crore** as certified by a Scheduled Commercial Bank in India and the certificate must be obtained on or after 1st October 2019.

4.4 A line of credit, amounting to Rs. 6 crores for meeting the working capital of the project, issued by a Nationalized/Scheduled bank shall be provided by the bidder, as per the format provided in Section 3, clause 1.6.

4.5 Should not have incurred any loss (profit after tax should be positive) during the last two consecutive financial years, ending 31st March 2023, duly certified by a Chartered Accountant in a separate certificate.

4.6 The Manufacturer should have their own factory for metal working and wood working. Complete details of Machinery, equipment, and tools with technological capabilities available in the Manufacturing unit need to be submitted along with the photo.

4.7 Manufacturer shall have the documentary evidence of these machineries at least as listed below, so as to ascertain the capacity of the manufacturer to complete the project in stipulated time. These Machineries should be immediately available with the Tenderer for use on this work: Computer Controlled through-feed multi station edge preparation machine with gluing & cutting for flush, trimming, scrapping & butting. Sheet Metal Folding Machine. Computer Controlled Press Brake for Sheet Metal Bending. Press Brake Machine 8 Ft. Power Sharing Machine 8 Ft. CO2 Welding Machine. Spot Welding Machine. Complete Powder Coating Line with baking oven and powder application. Nine tank Anti-Rust Surface Pre-treatment Plant. Beam saw & panel saw, CNC Machines for panel processing/ drilling/routing. CNC ROVER, Multi bonding Machines, Hot press for laminate pressing.

4.8 The Bidder/OEM should have their own Manufacturing Unit in India for manufacturing LABORATORY FURNITURE and the manufacturing company should be having in house manufacturing facility, Inhouse testing facility and inhouse powder coating facility as per tender requirement. Bidder/OEM should submit Factory License in support of the manufacturing facility.

4.9 The Bidder/OEM shall also submit the list of Machineries along with pictures/photos of machinery held towards manufacturing Furniture. The BIDDER / MANUFACTURER should indicate the capacity of the Manufacturing Facility and meeting tender requirement, so they are capable of supply of entire tender requirement within 60 days from the date of issue of Purchase order on them.

4.10 Bidder/ OEM Manufacturer should provide In-House Test for 1000 hrs salt spray test signed by QA.

4.11 Powder coating treatment: All Lab furniture & Fume-hood Products must undergo a Nine Tank pre-treatment process with 3 stages iron phosphating process with superior pure epoxy powder coated finish of thickness 60-80 microns. This process must be a spray type process, dip tanks are not acceptable. The bidder/manufacturer shall submit the last 3 years invoices/challans of pure epoxy powder purchased for old orders with the detailed order/customer information

Nine Tank Process: 1. Hot Water Rinse -> 2. Knock off Degreasing -> 3. Degreasing I -> 4. Degreasing II -> 5. Water rinse I -> 6. Water rinse II -> 7. Iron Phosphating -> 8. Water rinse III -> 9. Passivation

4.12 The bidder / manufacturer shall [at their own expense] organize the factory visits for the Tender Evaluation Committee Members, as and when they decide to visit. The committee will visit the manufacturing factories of the bidders and evaluate the capability for manufacturing, powder coating, Inhouse testing etc and inspect samples of the quoted products (Island Table) to furnished at site within 2 days of tender due date. Technical bids will be evaluated based on this.

Financial Criteria:

4.13 The Bidder/OEM/OEM should have registered for a minimum period of ten years. Proof of registration must be provided.

4.14 The average annual financial gross turnover should be at least 30% of the estimated cost of this tender, in the last five (5) years.

4.15 The minimum annual financial turnover for the two consecutive years should be at least 30% of the estimated cost of this tender.

4.16 The Bidder/OEM/OEM should not have incurred any loss in more than two years.

4.17 The Bidder/OEM should not have been blacklisted by any State / Central Govt. Departments / Autonomous bodies / Institutions. A self-declaration of the same should be provided on the company letterhead.

4.18 The Bidder/OEM should provide a self-declaration on their company letterhead stating that they understand the payment terms set in section 2.8 (above) and agree with the payment terms as well as the penalty clauses.

4.19. 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.

4.20 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

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

Sl. No	Year	Turnover amount	Profit / (Loss)	Remark
1	2019-20			
2	2020-21			
3	2021-22			
4	2022-23			
5	2023-24			

Litigation and Arbitral Issues:

4.16 Net pending litigations should not be more than 50% of Bidder/OEM's net worth.

4.17 No consistent history of court/arbitral award decisions against the Bidder/OEM for the last five years. A self-declaration of the same should be provided on company letterhead.

4.18 From the date of the Purchase Order generation, within 60 days the company should deliver, assemble, and install all materials. A self-declaration that Bidder/OEM will comply with this item should be provided on the company letterhead.

For any queries regarding the tender, the specifications or any other items, please contact

Assistant Registrar, Purchase Section
Indian Institute of Science
Bengaluru, India - 560012

5. Special Conditions

5.1 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.

5.2 Any damage to the existing service lines during execution of work shall be rectified by the Bidder/OEM at his own cost and risk.

5.3 Debris shall be disposed of to an undisputed place of Bangalore outskirts as per the direction of the Engineer-in-Charge, whenever required. If the item is not found in the Bill of quantities and the rate in the contract for haulage of debris, it shall be paid as per the KPWD SR.

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

5.5 **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 the amount will be recovered in the bills as per the actual rates fixed by the Institute. The supply of electricity from the Institute is not mandatory. Non-supply of electricity by the Institute cannot be held as a reason for shortfall in progress.

5.6 **Water supply:** The Contractor must 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 items which require water.

5.7 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

5.8 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 / KPWD** 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.

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

5.10 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.

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

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

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

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

5.15 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.

5.16 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.

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

5.18 The equipment data sheet as per the technical specification to be filled by the Bidder/OEM and uploaded along with the technical bid eligibility documents.

5.19 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.

1) DEFINITION:

In the Contract (as hereinafter defined) the following definitions words and expressions shall have the meaning hereby assigned to them except where the context otherwise required.

i. Institute shall mean the IISC Bengaluru.

ii. The President shall mean the Board of Governors, IISC Bengaluru.

iii. The Engineer-in-charge, who shall administer the work, shall mean the Project Engineer cum Estate Officer, IISC Bengaluru.

iv. Accepting authority shall mean the Chairman, Building and Works Committee- Director, IISC Bengaluru or his authorized representative.

v. Site Engineers shall mean the Project Manager appointed by Institute works department.

2) ASSIGNMENT & SUBLETTING:

The contractor shall not assign the contract or any part thereof without the written consent of the Engineer in-charge. The whole of the works included in the contract shall be executed by the contractor and sub-contracting will not be allowed.

3) SCOPE OF CONTRACT:

i. The contract comprises the supply, Installation, completion of works within six (6) months and maintenance of the works for twelve (12) months after actual date of completion and handing over to IISC , Bengaluru. The contractor shall carry out and complete the said work in every respect in accordance with this contract and as per the directions/ written instructions of the Engineer in charge. These pertain to the following:

ii. The variation or modification of the design, quality or quantity of works or the addition or omission or substitution of any work.

iii. All materials are to supplied as per approved shop drawings. Any excess material brought to site shall be taken back by the agency and no claim for payment of the same shall be entertained by IISC.

iv. Removal and substitution of material from the site.

v. The dismissal from the works of any persons employed. vi. The opening up for inspection of any work covered up.

vii. Any civil modifications required for installation of services (electrical, piping or exhaust system)

viii. Amending / making good of any defects.

The contractor shall forthwith comply with and duly execute any instructions of work comprised in such Project Engineer cum Estate Officer's instructions, provided always that the verbal instructions and explanations given to the contractor or his representative upon the works shall, if involving a variation, be confirmed in writing by the contractor within seven days and if not dissented in writing within a further seven days by the Project Engineer cum Estate Officer, shall be deemed to be instructions of the Engineer in-charge within the scope of the contract.

4) CONTRACT DOCUMENT*:*

1.1 All documents, forming the contract, are to be taken as mutually explanatory of one another and in case of ambiguities or discrepancies the same shall be explained and adjusted by the Project Engineer cum Estate Officer who shall thereupon issue to the contractor its interpretation directing in what manner the work is to be carried out.

1.2 The successful tenderer shall be required to enter into an agreement as per approved format given in the tender document with the Institute. The Bill of Quantities & rates filled by the successful tenderer, technical bid document, minutes of the pre bid meeting, negotiation letter and the award letter shall form part of the agreement to be signed by the successful tenderer. The cost of stamp paper and stamp duty, required for the agreement, shall be borne by the contractor.

1.3 The contractor shall study the Tender drawings thoroughly before the commencement of work. In case of any discrepancy the contractor shall seek clarification before proceeding with the works.

5) AS BUILT DRAWINGS:

On completion of work, the Contractor shall submit at his own cost four prints of "as built' drawings and commissioning reports along with O&M manual to the Project Engineer cum Estate Officer within 6 weeks of completion of the work.

a) The drawings shall have the following information.

Layout showing Modular furniture , lab benches & fume hoods .

6) The contractor shall make recesses, holes, opening etc. as may be required, nothing extra shall be payable on this account, including finishing the same.

7) The contractor shall be fully responsible for the safe custody of materials brought by him to site.

8) SPECIALISED WORK

Following specialized works should be got executed only through agencies specialized in the field and the contractor shall be required to submit the details of such agencies to the Project Engineer cum Estate Officer and obtain necessary approval: -

8.1 The Bidder/OEM should have an experience of minimum five years in his area of specialization.

The BIDDER / OEM should have executed ONE SINGLE ORDER for the tendered item [Modular Furniture , Laboratory Furniture, Fume Hoods] etc., to the extent of minimum 80% of the value of the amount put to tender in ANY ONE OF the immediately preceding 3 years 2018 – 19 to 2022 – 23, and such supplies should have been made to any State / Central Govt institutions.

8.2 The Bidder/OEM shall have sufficient experience in execution of turnkey projects.

8.3 The contractor shall submit the following details of the specialized agency along with the technical bid

a. Proof of the Bidder/OEM in operation for the last five year.
b. List of works carried out by the agency in last five years along with the name of work, name and address of clients, year of execution, value of work done and brief specification of the work

c. Completion certificate of one work of similar nature of magnitude equal to atleast 80% of the quantum of work proposed in the tender.

9) SAFETY, HEALTH AND ENVIRONMENT

i. The Contractor(s) shall take all precautions to avoid accidents by exhibiting necessary caution boards. He shall be responsible for all damages and accidents caused to existing/new work due to negligence on his part. In case of any accident of labour / contractual staff the entire responsibility will rest on the part of the contractor and any compensation under such circumstances if becomes payable shall be entirely born by the contractor.

ii. Appropriate personnel protective equipment's such as helmets, gloves, googles, aprons, safety belts etc.. shall be provided to the workers employed at work site.

iii. All hazardous materials shall be labeled with the name of the materials, the hazards associated with its use and necessary precaution to be taken.

iv. Contractor shall ensure that during the performance of the work, all hazard to the health of personnel, have been identified, assessed and eliminated.

v. The contractor must keep a record of all the workers employed at site, make daily attendance along with the location of the work. All the labour record shall be made available for inspection and verification as and when required.

10) PROGRAMME CHART:

The Contractor shall prepare an integrated bar chart for the execution of work, showing clearly all activities from the start of work to completion, with details of manpower, material and equipment required for the fulfillment of the contract within the stipulated period or earlier and submit the same for approval within ten days of award of the contract.

The programme chart should include the following:

1. Descriptive note explaining sequence of the various activities.
2. Network (PERT / CPM / BAR CHART).
3. Programme for procurement of materials / equipment / labour by the contractor.

If at any time, it appears that the actual progress of work does not conform to the approved programme referred above, the contractor shall produce a revised programme

showing the modifications to the approved programme to ensure completion of the work. The modified schedule of programme shall be approved by the Engineer in charge.

The submission for approval of such programme or the furnishing of such particulars shall not relieve the contractor of any of the duties or responsibilities under the contract. This is without prejudice to the right of Project Engineer cum Estate Officer to take action against the contractor as per terms and conditions of the agreement.

11) QUALITY ASSURANCE:

i. The contractor shall establish, document and maintain and effective quality assurance system as outlined in the specifications and various codes and standards.
ii. The Bidder/OEM shall understand scope of the work, drawing, specifications and standards etc. attached with the tender or to be followed and shall seek clarification, if any before submission of the tender
iii. The quality assurance system plans / procedures / method statement to be followed shall be furnished in the form of quality assurance manual. It should cover quality assurance, plan procedure, specifications, frequency of the inspection, testing, acceptance criteria, method of sampling, testing etc. to be followed for quality.
iv. The approval of quality assurance does not absolve the contractor of the contractual obligations towards executing the work as laid down in the specification of the work.
v. The contractor shall produce quality control records in the formats approved by Engineer-in-charge in the quality assurance plan.
vi. The contractor shall ensure the enforcement of quality assurance plan by all his specialized agencies as approved. The Project Engineer cum Estate Officer reserves the right to inspect, witness, review any stages of the work at shop / site as deemed necessary for quality assurance and / or timely completion of work.
vii. The contractor shall procure required materials in advance so that there is sufficient time for testing of the materials and clearance of the same before use in the work. The contractor shall provide at his own cost suitable measuring arrangements at site for checking the dimensions as may be necessary for execution of work.

12) TESTING OF MATERIALS

All the required tests as per Technical Specification should be conducted at the cost of the contractor, unless specifically mentioned otherwise. All materials which are to be tested at the manufacturer's works shall satisfactorily pass the tests in presence of the authorized representative of IISC before being used in the work. In case all requisite testing facilities are not available at the manufacturer's premises, such testing shall be conducted at approved laboratory. The charges for such testing shall be borne by the contractor.

6. GENERAL CONDITIONS

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.

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

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

6.3 "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.

6.4 "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.

6.5 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.

6.6 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.

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

6.8 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.

6.9 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.

6.10 "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.

6.11 "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.

6.12 "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.

6.13 "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.

6.14 "Month" shall mean a Calendar month.

6.15 "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.

6.16 **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.

6.17 **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.

6.18 **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.

6.19 **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.

6.20 **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.

6.21 **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.

6.22 **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.

6.23 **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

6.24 **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.

6.25 **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.

6.26 **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.

6.27 **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.

6.28 **SAMPLE APPROVAL:**

The bidder / OEM shall [at their own expense] organize the factory visits for the Tender Evaluation Committee Members, as and when they decide to visit. Committee will visit the manufacturing factories of the bidders and evaluate the capability for manufacturing, powder coating, Inhouse testing etc. and inspect samples of the quoted products. Technical bids will be evaluated based on this.

6.29 **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.

6.30 **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.

6.31 **PROJECTPROGRAMME 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.

6.32 **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.

6.33 **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.

6.34 **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.

6.35 **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.

6.36 **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.

6.37 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, GST, 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.

6.38 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.

6.39 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.

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

6.41 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.

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

6.43 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.

6.44 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.

6.45 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.

6.46 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.

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

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

6.49 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.

6.50 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.

6.51 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.

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

6.53 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.

6.54 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.

6.55 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.

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

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

6.58 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.

6.59 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.

6.60 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.

6.61 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.

6.62 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.

6.63 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 Under

taking 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.

6.64 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.

6.65 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.

6.66 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.

6.67 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.

6.68 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.

6.69 DUTIES AND LEVIES :

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

6.70 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.

6.71 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.

6.72 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.

6.73 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.

6.74 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.

6.75 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.

6.76 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.

6.77 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.

6.78 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 Engineers 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 noncompliance 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 subagencies 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.

6.79 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 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.

6.80 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 Aluminum 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.

6.81 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.

6.82 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.

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

6.84 **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-incharge, 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.

6.85 **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.

6.86 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.

6.87 **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.

6.88 **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.

6.89 **Labour Statistics**:

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

6.90 **Execution of work during night time:**

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.

6.91 **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 overloaded 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.

6.92 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.

6.93 **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.

6.94 **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.

6.95 **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-inCharge/Consultant.

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

6.96 **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.

6.97 **PERFORMANCE GUARANTEE**

The contractor shall indemnify the Institute against defective materials and workmanship for a period of Five years after completion of the work.

6.98 **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.

6.99 The Project Engineer reserves the right 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 subcontractor 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 FINES 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 Fines:

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 FINES 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 15 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 subcontractors 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 6 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	F.S.D. Percentage
(i)	(ii)	(iii)

(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 FSD 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 + FSD will be limited to 7.5% of the contract value.

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

No Interest will be paid on EMD / Further 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.

- EMD paid along with the tender shall be refunded only after the completion of the defect liability period without any interest.
- 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 a Scheduled Commercial Bank in favour of the Registrar, Indian Institute of Science, payable at Bangaloreamountingto**3%**ofthetotalcontractvaluevalidupto 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 &FSD):

i) EMD paid by the contractor at the time of tendering and FSD 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 a Scheduled commercial 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 **three years** 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

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.

(d) Apportioning of responsibility for the 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.

(e) 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 (h)** 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.

(f) 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.

(g) 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.

(h) 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 half percent of the contract value of the balance work assessed according to the programme, 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.

(i) 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.

(j) 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 subclauses (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 labourer's welfare fund created by the Government of Karnataka will be effected in the running account bills of the contractor.

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

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. 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 :

(k) 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.

(l) 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.

The order of preference in case of any discrepancy as indicated to be read as following:
a) Nomenclature of item as per Bill of Quantities.
b) Additional specifications, particular specifications & special conditions. c) General Conditions.
d) Tender drawings and specifications mentioned in drawings.
e) Tender specifications.
f) Indian Standard specifications of BIS.
g) Sound engineering practice as per directions of Project Engineer cum Estate Officer .
h) Manufactures specifications.

A reference made to any Indian Standard specifications in these documents reference to the latest version of that standard, including such revisions /amendments as issued by Bureau of Indian standards upto last date of receipt of tender. The contractor shall keep at his own cost all such publications of relevant Indian Standards applicable to the work at site.

(m) 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.

(n) 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

(i) 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: -

iii) Increase or decrease the quantity of any work included in the contract. **iv)** Omit any such work.

v) Change the character or quality or kind of any such work, **vi)** Change the levels, lines, positions and dimensions of any part of the work, **vii)** Executeadditionalworkofanykindnecessaryforthecompletionoftheworksand **viii)** 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

(ii) 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.

(iii) **(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 a respecified 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. TIME LIMITS UNFORSEEN CLAIMS

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 there upon suspend or stop the work totally or partially as the case may be. In any such case, except as provided here under, 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 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. <u>ACTION AND PENALTY IN CASE OF BAD WORK</u>

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 reexecute 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. <u>WORK TO BE OPEN TO INSPECTION - CONTRACTOR OR RESPONSIBLE AGENT TO BE PRESENT</u>

(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:

(i) One qualified Graduate Engineer &One qualified Diploma Engineer, when the cost of the work to be executed up to 1Crore,

(ii) Two qualified Graduate Engineer &Three qualified Diploma Engineer, when the cost of the work to be executed from 1 Crore to 10 crores.

(iii) Three qualified Graduate Engineer & Six qualified Diploma Engineer, when the cost of the work to be executed above 10 crores.

(iv) 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.

The technical staff so employed, should be available at site whenever required by Engineer in-charge to take instructions.

(c) 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.

(d) IftheContractorhimselfpossessestherequiredqualificationandisavailableatthesiteforreceivingi n structionsfromtheProjectEngineercumEstateofficerandothercompetentauthorityvide**subclaus e(a)**aboveitwill notbenecessaryforthetechnicalstafftobeavailableatsiteforreceivinginstructions.

Clause 15. <u>NOTICE TO BE GIVEN BEFORE WORK IS COVERED UP</u>

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 AFTERCERTIFICATE 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., ANDIS LIABLE FOR DAMAGES ARISINGFROM 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 black list 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. <u>SUM PAYABLE BY WAY OF COMPENSATION TO BE CONSIDEREDAS REASONABLE COMPENSATIONWITHOUT REFERENCE TO ACTUAL LOSS.</u>

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. <u>SETTLEMENT OF DISPUTES -TIME LIMIT FOR DECISION</u>

(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 in 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's decision 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 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. CONTRACTOR TO PAY COMPENSATION UNDER WORKMEN'S COMPENSATION ACT.

(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: -

(i) 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.

(ii) 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.

(iii) Adequate provision shall be made for prompt first-aid treatment of all injuries likely to be sustained during the course of the work.

Clause 26. Minimum age of persons employed by contractor (a): No contractor shall employ

(i) Anypersonwhoisunderageof18years.

(ii) Whodoesnotproduceavalidcertificateofvaccinationagainstepidemicdeceasesinrespectofhimself /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 INBORROW 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 GST 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, or duties 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:

- Preparing 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.
- 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.
- Attendingweeklyorasscheduledsafetymeetingsatsiteconductedbythesitesafetyrepresentati v eofproject manager

- 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.
- 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 & FSD):

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. PENALTY FOR DELAY

(a) Written Order to Commence Work

After acceptance of the tender, The Project Engineer/Registrar 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/Registrar. 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 to the agreement.

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

The Project Engineer cum Estate Officer, CCMD shall review the progress of all works with the contractor during the first fortnight of every month. Such a review shall take into account the programme fixed for the previous month, obligations on the part of the Contractor.

(d) ApportioningofresponsibilityfordelaybetweenContractorandInstitute.

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, CCMD and the Contractor.

Clause 34. <u>BAR CHART / CPM CHART:</u>

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

9. THE ARTICLES OF AGREEMENT

This Agreement is made at Bangalore, on this ----- **day of ------** in the year ----------
-
---------- .

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**, (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 ---------- , 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

A. WHEREAS the IISc is desirous of getting the work **of "Supply, Installation, Testing and Commissioning of laboratory furniture , Modular furniture & Unified AV solution for MBU, IISc Bangalore** (hereinafter called the work) executed by the Contractor at the rates quoted by him amounting to **Rs. ----------** (Rupees ---------- only) inclusive of all Taxes which is ----
---% 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

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 **5 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 proper 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 one-eighth of the whole work before, one-fourth of the whole time allowed under the contract has elapsed, three-eighths, of the work before one-half of such time has elapsed, and three-fourths of the work before three-fourths 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 Purchase Committee 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 (7.5) 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 Purchase Committee or its authorized representative 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 Purchase Committee and the Contractor.

6. 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 Purchase Committee, 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 Purchase Committee (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 Purchase Committee or becomes insolvent.

The Purchase Committee, on behalf of the Director of the Institute shall have powers: -

a) To determine or rescind the Contract as aforesaid (in which termination or recession notice in writing to the Contractor underhand of the Purchase Committee 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.

(a) To employ labour paid by the Institute and supply materials to carry out the work or any part by debiting the Contractor with the cost of the labour and the price of the materials (of the amount of which cost and price certified by the Purchase Committee, 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 Purchase Committee 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.

(b) 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 Purchase Committee 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 Purchase Committee, 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 Purchase Committee 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) Purchase 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 Purchase Committee 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, lawsuits, 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, lawsuits, 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 with 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 fulfil 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 party.

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.

24. **COURTS:**

Courts of appropriate jurisdiction situated in Bangalore City shall have exclusive jurisdiction

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:
Witness 1:

Signed by for and on behalf of the said Contractor.

(Company Name)

In the presence of:

Signed by for and on behalf of the IISc.

Witness 2:

REGISTRAR
INDIAN INSTITUTE OF SCIENCE BANGALORE-12

INDIAN INSTITUTE OF SCIENCE, BANGALORE-12

ITEM RATE TENDER FOR WORK

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.

MEMORANDUM OF WORK

1.	General Description	**"Supply, Installation, Testing and Commissioning of laboratory furniture , Modular furniture & Unified AV solution for MBU, IISc Bangalore**
2.	Estimated Cost	
3.	Earnest Money	
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	N/A
6.	Further Security Deposit	**5.5** % on the running account bills and final bill in addition to Earnest Money Deposit. When the F.S.D. deducted from the RA bills of the Contractor @ 2 % 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 Scheduled Commercial Bank only for an equal amount in the prescribed form. The bank guarantee should be valid till the completion of the defect liability period.
5.	Time allowed for the completion of work in all respects from the date of commencement of work	120 days
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 twelve 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 Bill.	Four weeks from the date of submission of each 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.

I/We hereby agree to abide by and fulfil 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. 8,00,000** (**Rupees Eight lakhs only)** has been deposited by demand 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 **xxrd day of xxxxxx 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.

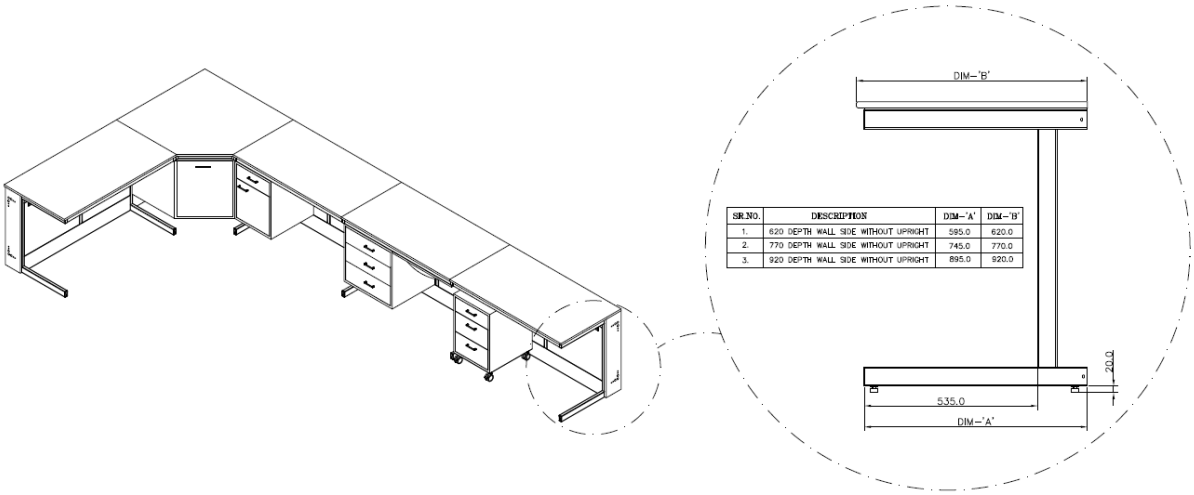
REGISTRAR
INDIAN INSTITUTE OF SICENCE
BANGALORE.

11. TECHNICAL SPECIFICATIONS, DRAWINGS AND COMPLIANCE

TECHNICAL SPECIFICATIONS FOR LABORATORY FURNITURE, FUME HOODS, MODULAR FURNITURE AND UNIFIED AV SOLUTION.

11.1 TECHNICAL SPECIFICATIONS - C-FRAME MODULAR FURNITURE SYSTEM

All C-Frames assemblies should be manufactured from standard hollow metal sections; confirming to I.S. Code 7138:1973 (Indian Standard specification for steel tubes for furniture) and all sheet metal components should be of CRCA confirming to IS Code 513:1994.
The suspended under-bench welded units should be supported on heavy-duty steel frames fully carrying the load of worktops. Its superior strength combined with aesthetically appealing end caps shall give maximum flexibility and modularity while making a layout. C-frame should be constructed from a rectangular pipe with a cross section of 60mm x 30mm and should be 2 mm thick and should be without a vertical front leg to give a clean look. This shall provide more knee space or leg space and would facilitate uninterrupted lateral movement of the under-bench units within the bench run. The C-frame legs should be supplied with adjustable feet (tolerance from -5mm to +20mm) to correct the unevenness of flooring. The tubular enclosed type construction shall discourage dust accumulation and unwanted development of bacteria & fungus.



SR.NO.	DESCRIPTION	DIM–'A'	DIM–'B'
1.	620 DEPTH WALL SIDE WITHOUT UPRIGHT	595.0	620.0
2.	770 DEPTH WALL SIDE WITHOUT UPRIGHT	745.0	770.0
3.	920 DEPTH WALL SIDE WITHOUT UPRIGHT	895.0	920.0

Drainage gradient should be well adjusted throughout the length of table and should have horizontal supports for drainage systems. The structure should have a removable back panel to provide access for maintenance throughout the length of table. The C-frame shall also have skirting at back bottom side. It should be suitable for sitting and standing nominal heights of 750mm & 900mm respectively. The nominal table depths should be 620 mm, 770 mm and 920 mm for wall side and 1240mm, 1540mm, 1840mm for Island tables. The Corner Units shall fit well with 770mm & 920mm table depths. All frame-work should be pre-treated with superior pure epoxy powder coated finish.

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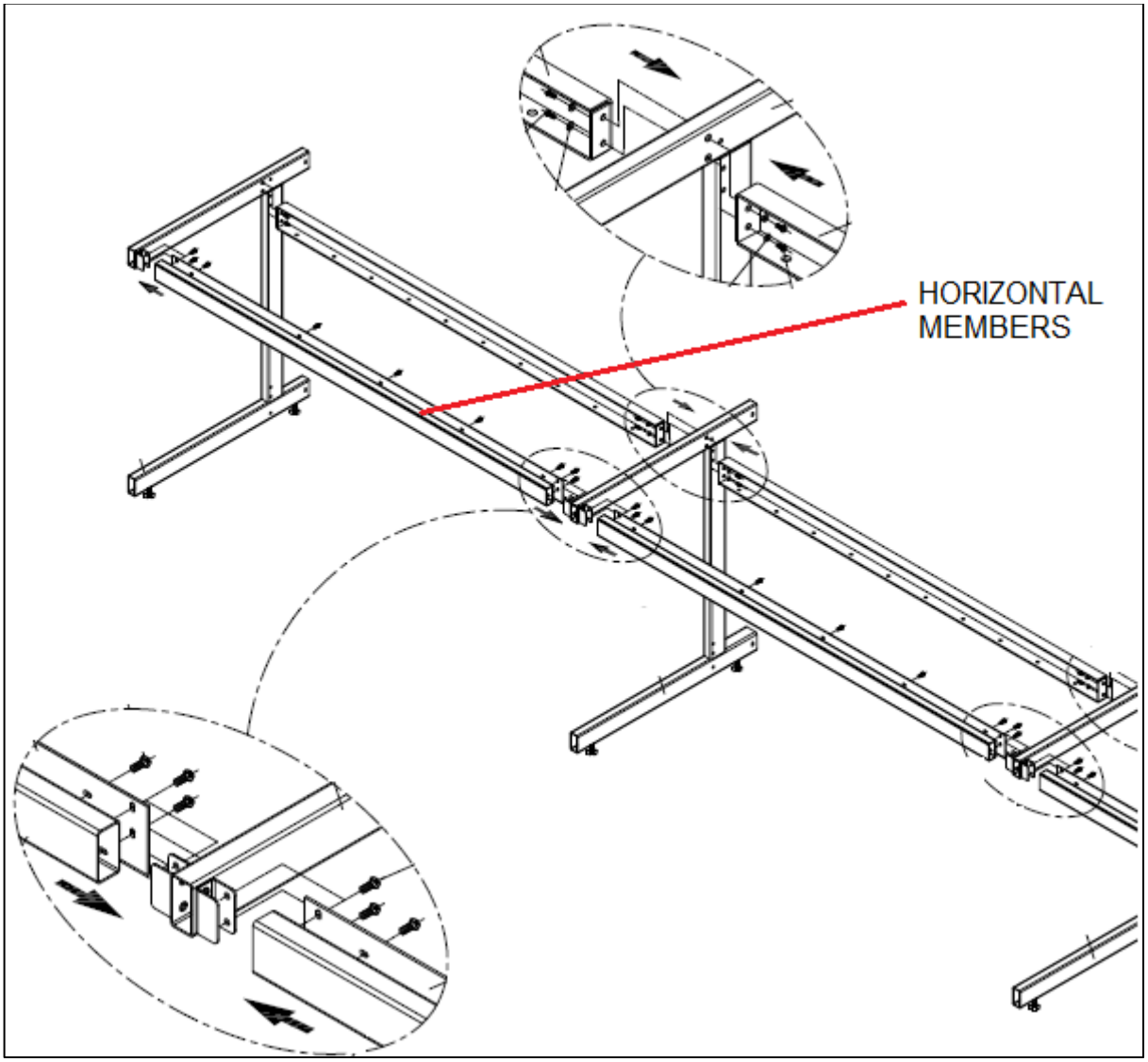
All frameworks should undergo 9 tank pretreatment process including 3 stages iron phosphating process with superior pure epoxy powder coated finish of thickness 60-80 microns.

Process names:

1. Hot Water Rinse -> 2. Knock off Degreasing -> 3. Degreasing I -> 4. Degreasing II -> 5. Water rinse I -> 6. Water rinse II -> 7. Iron Phosphating -> 8. Water rinse III -> 9. Passivation

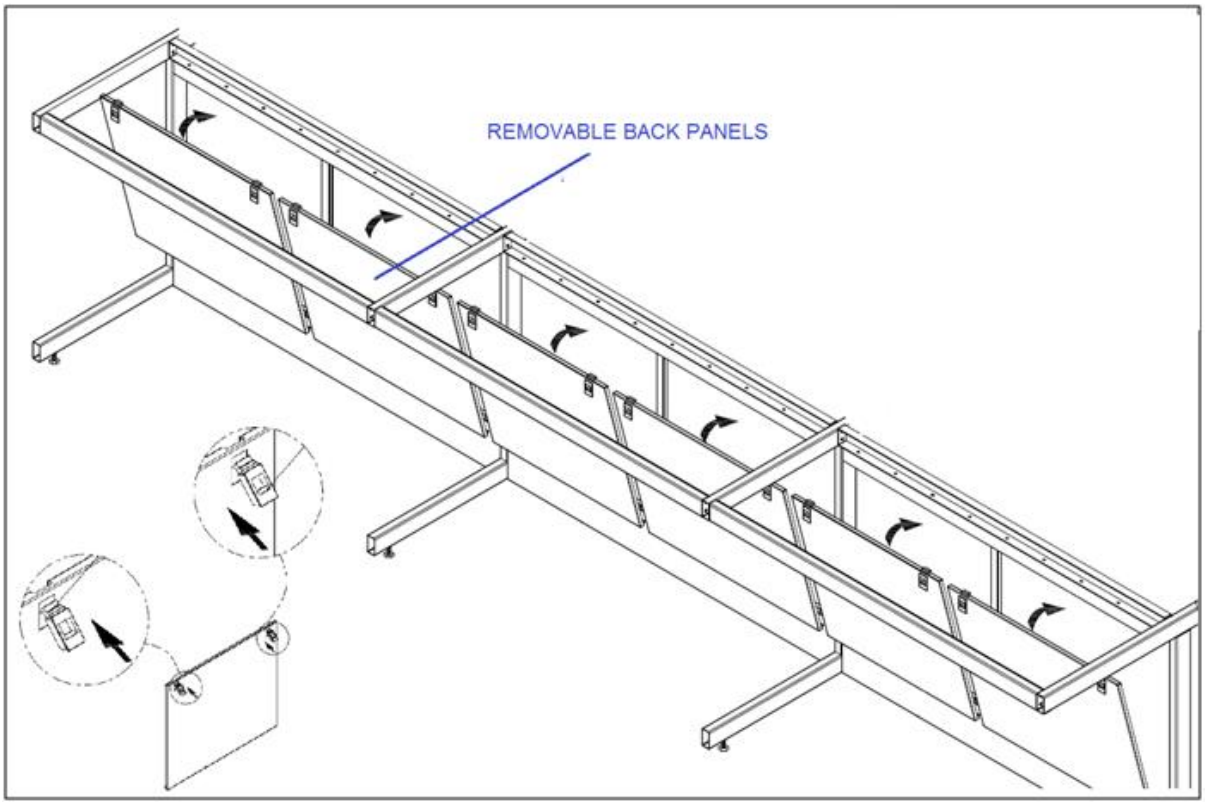
HORIZONTAL MEMBERS

These should be made from rectangular pipes of 2mm thickness. Cross-sectional dimensions of the pipe should be 60 x 30 x 2 mm. They should be made of CRCA MS and coated with pure epoxy powder. These connect two C-Frames together as shown using C-clamps/U-clamps. Together with the C-Frames and Horizontal Members connected together, the skeletal structure of the workbench is formed on which the worktop can be placed and the hanging-type storage cabinets can be suspended. Horizontal Members determine the width of the lab workbench as they form the member (distance) between two adjacent C-Frames. They should be available in various widths of 600, 750, 900, 1050, 1200, 1350, 1500, 1650, and 1800



Removable Back Panels

These cover panels cover the service lines that run behind them. These should be easily removed (unclipped) and the service line be accessed for maintenance. This allows the equipment on the workbench to remain undisturbed. They should be made of CRCA MS with pure epoxy powder coating and are of 1mm thickness



COVER PANELS

All side cover panels and back panels, filler panels should be made from CRCA MS panels of 1.0mm thickness with pure epoxy powder coating

MASTER UPRIGHT

Master Upright should be of dimensions: 300 x 150 x 1.2 mm. It should be made from 1.2mm thick CRCA MS with pure epoxy powder coating. It should have an open-able door for easy service maintenance and should extend till the false ceiling

VERTICAL UPRIGHT

The Upright system will form the backbone for internal distribution of GDS, Electrical supply systems Shelves and Top Units and should be constructed from 16 gauge CRCA formed steel panels with removable covers. Shelf height should be adjusted with an increment of 1inch / 25mm. Upright should also provide support to Top Units for hanging thus eliminating the danger of fixing the Top Units on non-rigid partition wall / panels. Uprights should be supplied with adjustable feet from -5mm to +20mm.

REAGENT SHELVES

Fixed-Type reagent shelves should be provided. It should be a complete modular design consisting of 2 stage horizontal storage shelves made of CRCA MS with pure epoxy powder coating and having cutouts for electrical switches and sockets. It should have provision for placing Granite pieces (as per requirement in BOQ)

WELDED UNDER-BENCH STORAGE CABINETS

Welded under-bench storage cabinets should be fully welded cabinet body with flush face construction with intersection of vertical and horizontal members like LH and RH side panel along with front horizontal channel, back panel and bottom panel. It should be relocated anywhere easily as it is an independent unit. Cabinet should be of square non-sharp edge construction. Doors should be assembled with SS-304 hinge assembly. A removable back panel should be provided to easily access the service lines running behind the cabinet benches. Intermediate horizontal channels should be provided between door and drawer. Shelf should be eight bend panel with 20mm height. Drawer tray should be of single piece construction. Drawer should be well supported on LH and RH ball slide suspension system. Steel door and drawer front is of double wall construction with sound dampening material filled inside. Doors should be easily removable, and hinges should be easily replaceable. Knee space panel should be in 22-gauge construction.
Storage Units to be of the following types:

1. Suspended Type
2. Castor-based Mobile Type

(depending upon the requirement in the schedule of quantity)
Dimensions: W=300/450/600/750/900 mm, D = 530mm, H = 635/485 mm. **Configurations:** 1 Shutter/ 2 Shutters + No Drawer/1 Drawer/2 Drawers/3 Drawers, **MOC:** MSCRCA: IS – 513 (1994), **Thickness:** LH/RH side panels, shutter front, Bottom panel, Top front, Drawer separator, shelf, Alignment channel should be of 1.2mm thk. Removable Back panel, Shutter cover, Fr. Rack strip, Top cover panel should be of 0.8mmthk. **Finish:** Powder coating pure epoxy, thickness 40-50 microns. **Handle: Anodized** Aluminum Recessed-Type**, CTC:** 160.0mm**. Lock: Units** have a locking facility with 180° and 10 lever cam lock mechanism (except for sink and corner unit). **Hinge:** Knuckle-butt type SS Hinge. **Screw:** SS304. Shutter should be of twin-type construction with sound dampening effect using profeel. Shutter cover should be equipped with Bump on for sound dampening. Ball Slide: 500mm Length (required only for drawer unit). Shutter should have provision of roller catch

WELDED OVER-HEAD STORAGE CABINETS

The construction should be the same as the under-bench cabinets. The height of these cabinets should be around 635mm while the depth should be around 340mm. The shutters should be available in two options: Metal shutters and Metal frame with inserted glass. There should be one height-adjustable shelf inside each cabinet. Other construction should be similar to under-bench cabinet

- Flush face construction with intersection of vertical and horizontal members like LH and RH side panel along with front horizontal channel, back panel and bottom panel.
- Cabinet should be of square-edge construction.
- Doors are assembled with SS-304 hinge assy.
- Shelf should be eight bend panel with 20mm height.
- Steel door and drawer front should be of double wall construction with sound dampening material filled inside.
- Doors should be easily removable, and hinges are easily replaceable.
- Shutters should have glass or made of metal alone depending as per BOQ.

SERVICE FITTINGS AND ACCESSORIES

Service fittings should be laboratory grade, and water faucets and valve bodies should be cast red brass alloy or bronze forgings, all fittings should be powder plated unless specified otherwise. **Service Indexes:** Fittings should be identified with service indexes in the color coding as per DIN 12920.

ELECTRICAL TRUNKING

Used for housing electrical switches and sockets, data and voice points, its top panel, bottom panel of the trunking should be made from 1.0 mm thick CRCA MS panel. It should be available in both, single sided and double-sided configurations. It should be made from CRCA MS with pure epoxy powder coating. The front surface that houses the electrical points should have a slope

LABORATORY SINK AND ACCESSORIES

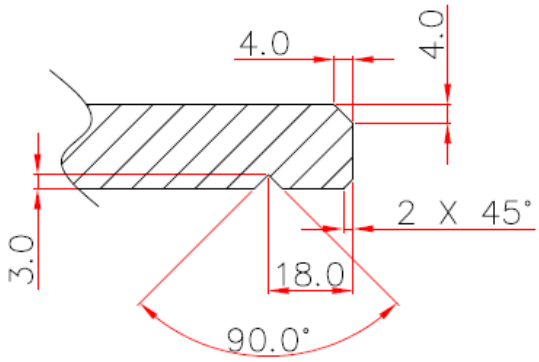
Polypropylene Molded Sinks: Made up of 5 mm thick high density and elastic poly propylene with good resistance to organic solvents. Standard bowl size (L x W x D) is 560 x 355 x 300 mm. Faucet should be 1-way type faucet of approved make

PEG BOARDS

These should be Single faced high-grade stainless-steel pegboard having a tray hole for water drainage and detachable pegs. The essence should be made up of I mm thick stainless steel (SS 304) whereas the pegs should be made up of polypropylene and should be adjustable with a minimum 10mm distance between each peg

WORKTOP

It should be 19mm (+/- 2mm) thick Jet Black Granite worktop. The exposed edges of the worktop should be chamfered and smoothened. The bottom of the worktop should be polished and there should be a V-groove throughout the length of the exposed edges to protect the cabinets from coming in contact with the spillages. The overhang on the storage cabinet is 25 mm at the front side and 30 mm at the sides. The backing material used is a neoprene mat of 6 mm thickness. A representation the worktop edges is shown as under



Powder Coating Specification: Pure Epoxy powder coating having thickness of 60-80 microns. All coated surface to follow the testing standards namely **IS 101, IS 13871, ASTM B 117**:

S.No	PRODUCT CHARACTERISTICS	SPECIFICATION
1	SHADE	As per finalized shade
2	GLOSS AT 60°	65-75 Units.
3	SCRATCH HARDNESS	3 Kg
4	CROSSCUT ADHESION	GT "0"
5	IMPACT TEST	150 kg. cm
6	DFT	50 Micron (Min)
7	CONICAL MANDREL TEST	6.35 mm

8	HOT BATH TEST	70 Degree C, 01 hour. No peel off
9	FINISH	Even, Smooth, Dust Free
10	CUPPING	6.0 mm
11	SALT SPRAY TEST	1000 Hrs

Performance Test for powder coating (Chemical Spot Test):

- *Testing Procedure:* Chemical spot tests for non-volatile chemicals shall be made by applying 5 drops of each reagent to the surface to be tested and covering with a 1-1/4" dia. watch glass, convex side down to confine the reagent. Spot tests of volatile chemicals shall be tested by placing a cotton ball saturated with reagent on the surface to be tested and covering with an inverted 2-ounce wide mouth bottle to retard evaporation. All spot tests shall be conducted in such a manner that the test surface is kept wet throughout the entire test period, and at a temperature of 77° ±3° F. For both methods, leave the reagents on the panel for a period of one hour. At the end of the test period, the reagents shall be flushed from the surface with water, and the surface scrubbed with a soft bristle brush under running water, rinsed and dried. Volatile solvent test areas shall be cleaned with a cotton swab soaked in the solvent used on the test area. Immediately prior to evaluation, 16 to 24 hours after the reagents are removed, the test surface shall be scrubbed with a damp paper towel and dried with paper towels.

- *Test Evaluation:* Evaluation shall be based on the following rating system.

  Level 0 – No detectable change.

  Level 1 – Slight change in color or gloss.

  Level 2 – Slight surface etching or severe staining.

  Level 3 – Pitting, catering, swelling, or erosion of coating (obvious and significant deterioration)

After testing, panel shall show no more than three (3) Level 3 conditions.

- *Test Reagents:*

Test No	Chemical Reagent	Test Method
1	Acetate, Amyl	Cotton ball & bottle
2	Acetate, Ethyl	Cotton ball & bottle
3	Acetic Acid, 98%	Watch glass
4	Acetone	Cotton ball & bottle

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5	Acid Dichromate, 5%	Watch glass
6	Alcohol, Butyl	Cotton ball & bottle
7	Alcohol, Ethyl	Cotton ball & bottle
8	Alcohol, Methyl	Cotton ball & bottle
9	Ammonium Hydroxide, 28%	Watch glass
10	Benzene	Cotton ball & bottle
11	Carbon Tetrachloride	Cotton ball & bottle
12	Chloroform	Cotton ball & bottle
13	Chromic Acid, 60%	Watch glass
14	Cresol	Cotton ball & bottle
15	Dichlor Acetic Acid	Cotton ball & bottle
16	Dimethylformanide	Cotton ball & bottle
17	Dioxane	Cotton ball & bottle
18	Ethyl Ether	Cotton ball & bottle
19	Formaldehyde, 37%	Cotton ball & bottle
20	Formic Acid, 90%	Watch glass
21	Furfural	Cotton ball & bottle
22	Gasoline	Watch glass
23	Hydrochloric Acid, 37%	Cotton ball & bottle
24	Hydrofluoric Acid, 48%	Watch glass
25	Hydrogen Peroxide, 3%	Watch glass
26	Iodine, Tincture of	Watch glass
27	Methyl Ethyl Ketone	Cotton ball & bottle
28	Methylene Chloride	Cotton ball & bottle

29	Mono Chlorobenzene	Cotton ball & bottle
30	Naphthalene	Cotton ball & bottle
31	Nitric Acid, 20%	Watch glass
32	Nitric Acid, 30%	Watch glass
33	Nitric Acid, 70%	Watch glass
34	Phenol, 90%	Cotton ball & bottle
35	Phosphoric Acid, 85%	Watch glass
36	Silver Nitrate, Saturated	Watch glass
37	Sodium Hydroxide, 10%	Watch glass
38	Sodium Hydroxide, 20%	Watch glass
39	Sodium Hydroxide, 40%	Watch glass
40	Sodium Hydroxide, Flake	Watch glass
41	Sodium Sulfide, Saturated	Watch glass
42	Sulfuric Acid, 33%	Watch glass
43	Sulfuric Acid, 77%	Watch glass
44	Sulfuric Acid, 96%	Watch glass
45	Sulfuric Acid, 77% and Nitric Acid, 70%, equal parts	Watch glass
46	Toluene	Cotton ball & bottle
47	Trichloroethylene	Cotton ball & bottle
48	Xylene	Cotton ball & bottle
49	Zinc Chloride, Saturated	Watch glass

** - Where concentrations are indicated, percentages are by weight.*

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11.2 TENDER SPECIFICATIONS FOR FLOOR BASED MODULAR FURNITURE SYSTEM

Floor Based Cabinet with Metal Skirting

- Welded cabinet body should be flush face construction with intersection of vertical and horizontal members like LH and RH side panel along with front horizontal channel, back panel and bottom panel.
- It should be relocated anywhere easily as it is an independent unit.
- Cabinet should of square non-sharp edge construction.
- Doors should be assembled with SS-304 hinge assembly.
- Removable back panel should be provided to easily access the service lines running behind the cabinet benches.
- Intermediate horizontal channels should be provided between door and drawer.
- Toe-space of 90mm X 90mm is provided at front-bottom side of cabinet.
- Levelers are provided for easy leveling of welded cabinet.
- Shelf should be eight-bend panel with 20mm height.
- Drawer tray should be of single piece construction. Drawer should be well supported on LH and RH ball slide suspension system.
- Steel door and drawer front should be of double wall construction with sound dampenening material filled inside.
- Doors should be easily removable, and hinges should be easily replaceable. Knee space panel should be in 22-gauge construction

- **Dimensions:** W=300/450/580/600/750/900 mm, D = 530mm, H = 875/725 mm
- **Configurations:** 1 Shutter + 1 Drawer/4 Drawers/Leg Spaces/1 Shutter/2 Shutters/3 Drawers/2 Shutters + 1 Drawer/Sink Unit + 2 Shutters
- **MOC:** MSCRCA: IS – 513 (1994)
- **Thickness:**
    - LH/RH side panels, shutter front, Bottom panel, Top front, Drawer separator, shelf, Alignment channel is of 1.2mm thk.
    - Removable Back panel, Shutter cover, Fr. Rack strip, Top cover panel is of 0.8mmthk
    - **Finish:** Powder coating pure epoxy, thickness 40-50 microns
    - **Handle:** Anodized Aluminum Recessed-Type**, CTC:** 160.0mm
    - **Lock:** Units have a locking facility with 180° and 10 lever cam lock mechanism (except for sink and corner unit)
    - **Hinge:** SS Hinge **Screw:** SS 304

Shutter should be of twin-type construction with sound dampening effect using profeel. Shutter cover should be equipped with Bump on for sound dampening. Base Moulding should be made of PVC with corner clips. Ball Slide: 500mm Length (required only for drawer unit). Shutter should have provision of roller catch.

Powder Coating Specification: Pure Epoxy powder coating having thickness of 60-80 microns. All coated surface to follow the testing standards namely **IS 101, IS 13871, ASTM B 117**:

S.No	PRODUCT CHARACTERISTICS	SPECIFICATION
1	SHADE	As per finalized shade
2	GLOSS AT 60°	65-75 Units.
3	SCRATCH HARDNESS	3 Kg
4	CROSSCUT ADHESION	GT "0"
5	IMPACT TEST	150 kg. cm
6	DFT	50 Micron (Min)
7	CONICAL MANDREL TEST	6.35 mm
8	HOT BATH TEST	70 Degree C, 01 hour. No peel off
9	FINISH	Even, Smooth, Dust Free
10	CUPPING	6.0 mm
11	SALT SPRAY TEST	1000 Hrs

Performance Test for powder coating (Chemical Spot Test):

- *Testing Procedure:* Chemical spot tests for non-volatile chemicals shall be made by applying 5 drops of each reagent to the surface to be tested and covering with a 1-1/4" dia. watch glass, convex side down to confine the reagent. Spot tests of volatile chemicals shall be tested by placing a cotton ball saturated with reagent on the surface to be tested and covering with an inverted 2-ounce wide mouth bottle to retard evaporation. All spot tests shall be conducted in such a manner that the test surface is kept wet throughout the entire test period, and at a temperature of 77° ±3° F. For both methods, leave the reagents on the panel for a period of one hour. At the end of the test period, the reagents shall be flushed from the surface with water, and the surface scrubbed with a soft bristle brush under running water, rinsed and dried. Volatile solvent test areas shall be cleaned with a cotton swab soaked in the solvent used on the test area. Immediately prior to evaluation, 16 to 24 hours after the reagents are removed, the test surface shall be scrubbed with a damp paper towel and dried with paper towels.

- *Test Evaluation:* Evaluation shall be based on the following rating system.

  Level 0 – No detectable change.

  Level 1 – Slight change in color or gloss.

  Level 2 – Slight surface etching or severe staining.

  Level 3 – Pitting, catering, swelling, or erosion of coating (obvious and significant deterioration)

After testing, panel shall show no more than three (3) Level 3 conditions.

- *Test Reagents:*

Test No	Chemical Reagent	Test Method
1	Acetate, Amyl	Cotton ball & bottle
2	Acetate, Ethyl	Cotton ball & bottle
3	Acetic Acid, 98%	Watch glass
4	Acetone	Cotton ball & bottle
5	Acid Dichromate, 5%	Watch glass
6	Alcohol, Butyl	Cotton ball & bottle
7	Alcohol, Ethyl	Cotton ball & bottle
8	Alcohol, Methyl	Cotton ball & bottle
9	Ammonium Hydroxide, 28%	Watch glass
10	Benzene	Cotton ball & bottle
11	Carbon Tetrachloride	Cotton ball & bottle
12	Chloroform	Cotton ball & bottle
13	Chromic Acid, 60%	Watch glass
14	Cresol	Cotton ball & bottle
15	Dichlor Acetic Acid	Cotton ball & bottle
16	Dimethylformanide	Cotton ball & bottle
17	Dioxane	Cotton ball & bottle
18	Ethyl Ether	Cotton ball & bottle
19	Formaldehyde, 37%	Cotton ball & bottle
20	Formic Acid, 90%	Watch glass
21	Furfural	Cotton ball & bottle

22	Gasoline	Watch glass
23	Hydrochloric Acid, 37%	Cotton ball & bottle
24	Hydrofluoric Acid, 48%	Watch glass
25	Hydrogen Peroxide, 3%	Watch glass
26	Iodine, Tincture of	Watch glass
27	Methyl Ethyl Ketone	Cotton ball & bottle
28	Methylene Chloride	Cotton ball & bottle
29	Mono Chlorobenzene	Cotton ball & bottle
30	Naphthalene	Cotton ball & bottle
31	Nitric Acid, 20%	Watch glass
32	Nitric Acid, 30%	Watch glass
33	Nitric Acid, 70%	Watch glass
34	Phenol, 90%	Cotton ball & bottle
35	Phosphoric Acid, 85%	Watch glass
36	Silver Nitrate, Saturated	Watch glass
37	Sodium Hydroxide, 10%	Watch glass
38	Sodium Hydroxide, 20%	Watch glass
39	Sodium Hydroxide, 40%	Watch glass
40	Sodium Hydroxide, Flake	Watch glass
41	Sodium Sulfide, Saturated	Watch glass
42	Sulfuric Acid, 33%	Watch glass
43	Sulfuric Acid, 77%	Watch glass
44	Sulfuric Acid, 96%	Watch glass
45	Sulfuric Acid, 77% and Nitric Acid, 70%, equal parts	Watch glass

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46	Toluene	Cotton ball & bottle
47	Trichloroethylene	Cotton ball & bottle
48	Xylene	Cotton ball & bottle
49	Zinc Chloride, Saturated	Watch glass

** - Where concentrations are indicated, percentages are by weight.*

11.3 TECHNICAL SPECIFICATIONS - FUME HOODS

Fume hoods should be of complete KD (Knock down) construction with airfoil design to insure maximum operating efficiency. Foil sections at the front facials of the hood should minimize eddying of air currents at the hood face and the rear baffle system should minimize turbulence in the upper portion of the hood interior.
Test Method – The hood should be tested by a third party as per the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standard 110-1995 and EN-14175.

Dimensions – 1200mm W x 900mm D x 1800mm H

Superstructure Frame – It should be a free-standing rigid panel structure of steel (G.I.)

Interior Walls - Double wall ends, not more than 6" wide, should be provided to maximize interior working area. The area between the double wall ends should be closed to house the remote-control valves. Cut-outs should be provided inside the fume hood for service line accessibility. The same to have a cover with a fastener free design. The vertical fascias shall contain the required service controls, electrical switches and receptacles.

Airfoil - A streamlined airfoil should be integral at the bottom of the hood opening on bench and distillation hoods. This foil shall provide a nominal 20mm open space between the foil and the top front edge of the work surface to direct an air stream across the work surface to prevent back flow of air. The sash should be provided with a separate handle which also provides for air flow when in completely closed position. The foil should be of 1.2mm steel to resist denting and flexing.

Baffles - A stable, non-adjustable baffle with a single slot on the back baffle to aid in distributing the flow of air into and through the hood. The baffle should be spaced out from the back liner and should be removable for cleaning.

Duct Collar - A 8"-10" diameter polyethylene funnel shaped rectangular duct collar should be located in the top of the hood plenum chamber.

Lighting- Two CFL tubes of 40 watts each should be provided in the fume hood. The lighting fixture should be completely outside the fume hood area.

Sash - A combination sash should be provided. The sash should have horizontal sliding glass panels in a vertical rising steel frame. The bottom of the sash frame should have a full-length metal handle. The sash track has minimum protrusion to avoid any kind of turbulence. The sash should be counterbalanced with a weights to prevent tilting and binding during operation. The glass panels should be 5mm toughened glass mounted in an levelled channel with roller for smooth operation.

Plumbing Services - Utility services like Vacuum, Nitrogen, Compressed Air & Raw water (as per Schedule of Quantity) shall consist of remote-control valves as selected located within the end panels, controlled by in and out facility with flexible hose passing through the side panels of the hood, with color coded plastic handles. Interior fitting for gases and water should be with powder coated brass. All gas valves for regular lab gases to have standard needle valve and push and turn type arrangement for all burning gases should be supplied. All supplied valves to clear the following pressure test conditions: Gas Fittings – 7 bar, Water fittings – 10 bar.
Electrical Services – The hood superstructure should be fully wired and should have a control box with MCB blower starter all safety devices like trip etc. Inlet should be of 3 phase power supply and the whole electrical should be of plug and play type. It also has 4 nos. electrical sockets and switches of Northwest make (230V, 5/16 A, 50 Hz)
Liner – Interior liner panels should be 6 mm thick Phenol resin based industrial laminate.

Lattice Rod Assemblies - 12mm diameter epoxy rods should be clamped with the PP clamps to form a lattice arrangement to hold the test samples and rotors within the fume hood.

Centrifugal Blower – Silent high efficiency remote blower consisting of continuous rating motor and chemical resistant impellar. The blower should be designed to give a face velocity at safe working height as per the international safe velocity norms. (ANSI/AIHA Z9.5). The blower body should be polypropylene UV treated, high density and chemical (corrosion) resistant and mounted on a metallic stand.

Ducting – Rigid Ducting of PP (Polypropylene) + FRP (Fibre Reinforced Polyester) and flexible ducting with flanges, bends, damper transitions, clamps etc. Flexible joint should be provided in the ducting in order to avoid transmitting the blower vibrations to the hood. A weatherproof rain cowl is provided at the outlet of blower.

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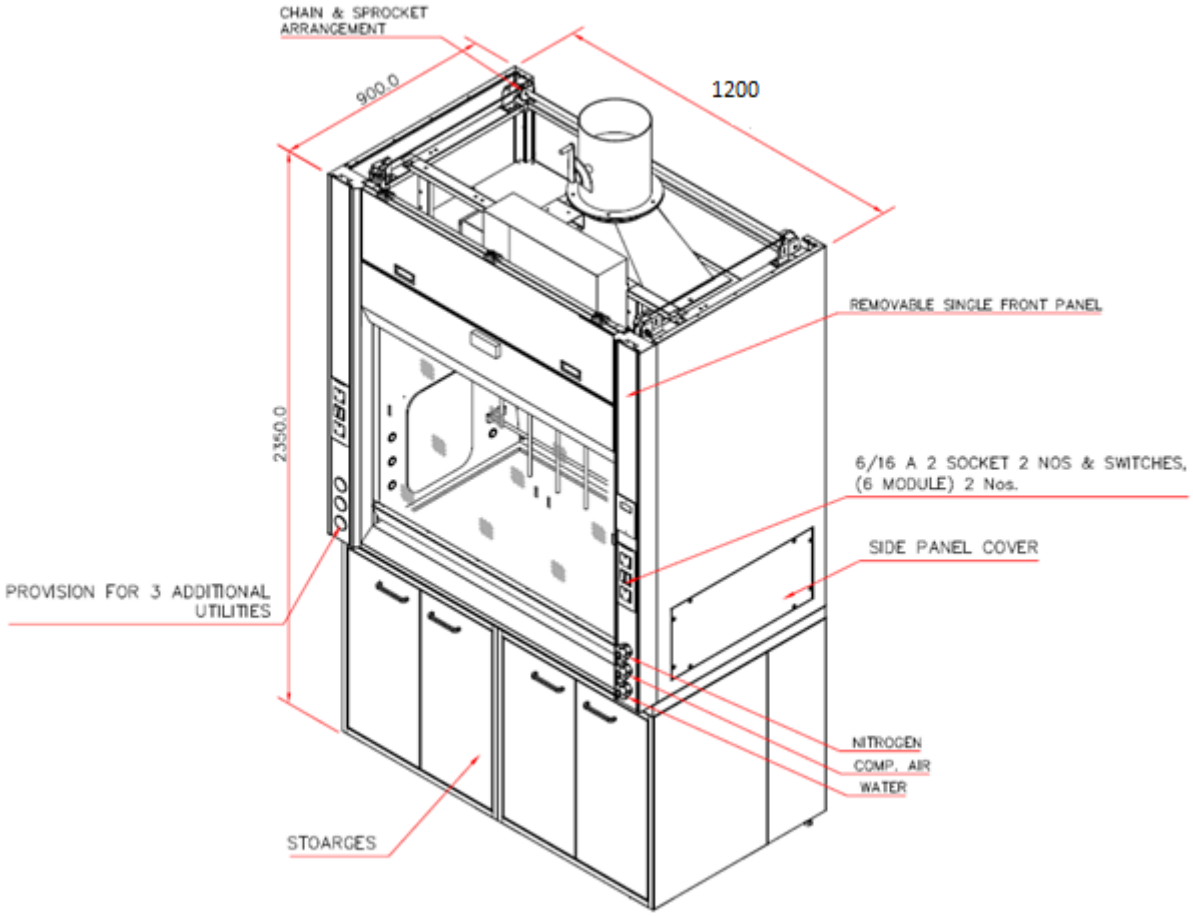

(Indicative drawing of the Fume hood)

PP Made Base Cabinets –Storage cabinets are designed to safely store highly corrosive acids. With a full PP construction, the cabinets are completely protected from corrosion, making them suitable for laboratory workspaces dealing with aggressive chemicals.

PP made base storage cabinets are designed to safely store highly corrosive acids. With a full PP construction, the cabinets are completely protected from corrosion, making them the preferred choice in labs and workspaces dealing with aggressive chemicals. It provides you with a storage solution that easily outperforms the metal and wooden storages.

Cabinets should have third party certification for Chemical Spot Test for 49 chemicals listed in SEFA standards and used across various industries. The cabinet should be designed to be fully ventilated ensuring air circulation and preventing a build-up of dangerous fumes within the cabinet. The shelves comprise of removable height adjustable collection trays that are leak-proof, enhancing the safety factor of the storage units.

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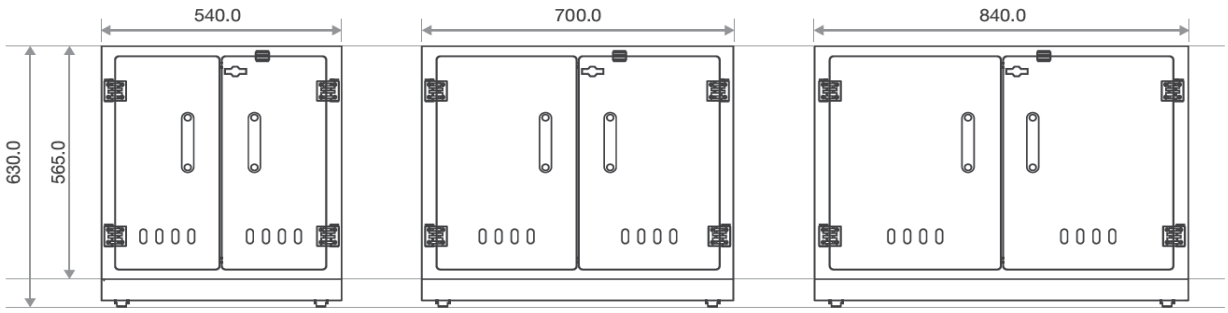
Dimensions

All dimensions in mm I Cabinet Depth = 530 mm



Ceiling Enclosures - Use to enclose space between front top and ceiling of Concept fume hood superstructure also provides enclosure for raised sash.

Transition – Used to connect fume hood with ducting. They are designed to reduce the static pressure and are made up of Polypropylene of 6 mm thickness.

Work Surface – Standard hood work surface should be 18mm thick jet-black granite made in the form of a watertight pan, not less than 7 mm deep to contain spillage. Worktop will have oval shaped 102 mm X 175 mm 'PP' Cup-Sink for drainage. Top should be manufactured at the same manufacturing location as the fume hood to assure proper cut-out alignment and coordinated shipping. The work surface and cup drain should be available in black.

Powder Coating Specification: Pure Epoxy powder coating having thickness of 60-80 microns. All coated surface to follow the testing standards namely **IS 101, IS 13871, ASTM B 117**:

S.No	PRODUCT CHARACTERISTICS	SPECIFICATION
1	SHADE	As per finalized shade
2	GLOSS AT 60°	65-75 Units.
3	SCRATCH HARDNESS	3 Kg
4	CROSSCUT ADHESION	GT "0"
5	IMPACT TEST	150 kg. cm
6	DFT	50 Micron (Min)
7	CONICAL MANDREL TEST	6.35 mm
8	HOT BATH TEST	70 Degree C, 01 hour. No peel off
9	FINISH	Even, Smooth, Dust Free
10	CUPPING	6.0 mm
11	SALT SPRAY TEST	1000 Hrs

Performance Test for powder coating (Chemical Spot Test):

- *Testing Procedure:* Chemical spot tests for non-volatile chemicals shall be made by applying 5 drops of each reagent to the surface to be tested and covering with a 1-1/4" dia. watch glass, convex side down to confine the reagent. Spot tests of volatile chemicals shall be tested by placing a cotton ball saturated with reagent on the surface to be tested and covering with an inverted 2-ounce wide mouth bottle to retard evaporation. All spot tests shall be conducted in such a manner that the test surface is kept wet throughout the entire test period, and at a temperature of 77° ±3° F. For both methods, leave the reagents on the panel for a period of one hour. At the end of the test period, the reagents shall be flushed from the surface with water, and the surface scrubbed with a soft bristle brush under running water, rinsed and dried. Volatile solvent test areas shall be cleaned with a cotton swab soaked in the solvent used on the test area. Immediately prior to evaluation, 16 to 24 hours after the reagents are removed, the test surface shall be scrubbed with a damp paper towel and dried with paper towels.

- *Test Evaluation:* Evaluation shall be based on the following rating system.

  Level 0 – No detectable change.

  Level 1 – Slight change in color or gloss.

  Level 2 – Slight surface etching or severe staining.

  Level 3 – Pitting, catering, swelling, or erosion of coating (obvious and significant deterioration)

After testing, panel shall show no more than three (3) Level 3 conditions.

- *Test Reagents:*

Test No	Chemical Reagent	Test Method
1	Acetate, Amyl	Cotton ball & bottle
2	Acetate, Ethyl	Cotton ball & bottle
3	Acetic Acid, 98%	Watch glass
4	Acetone	Cotton ball & bottle
5	Acid Dichromate, 5%	Watch glass
6	Alcohol, Butyl	Cotton ball & bottle
7	Alcohol, Ethyl	Cotton ball & bottle

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8	Alcohol, Methyl	Cotton ball & bottle
9	Ammonium Hydroxide, 28%	Watch glass
10	Benzene	Cotton ball & bottle
11	Carbon Tetrachloride	Cotton ball & bottle
12	Chloroform	Cotton ball & bottle
13	Chromic Acid, 60%	Watch glass
14	Cresol	Cotton ball & bottle
15	Dichlor Acetic Acid	Cotton ball & bottle
16	Dimethylformanide	Cotton ball & bottle
17	Dioxane	Cotton ball & bottle
18	Ethyl Ether	Cotton ball & bottle
19	Formaldehyde, 37%	Cotton ball & bottle
20	Formic Acid, 90%	Watch glass
21	Furfural	Cotton ball & bottle
22	Gasoline	Watch glass
23	Hydrochloric Acid, 37%	Cotton ball & bottle
24	Hydrofluoric Acid, 48%	Watch glass
25	Hydrogen Peroxide, 3%	Watch glass
26	Iodine, Tincture of	Watch glass
27	Methyl Ethyl Ketone	Cotton ball & bottle
28	Methylene Chloride	Cotton ball & bottle
29	Mono Chlorobenzene	Cotton ball & bottle
30	Naphthalene	Cotton ball & bottle
31	Nitric Acid, 20%	Watch glass

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32	Nitric Acid, 30%	Watch glass
33	Nitric Acid, 70%	Watch glass
34	Phenol, 90%	Cotton ball & bottle
35	Phosphoric Acid, 85%	Watch glass
36	Silver Nitrate, Saturated	Watch glass
37	Sodium Hydroxide, 10%	Watch glass
38	Sodium Hydroxide, 20%	Watch glass
39	Sodium Hydroxide, 40%	Watch glass
40	Sodium Hydroxide, Flake	Watch glass
41	Sodium Sulfide, Saturated	Watch glass
42	Sulfuric Acid, 33%	Watch glass
43	Sulfuric Acid, 77%	Watch glass
44	Sulfuric Acid, 96%	Watch glass
45	Sulfuric Acid, 77% and Nitric Acid, 70%, equal parts	Watch glass
46	Toluene	Cotton ball & bottle
47	Trichloroethylene	Cotton ball & bottle
48	Xylene	Cotton ball & bottle
49	Zinc Chloride, Saturated	Watch glass

* - *Where concentrations are indicated, percentages are by weight.*

LIST OF APPROVED MAKES

Steel	TATA Steel, JINDAL Steel
Powder Coating	Kansai Nerolac, Berger Paints, Asian Paints
Fume Hood Utility Fittings	Water saver, Broen
Fume hood Air flow monitor	TEL or equivalent
Switches and Sockets, Data and LAN points	Northwest, Norisys

Locks	Hettich, Hafele, Godrej
Drawer Slides	Hettich, Hafele, Godrej
Sink (PP Sink) and water faucet	Alloyplass, Premier Polymer
Worktop	Jet Black Granite

11.4 TECHNICAL SPECIFICATIONS – Modular Furniture

SL.No	Item Description	Tender technical Specification
1	Student Chair	SEAT ASSEMBLY: The seat assembly should be made up of 1.2 ±0.1cm. thick hot-pressed plywood , upholstered with fabric upholstery covers and moulded Polyurethane foam. SEAT SIZE: 47.0 cm. (W) x 48.0 cm. (D). BACK ASSEMBLY: The back asembly. should be made of powder coated (OFT 40-60 microns) tubular frame of 0 2.54 ±0.03cm. x 0.2 ±0.016cm.thk. MS ERW tube designed with contoured lumbar support for extra comfort. The back should be upholstered using double layer spacer mesh fabric with high tenacity yarn. BACK SIZE: 46.5 cm (W) x 60.5 cm (H). HIGH RESILIENCE (HR) POLYURETHANE FOAM: The HR polyurethane foam should be molded with density =45+/-2 kg/m3 and hardness load 16 ± 2 kgf for 25% compression. ARMRESTS: The one-piece armrests should be injection moulded from black Co-polymer Polypropylene. CENTRE-TILT mechanism: The mechashould be m should be designed with the following features: • 360° revolving type. • 17° ±2° maximum tilt on pivot at center • Upright position locking. • Tilt tension adjustment. PNEUMATIC HEIGHT ADJUSTMENT: The pneumatic height adjustment has an adjustment stroke of 11.0 ±0.3cm. TELESCOPIC BELLOW ASSY: The bellow should be 3-piece telescopic type and injection molded in Black Polypropylene. PEDESTAL ASSEMBLY: The pedestal should be injection molded in black 33% glass-filled Nylon66 and fitted with 5 nos. twin wheel castors. The pedestal should be 66.3 ±0.5cm. pitch-center dia. (76.3 ±1.0cm with castors.) TWIN WHEEL CASTORS: The twin wheel castors should be injection molded in black nylon. Overall Dimensions of Chair Seat Height - min 43.3 to max 54.3cm. Height - min 89.5 to max 100.5cm. Width & Depth of Chair as measured from pedestal - Width-76.3 cm and Depth-76.3 cm.

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2	Visitor Chairs	SEAT ASSEMBLY: The seat assembly should be made up of 1.2 ±0.1cm. thick hot-pressed plywood, upholstered with fabric upholstery covers and molded Polyurethane foam. SEAT SIZE: 47.0 cm. (W) x 48.0 cm. (D) BACK ASSEMBLY: The back assembly. should be made of powder coated (OFT 40-60 microns) tubular frame of 0 2.54 ±0.03cm. x 0.2 ±0.016cm.thk. MS ERW tube designed with contoured lumbar support for extra comfort. The back should be upholstered using double layer spacer mesh fabric with high tenacity yarn. BACK SIZE: 46.5 cm. (W) x 60.5cm. (H) HIGH RESILIENCE (HR) POLYURETHANE FOAM: The HR polyurethane foam should be molded with density =45+/-2 kg/m3 and hardness load 16 ± 2 kgf for 25% compression. ARMRESTS: The one-piece armrests should be injection molded from black Co-polymer Polypropylene. TUBULAR FRAME: The powder coated (DFT 40-60. microns) tubular frame should be cantilever type & made of Ø2.54 ±0.03cm. x 0.2 ±0.016cm thick M.S.E.R.W. Tube. Overall Dimensions of Chair Seat Height - 46.5cm. Height - 93.5cm. Width & Depth of Chair as measured from pedestal - Width-61.0 cm and Depth-64.5 cm.
3	10-seater conference table	3000 X 1150 X 740.Work top--Made of 25mm thick MDFone side prelaminated board conforming to IS14587:1998 with 0.4mm PVC membrane pressed on to top and having chamfered edge. Access panels provided with soft closing hinges Understructure-The Under-structure consists of mixture of 25mm and 18mm pre-laminated twin board of E1-P2 grade and approved shade conforming to IS-12823:1990, Edge banded with matching 2 mm thick PVC lipping. Anodised aluminum alloy 63400 - WP profile is added at bottom edges for improving the aesthetics. The product has a knock-down construction. Wire Raiser-A wire raiser made of 0.8mm CRCA MS IS:513. It is epoxy polyester powder coated (DFT 40-60 microns) for flow of wires and cables. Cutout provision below Access flap at two locations for standard 8 module Anchor Roma is provided. Beside each cutout, an additional cutout with plate is provided for mounting Audio Visual Cables (eg.HDMI, VGA-A,etc).
4	Lab Stool	**SEAT ASSEMBLY:** The seat should be made up of 1.2±0.1cm thick flat plywood and with molded Polyurethane foam and should be . upholstered with replaceable synthetic leather covers. SEAT SIZE: Diameter 40.0 cm ADJUSTMENTS: 360° Revolving type BACK ASSEMBLY: The back foam should be designed with contoured Lumbar support for extra comfort. The upholstery should be available in synthetic leather. BACK SIZE: 45.0 cm (W) covered with polyurethane foam. HIGH RESILIENCE (HR) POLYURETHANE FOAM: The HR polyurethane foam should be moulded with density = 45 +/-2 kg/m3 and Hardness load 16 ± 2 kgf for 25% compression.

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		HEIGHT ADJUSTMENT: The manual height adjustment should be very easy to operate with a help of a knob. It can be easily locked at the most comfortable position. PEDESTAL ASSEMBLY: The five-prong pedestal should be fabricated from 0.2 ± 0.02 cm: thick HR sheet. (Should be. DD 1079 / HR), powder coated (DFT 40-60 microns) and fitted with an injection moulded black Polypropylene Hub Cap and 5 nos. twin wheel castors. The pedestal-should be 55.0±0.5cm pitch-circle-diameter- (65.0±-1,0cm-with-castors).-Circular-foot-ring of 052.0±0.2cm made up of 01.9±0.2 x 0.12±0.0096cm thk MS ERW Tube for foot support in High-base stool. TWIN WHEEL CASTORS: The twin wheel castors should be injection moulded in Black Nylon. Width- 65.0cm, Depth- 65.0 cm, Height- 88.0cm to 99.5cm Seat Height- 67.0 to 78.5cm
5	Compactor 1 Bay Push Pull Type 1SS 1ST 3 TM	Overall Dimensions of SS1 - Single Static 1 Bay Push Pull Type (U/C + Fittings) shall be 1200mm(W)x400mm(D)x2082mm(H). The Construction shall be rigid knock down made out of 0.8 thick CRCA steel conforming to IS: 513.Each body shall have a main unit plus and then one add on unit depending upon requirement. Each unit having 5 loading levels formed by 4 nos. adjustable shelves. The front cover having pattern of holes on the front surface for ventilation purpose. Final finish consists of epoxy polyester powder coating of approved color & shade with a Dry Film Thickness of minimum 40 microns.Shelf construction shall be with 12 bend panel made from CRCA steel 0.7 mm thick IS:513, Gr.D.Uniformly distributed load capacity of 100 Kg . Undercarriage shall have construction in welded frame CRCA sheet 2 mmthk conforming to IS:513. The movements of the system shall be Push pull configuration (TYPE-P1/TYPE-P2) : Movement of units achieved by pushing or pulling 'C' type plastic handle (mounted on each double & single movable units) & rigidly fixed at suitable height on body side. Each movable body also has an understructure with 4 nos. of antifriction ball bearings for rolling on channels. The twin moving body, i.e. TM, has 4 nos. of bearing fitted horizontally to restrict the lateral movement of the body on rail while the single moving body, i.e. SL, body has 2 nos. of a special anti-tilt bearing assembly fitted to the understructure which not only restricts lateral movement but also prevents SL from toppling. A Centralized locking arrangement is provided through Locking Stiffener mounted onto back of Single Last unit, i.e. SL body. It gets locked into the channels when all the units are brought together, and the lock is turned. The Recess handle lock is of Godrej make & placed at a height of 940mm from ground level. The locking stiffener is made of 1.2 mm thk conforming to IS: 513.Hinged doors have Recessed Die cast Handle cum lock with 3 way locking through a lever & shooting bolt. The nuts & bolts are galvanized / blackodized / Zn Plated. Also total no. of loading levels per understructure shall be 5 for SS1. Label Holder: It is an aluminium extrusion of length 396mm for SL/SS and 796mm for TM, fitted on to front cover of body. The Paper is 300GSM matt milky white sticker paper, to be inserted into the aluminium extrusion. The length of paper is 394mm for SL/SS and 794mm for TM. Over that a transparent plastic of corresponding length of 150–200-micron polythene is to be inserted.

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		Overall Dimensions of SL1 - Single Last 1 Bay Push Pull Type (U/C + Fittings) shall be 1200mm(W)x400mm(D)x2082mm(H). The Construction shall be rigid knock down made out of 0.8 thick CRCA steel conforming to IS : 513.Each body shall have a main unit plus and then one add on unit depending upon requirement. Each unit having 5 loading levels formed by 4 nos. adjustable shelves. The front cover having pattern of holes on the front surface for ventilation purpose. Final finish consists of epoxy polyester powder coating of approved color & shade with a Dry Film Thickness of minimum 40 microns.Shelf construction shall be with 12 bend panel made from CRCA steel 0.7 mm thick IS:513, Gr.D.Uniformly distributed load capacity of 100 Kg . Undercarriage shall have construction in welded frame CRCA sheet 2 mmthk conforming to IS:513. The movements of the system shall be Push pull configuration (TYPE-P1/TYPE-P2) : Movement of units achieved by pushing or pulling 'C' type plastic handle (mounted on each double & single movable units) & rigidly fixed at suitable height on body side. Each movable body also has an understructure with 4 nos. of antifriction ball bearings for rolling on channels. The twin moving body, i.e. TM, has 4 nos. of bearing fitted horizontally to restrict the lateral movement of the body on rail while the single moving body, i.e. SL, body has 2 nos. of a special anti-tilt bearing assembly fitted to the understructure which not only restricts lateral movement but also prevents SL from toppling. A Centralized locking arrangement is provided through Locking Stiffener mounted onto back of Single Last unit, i.e. SL body. It gets locked into the channels when all the units are brought together, and the lock is turned. The Recess handle lock is of Godrej make & placed at a height of 940mm from ground level. The locking stiffener is made of 1.2 mm thk conforming to IS:513.Hinged doors have Recessed Die cast Handle cum lock with 3 way locking through a lever & shooting bolts.The nuts & bolts are galvanized / blackodized / Zn Plated. Also total no. of loading levels per understructure shall be 5 for SL1. Label Holder: It is an aluminium extrusion of length 396mm for SL/SS and 796mm for TM, fitted on to front cover of body. The Paper is 300GSM matt milky white sticker paper, to be inserted into the aluminium extrusion. The length of paper is 394mm for SL/SS and 794mm for TM. Over that a transparent plastic of corresponding length of 150-200 micron polythene is to be inserted. The tie rod assembly acts as a substitute for the back panels (only in twin body) if the customer chooses to not have back panels. The assembly consists of 2 tie rods, 4 fixing brackets and 2 turnbuckles. The tie rods are fixed in a shape of 'X' between two opposite shelves. The tie rods are made of 4mm diameter rods of MS while the fixing brackets are made of 2mm thk. CRCA Steel conforming to IS: 513 Gr.D.
6	PI chair	SEAT/BACK A SSEMBLY: The seat is made up of 1.2 ± 0.1cm thk. hot pressed plywood measured.The Back is made up of injection mou1ded glass filled nylon & upholstered using Mesh fabric with high tenacity yarn. * SEAT SIZE : 47.0 cm. (W) x 51.5 cm (D) * BACK SIZE : 45.0 cm. (W) x 65.3 cm. (H) HIGH RESILIENCE (HR) POLYURETHANE FOAM: The HR polyurethane seat foam is moulded with density 45+/-2 kg/m° and hardness 16 ± 2 kgf as per IS:7888 for 25% compression.

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		ARMRESTS : The adjustable armrest is designed with the following features : • Up-Down adjustment- 8 steps (8 0±0.Scm range) • Height adjustable armrest structure which is Powder Coated & fitted with an armrest top. • Fixed Armrest Top is PU moulded over metal insert. LUMBAR SUPPORT ASSEMBLY: The Lumbar support consists of polypropylene pad with moulded polyurethane foam & covered with polyester fabric.The Height of Lumbar pad can be adjusted through two projecting knobs provided on the rear side of the pa6. Lumbar pad has an adjustment of 8.0 ± 0.5 cm in height. FRONT PIVOT SYNCHRO MECHANISM: The adjustable tilting mechanism is designed with the following features. • 360° revolving type. • Single point control. • Front-pivot for tilt with feet resting on ground ensuring more comfort. • Tilt tension adjustment. • 4-position locking with anti-shock feature. • Seat/back tilting ratio of 1:2. PNEUMATIC HEiGHT ADJUSTMENT. The pneumatic height adjustment has an adjustment stroke oi 10.0 ± 0.3 cn°. Pedestal Assembly : the pedestal is injection moulded in black 30% glass filled nylon and fitted with 5 nos. twin wheel castors. The pedestal pitch center dia is 66.1± 0.5 cm. TWIN WHEEL CASTORS: The twin wheel castors are injection moulded in black Nylon.
7	25-seater conference Table	Work Surface-Made of 25mm Thick Pre-laminated twin board of E1-P2 grade and approved shade conforming to IS-12823:1990, Edge banded with matching 2 mm thick PVC lipping.Plastic ABS access flap is provided for easy access to wires and cables. Work top is available in various shapes. Understructure-It consist of 18mm Thick Pre-laminated twin board of E1-P2 grade and approved shade conforming to IS-12823:1990, Edge banded with matching 2 mm thick PVC lipping.Aluminium alloy 63400 - WP profile is used for connecting panels together. The product has a knock-down construction. Modesty Panel-Made of 18mm Thick Pre-laminated twin board of E1-P2 grade and approved shade conforming to IS-12823:1990, Edge banded with matching 2 mm thick PVC lipping. Powder coated accent metal strip provided below work surface to enhance aesthetics. It is made of 0.8mm CRCA as per IS 513,epoxy polyester powder coated (DFT 40-60 microns). Wire Management-An array of panels made of 0.8mm CRCA MS IS:513, epoxy polyester powder coated (DFT 40-60 microns) is used for flow of wires and cables. Provision to mount Anchor Roma 6 module plate is provided below worktop. Cutout on top with two piece injection moulded plastic part polymer component is fitted to pull out audio,video cables onto worktop and connect devices charger to power socket below worktop.

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8	Lecture Hall Desk cum Bench	Training Room Desk cum Bench is an ingenious product which provides an elegant,modular solution to the needs of modern day classroom. It offers flexibility in layout and efficiancy in space management Without compromising on seating comfort.A)Legs: Legs are made of MS ERW tube section (IS:7138) of size 75x25x2 mm thick oval tube with 5 mm thk HR brackets as per IS:2062 and 2mm thk CRCA brackets as per IS-513welded on to the tubes. Assembly is powder coated with epoxy polyester.Leg height varies from 705 to 1005 in pitch of 50 as per layout.Sturdy anchoring by anchor bolts on to base of 8mm thk plate for proper resting of Leg**.Shoe made of ultramid -Nylon are provided at the bottom for covering the base plate. B)Side clads: Two side clads made of e18 mm thk plate with 0.8mm thk pvc lipping and on the outside covered with welded metal structure made of 2 mm thk CRCA as per 1S-513 powder coated with Epoxy polyester . C)Worktop: Worktop are made of 25 mm thick Pre-Laminated Board of El-P2 Grade and approved shade conforming to IS:12823:1990. All the edge of work surface are provided with machine pressed 2mm thick pvc edge band glued with hot melt glue. D)Seat: Seat has self closing mechanism which will operate by means of dead weight . Seat understructure is made from combination of welded fabricated structure of 5mm Thk HR as per IS:2062 and 8mm thk ply as per IS:303 with moulded PU foam of density 55 kg/cu.mtr. on top which in turn is covered with stitched upholstery made of leatherite or foam back fabric.Seat assembly is covered on bottom side by means of seat cover made of pp. E)Seat Back: Seat back is made from combination of 8mm thk ply as per IS:303 with moulded foam on top which in turn is covered with stitched upholstery made leaterite as per or foam back fabric. F) Seat Support Frame : Seat support frame is made from combination of MS ERW tube section (IS 7138) of size 80x40x2.5 mm thick rectangular tube and MS ERW tube section(IS 7138), of size 48x19.1x2 mm thick oval tube welded together . Assembly is powder coated with Epoxy polyester. CAP made of ultramid are provided from front to cover the oval tubes. G)Modesty: Modesty is made of 25mm thick pre-laminated twin board of E1-P2 Grade and approved shade conforming to IS:12823:1990. All the edge of modesty are provided with machine pressed 2 mm Thick pvc edge band glue with hot melt glue.
9	Upstorage cabinets 900(W)mm X 328**(D)mm X 785(H)mm.	Product Size - 900(W)mm X 328**(D)mm X 785(H)mm. Installation - The Up storage cabinet should be installed on concrete or solid brick wall only Construction & Material - Aesthetically appealing complete knonk-down construction made from 0.5mm(#0.07 mm)THK CRCA as per IS-513 for back panel,side panel, side end cover panel, top panel, bottom panel & bottom panel cover. Doors - Wooden doors are made from 18mm Thick Pre-laminated twin board of E1-P2 grade and approved shade, Edge banded with matching 2mm thick PVC lipping. Locking - Cam lock with lock lever at the bottom of the door

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		Shelving - Fixed shelves made up of 10 bend panel made of 0.6mm (for 300mm and 450mm Width land 0.8mm (for 600mm and 900mm width) Thick CRCA (D Grade, IS-513) A4 SIZE BOX FILES (85W×345Hx285D) can be stored vertically as shown in page 4. Number of files that can be stored on each shelf is For width 900w - 9 Nos. Each shelf has max Load Capacity of 36.5kg of UDL for 900W unit Finish - Epoxy powder coated to the thickness of 50 microns (+10)
10	Upstorage cabinets 450(W)mm X 328**(D)mm X 785(H)mm.	Product Size – 450(W)mm X 328**(D)mm X 785(H)mm. Installation - The Up storage cabinet should be installed on concrete or solid brick wall only Construction & Material - Aesthetically appealing complete knonk-down construction made from 0.5mm(#0.07 mm)THK CRCA as per IS-513 for back panel,side panel, side end cover panel, top panel, bottom panel & bottom panel cover. Doors - Wooden doors are made from 18mm Thick Pre-laminated twin board of E1-P2 grade and approved shade, Edge banded with matching 2mm thick PVC lipping. 450W units have single RH door with lock. 600W, 900W units have LH door & RH door with single lock on RH door. Soft closing Hinges Available with 105° door opening angle Handleless Doors Locking - Cam lock with lock lever at the bottom of the door Shelving - Fixed shelves made up of 10 bend panel made of 0.6mm (for 300mm and 450mm Width land 0.8mm (for 600mm and 900mm width) Thick CRCA (D Grade, IS-513) A4 SIZE BOX FILES (85W×345Hx285D) can be stored vertically as shown in page 4. Number of files that can be stored on each shelf is For width 900w - 9 Nos. Each shelf has max Load Capacity of 36.5kg of UDL for 900W unit Finish - Epoxy powder coated to the thickness of 50 microns (+10)
11	Upstorage cabinets penta corner 600(W)mm X 600(W2)328mm**(D)mm X 785(H)mm.	Product Size - Penta Unit-600(W)mm*600(W)mm*328*(d)mm*785(H)mm **- Depth includes door thickness. Body depth is 308mm Stackability - Any width of add-on units can be stacked with any width of main unit and penta unit. - The Up storage cabinet should be installed on concrete or solid brick wall only Construction & Material - Aesthetically appealing complete knonk-down construction made from 0.5mm(#0.07 mm)THK CRCA as per IS-513 for back panel,side panel, side end cover panel, top panel, bottom panel & bottom panel cover. Doors - Wooden doors are made from 18mm Thick Pre-laminated twin board of E1-P2 grade and approved shade, Edge banded with matching 2mm thick PVC lipping.

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		Doors - Wooden doors are made from 18mm Thick Pre-laminated twin board of E1-P2 grade and approved shade, Edge banded with matching 2mm thick PVC lipping Locking - Cam lock with lock lever at the bottom of the door Shelving - Fixed shelves made up of 10 bend panel made of 0.6mm (for 300mm and 450mm Width land 0.8mm (for 600mm and 900mm width) Thick CRCA (D Grade, IS-513) A4 SIZE BOX FILES (85W×345Hx285D) can be stored vertically as shown in page 4. Number of files that can be stored on each shelf is For width 900w - 9 Nos. Each shelf has max Load Capacity of 36.5kg of UDL for 900W unit Finish - Epoxy powder coated to the thickness of 50 microns (+10)
12	PI Table 1500x750 main + 900x450 ERU	PI Table 1500x750 main + 900x450 ERU LEGS: Providing metal powder coated CUBE leg. Legs are for standard workstation height of 750mm. Cube legs are fabricated by Argo Shield welding MS ERW Tube 40 mm x 40 x 1.2 mm thk, with the base of the MS tube a polycarbonate cap with M8 metal insert is fixed, on to which a straight M8 leveler fitted to a bottom translucent cap which allows for adjustment of the height by 50mm. Support brackets of 3 mm thk HR are welded on top surface of Leg for fixing top. UNDERSTRUCTURE: Comprising of metal powder coated cross connectors between legs and legs. Made up of metal powder coated finish and the entire assemply is fixed to the worktop. These are the supporting members that span across the leg assemblies and form the understructure of a workstation. These shall be fabricated by CO2 welded MS powder coated and Powder used for powder coating will be LEAD-free, the tube shall be made from section 50 mm x 25 mm x 1.2mm thick. Cross members are assembled by friction fit PDC joinery and Grub screws. Certain cross connectors shall be fabricated with Argo shield welding with a 3mm thick HR plate at the end. WIREMANAGEMENT: For 750 high workstations-The wire raisers shall be made from 0.8 mm thick CRCA with bottom support made from 5 mm thick HR and 2 mm thick CRCA fabricated with Argo shield welding, shall be fixed on single/dual power box. The variety of raiser available are "MODESTY : Metal modesty: Lazer cut perforated Metal modesty Metal modesty are mounted on the worktop with the help of the modesty mounting brackets Modesty terminates at 400 mm from ground. Metal modesty shall be made of 0.8 mm thick CRCA. Internal tapped stud is welded to the modesty for mounting. Internal tapped stud shall be welded to the modesty for mounting. Metal modesty are mounted on the worktop with the help of the modesty mounting brackets made of 3 mm thick HR. It would terminate at 400 mm from the ground." WORKSURFACE - Out of 25 mm thk prelam particle board with flat pvc lipping edge banding of size 1500 mm w x 750 mm d for Main table, 900

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		mm w x 450 mm d for Return unit. Worktop shall be made of 25MM thick Pre-Laminated E1 grade E1 grade Board. The top shall be laminated with a laminate of 0.6 mm thickness of approved shade. All the edges of the work surface shall be provided with machine pressed 2 mm thick PVC lipping glued with low emitting hot melt EVA glue and configuration of access flap or grommet cut out. The bottom shall have a backing laminate of 0.6 mm thickness. Metal Pedestal: 2 boxes + 1file: minimum Size-390 (W) x 440 (D) x 650 (H)mm. Its welded assembled of 21 gauge thick CRCA for body shell, drawer front & tray, front side stiffener, rear side stiffener & bottom, 18 gauge thick CRCA top stiffener & bottom stiffener. Drawer Fronts & Metal Front Straight Edge. All Drawers with Double extension precision ball slide shall be provided. For Drawer pulling, side wise tapered recess provided in shell behind Drawer Fronts. Locking: 10 lever Cam Lock & Central RH locking with actuator & lock channel mechanism Godrej/ Hafele/ Hettich make lock. Castors: Swiveling nonlockable Castors mounted below the body shell. Finish: Epoxy Polyester Powder coated to the thickness of 50 microns (+/-10). Metal Tray Tray is made of 0.9 mm thick CRCA 'D' Grade as per IS-513.(Size-482(W)x280(D)x40(H))Ball-slideSingle Extension 350 mm(long)x11.8mm(Thk) Single extension (Stroke: 230mm) Ball-slideMade of Ball Slide assembly combination of 1.2/1.5mm thk roll-formed CRCA 'D' Grade as per IS-513. Tray Mouse Mouse Tray Option retrofit mouse tray is provided which could be fitted at right hand or left hand as per user requirement. Mouse tray (size 210 x 210) is made of 0.9 mm thick CRCA 'D' Grade as per IS-513. CPU Trolley is made of 1.0 mm thick MS CRCA Sheet and Side support is made of 0.8 mm thick MS CRCA Sheet. Castor Castor Lockable/Non-lockable twin wheel castors are injection molded in Black Nylon.
13	Student Linear Workstation size 1200x600	Linear Workstation size 1200Wx600Dx1050 H PARTIAL SCREENS: 8mm thk Laminated glass marker screen. Available in 300mm ht., mounted on Studs. The screen shall be made from 3.5 mm clear annealed with 1 mm PVB film and 3.5 mm clear annealed. LEGS: Providing metal powder coated CUBE leg. Legs are for standard workstation height of 750mm. Cube legs are fabricated by Argo Shield welding MS ERW Tube 40 mm x 40 x 1.2 mm thk, with the base of the MS tube a polycarbonate cap with M8 metal insert is fixed, on to which a straight M8 leveler fitted to a bottom translucent cap which allows for adjustment of the height by 50mm. Support brackets of 3 mm thk HR are welded on top surface of Leg for fixing top. UNDERSTRUCTURE: Comprising of metal powder coated cross connectors between legs and legs. Made up of metal powder coated finish and the entire assemply is fixed to the worktop. These are the supporting members that span across the leg assemblies and form the understructure of a workstation. These shall be fabricated by CO2 welded MS powder coated and Powder used for powder coating will be LEAD-free, the tube shall be made from section 50 mm x 25 mm x 1.2mm thick. Cross members are assembled by friction fit PDC joinery and Grub screws. Certain cross connectors shall be fabricated with Argo shield welding with a 3mm thick HR plate at the end. WIRE MANAGEMENT: For 750 high workstations- For vertical wiremenagement, Shared legs / wire risers with cover are considere. For

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		horizontal wiremanagement - Wire Tray with integrated power box. Access flap will be provided. Switch plate of (8+3 Anchor Roma) module is considered for Power and Data points. This is used to carry data & electrical wires through the length of the workstation cluster to give a concealed look. A wire carrier shall be made with a combination of 0.6 mm thick CRCA outer body along with 0.8 mm thick CRCA switch plate (8+3 Anchor Roma) module cut out as standard. These are mounted either on leg lateral members or cross members with a bracket made from 3 mm thick HR. WORKSURFACE - Out of 25 mm thk prelam particle board with flat pvc lipping edge banding of size 1200 mm w x 750 mm d. Worktop shall be made of 25MM thick Pre-Laminated E1 grade E1 grade Board. The top shall be laminated with a laminate of 0.6 mm thickness of approved shade. All the edges of the work surface shall be provided with machine pressed 2 mm thick PVC lipping glued with low emitting hot melt EVA glue and configuration of access flap or grommet cut out. The bottom shall have a backing laminate of 0.6 mm thickness. "MODESTY: Metal modesty: Lazer cut perforated Metal modesty Metal modesty are mounted on the worktop with the help of the modesty mounting brackets Modesty terminates at 400 mm from the ground. Metal modesty shall be made of 0.8 mm thick CRCA. Internal tapped stud is welded to the modesty for mounting. Internal tapped stud shall be welded to the modesty for mounting. Metal modesty are mounted on the worktop with the help of the modesty mounting brackets made of 3 mm thick HR. It would terminate at 400 mm from the ground." Metal Pedestal: 2 boxes + 1file: minimum Size-390 (W) x 440 (D) x 650 (H)mm. Its welded assembled of 21 gauge thick CRCA for body shell, drawer front & tray, front side stiffener, rear side stiffener & bottom, 18 gauge thick CRCA top stiffener & bottom stiffener. Drawer Fronts & Metal Front Straight Edge. All Drawers with Double extension precision ball slide shall be provided. For Drawer pulling, side wise tapered recess provided in shell behind Drawer Fronts. Locking: 10 lever Cam Lock & Central RH locking with actuator & lock channel mechanism Godrej/ Hafele/ Hettich make lock. Castors: Swivelling nonlockable Castors mounted below the body shell. Finish: Epoxy Polyester Powder coated to the thickness of 50 microns (+/- 10).
14	Student Linear workstation size 1050x600	LEGS: Providing metal powder coated CUBE leg. Legs are for standard workstation height of 750mm. Cube legs are fabricated by Argo Shield welding MS ERW Tube 40 mm x 40 x 1.2 mm thk, with the base of the MS tube a polycarbonate cap with M8 metal insert is fixed, on to which a straight M8 leveler fitted to a bottom translucent cap which allows for adjustment of the height by 50mm. Support brackets of 3 mm thk HR are welded on top surface of Leg for fixing top. UNDERSTRUCTURE: Comprising of metal powder coated cross connectors between legs and legs. Made up of metal powder coated finish and the entire assembly is fixed to the worktop. These are the

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		supporting members that span across the leg assemblies and form the understructure of a workstation. These shall be fabricated by CO2 welded MS powder coated and Powder used for powder coating will be LEAD-free, the tube shall be made from section 50 mm x 25 mm x 1.2mm thick. Cross members are assembled by friction fit PDC joinery and Grub screws. Certain cross connectors shall be fabricated with Argo shield welding with a 3mm thick HR plate at the end. WIRE MANAGEMENT: For 750 high workstations- For vertical wire management, Shared legs / wire risers with cover are considered. For horizontal wire management - Wire Tray with integrated power box. Access flap will be provided. The switch plate of (8+3 Anchor Roma) module is considered for Power and Data points. This is used to carry data & electrical wires through the length of the workstation cluster to give a concealed look. A wire carrier shall be made with a combination of 0.6 mm thick CRCA outer body along with 0.8 mm thick CRCA switch plate (8+3 Anchor Roma) module cut out as standard. These are mounted either on leg lateral members or cross members with a bracket made from 3 mm thick HR. WORKSURFACE - Out of 25 mm thk prelam particle board with flat pvc lipping edge banding of size 1050 mm w x 600 mm d. Worktop shall be made of 25MM thick Pre-Laminated E1 grade E1 grade Board. The top shall be laminated with a laminate of 0.6 mm thickness of approved shade. All the edges of the work surface shall be provided with machine pressed 2 mm thick PVC lipping glued with low emitting hot melt EVA glue and configuration of access flap or grommet cut out. The bottom shall have a backing laminate of 0.6 mm thickness. Metal Pedestal: 2 boxes + 1file: minimum Size-390 (W) x 440 (D) x 650 (H)mm. Its welded assembled of 21-gauge thick CRCA for body shell, drawer front & tray, front side stiffener, rear side stiffener & bottom, 18 gauge thick CRCA top stiffener & bottom stiffener. Drawer Fronts & Metal Front Straight Edge. All Drawers with Double extension precision ball slide shall be provided. For Drawer pulling, side wise tapered recess provided in shell behind Drawer Fronts. Locking: 10 lever Cam Lock & Central RH locking with actuator & lock channel mechanism Godrej/ Hafele/ Hettich make lock. Castors: Swiveling nonlockable Castors mounted below the body shell. Finish: Epoxy Polyester Powder coated to the thickness of 50 microns (+/- 10).

11.5 TECHNICAL SPECIFICATIONS – Audio Video Solution / Unified communication.

Bill Of Material- Conference room with Display

SL No	Item	Approved Makes	Quantity	Unit
1.	Display	Samsung/NEC/Christie	1	Nos
2.	Wall mount for display	nT/Vogels/Legrand	1	Nos
3.	Cable cubby	Magnum/Extron/Kramer	1	Nos
4.	Auto switcher	QSC/Kramer/Extron	1	Nos

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5.	Transmitter	QSC/Kramer/Extron	1	Nos
6.	Mounting bracket	nT/Vogels/Legrand	2	Nos
7.	Receiver	QSC/Kramer/Extron	1	Nos
8.	Speakers (Pair)	QSC/PEAVY/HK	1	Nos
9.	HDMI cable	Kramer/ Extron/Belden	5	Nos
10.	USB cable	Kramer/ Extron/Thomann	2	Nos
11.	Audio stereo/control cable	Kramer/ Extron/Belden	10	Metres
12.	STP cable	Dlink/Extron/Belden	20	Metres
13.	AV rack	Valrack/WQ	1	Nos
14.	Installation, Commissioning,Design and Consultancy , User Training, Site Survey,Drawings – (conduiting layouts, schematics etc.)and documentation charges	Custom	1	Nos
15.	Cabling and termination charges	Custom	1	Nos

Tender Specification

1.	**Display**	**Make Quoted**	
SITC of Professional Signage display		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
a.	Should be a 4K IPS Professional Signage display		
b.	should have brightness of 500 nits typical or better		
c.	Dynamic contrast ratio should be 1,200:1 or better		
d.	should have 178 degree horizontal and 178 vertical viewing angle		
e.	Should have response time of 8ms or better		
f.	should have non glare panels to prevent reflections		
g.	Should have 24/7 operation,		
h.	Should have colour Gamut of 0.72%,		
i.	should have 2 x HDMI in ports with HDCP 2.2 content protection , 1 X DVI, 2 USB ports, DP in with version of 1.2, RS 232 and RJ 45 ports for Control		
j.	should have audio de-embedding with stereo mini jack connector,		
k.	should have operating temperature of 0 °C~ 40 °C		
l.	bezel width should be 17.9 mm or better.		

2.	**Display mount**	**Make Quoted**	
SITC of Heavy Duty Display Wall mount having Tilt functionality, with VESA mounts supporting upto 1200x600, should support displays with weight upto 80 Kgs or better.		**Model Quoted**	

3.	**Cable cubbty**	**Make Quoted**	
SITC of cable cubby		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Should have 2 Power sockets		

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	Should have pass through holes		
	should be designed to be installed into a table presentation system and provide easy access to the end-users		
	should have two un-switched AC outlets 110v-240 volts and 50/60 Hz 10 A outputs		
	should have 3.5mm audio mini stereo audio jack		
	Should have Two CAT RJ45 Network/ Data Connectors		
	Should have one HDMI cable		
	Should have and one USB cable		
	Should have compact size with square cut bezels with cut-out dimensions 217mm x 120mm.		

4.	**Auto switcher**	**Make Quoted**	
SITC of HDMI and USB C switcher		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	4k60 HDMI and USB C switcher		
	Should have a DP Alt Mode & PD 3.0 USB-C port on a USB type-C female connector for versatile connectivity options and power delivery capability and 2 HDMI ports on HDMI female connectors		
	Should have video capabilities with a maximum data rate of 18Gbps bandwidth (6Gbps per graphic channel)		
	Should be supporting resolutions up to 4K@60Hz (4:4:4) with HDCP 2.3 content protection		
	Should have HDMI features such as Deep Color, 3D, and HDR as specified in HDMI 2.0b		
	Should have HDMI Loop port on an HDMI female connector, enabling convenient looping of HDMI signals for extended setups		
	Should have a USB 3.1 Host port on a USB-C female connector, two USB 3.1 Host ports on USB-B female connectors, and four USB 3.1 Device ports on USB type-A female connectors,		
	Should have USB features including USB 3.1 data rate up to 10Gbps		
	Should have integrated USB hubs (1), and compliance with USB 3.2 GEN 2, 2.0, and 1.1 standards, ensuring seamless USB connectivity and compatibility		
	Should have a Balanced Stereo Audio Line on a 5-pin terminal block connector for professional audio applications		
	Should have an IR port on a 3.5mm mini jack for remote control extension capabilities		
	Should have an RS-232 port on a 3-pin terminal block for serial communication, and two GPIO ports on a 2-pin terminal block for flexible input/output functions,		
	Should have two GPIO ports on a 2-pin terminal block for flexible input/output functions		

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	Should have flexible power options including power adapters and Power over Ethernet (PoE), with USB-C charging supporting up to 60W with PD 3.0 compliance, and USB device charging with a maximum total current of 2A for simultaneous charging of multiple devices		
	Should have a built-in Intelligent Control Gateway enabling remote IP-driven intelligent control of connected AV, USB, and sensor devices via CEC, RS-232, IR, or I/O, eliminating the need for an external control gateway and reducing installation complexity and costs.		

5.	**Transmitter**	**Make Quoted**	
SITC of HDMI transmitter		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Should support 4k60 4:4:4 HDMI transmission over HDBaseT		
	Should accept HDMI and give out HDBaseT signal, Should support bi-directional RS-232 and IR signals, Should		
	Should support bi-directional RS-232 and IR signals,		
	Should support a minimum data rate of 18Gbps		
	Should carry HDMI signal over Up to 40m (130ft) at 4K@60Hz (4:4:4), Up to 70m (230ft) at up to 4K@30Hz (4:4:4)		
	Should be HDTV and HDCP 2.2 compatible		
	Should have 1080p, 2K and 4K@60Hz 4:4:4 & HDR 10 support,		
	Should have EDID pass through		
	Should have support for Deep Color, x.v.Color™, Lip Sync, HDMI Uncompressed Audio Channels, Dolby TrueHD, DTS-HD, CEC,		
	should be CE, ISO 9001, ISO 14001, OHSAS 18001 compliant		

6.	**Table mounting bracket**	**Make Quoted**	
SITC of Table mounting bracket		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
1	As found necessary as per mounting plan for equipments		

7.	**Receiver**	**Make Quoted**	
SITC of HDMI Receiver		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Should support 4k60 4:4:4 HDMI transmission over HDBaseT		

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m	Should accept HDMI and give out HDBaseT signal, Should support bi-directional RS-232 and IR signals, Should		
n	Should support bi-directional RS-232 and IR signals,		
o	Should support a minimum data rate of 18Gbps		
p	Should carry HDMI signal over Up to 40m (130ft) at 4K@60Hz (4:4:4), Up to 70m (230ft) at up to 4K@30Hz (4:4:4)		
q	Should be HDTV and HDCP 2.2 compatible		
r.	Should have 1080p, 2K and 4K@60Hz 4:4:4 & HDR 10 support,		
s	Should have EDID pass through		
t.	Should have support for Deep Color, x.v.Color™, Lip Sync, HDMI Uncompressed Audio Channels, Dolby TrueHD, DTS-HD, CEC,		
u	should be CE, ISO 9001, ISO 14001, OHSAS 18001 compliant		

8.	**Speakers**	**Make Quoted**	
SITC of powered speakers(Pair)		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
1	5.25" powered on on wall speakers		
v	should be 2-way powered,		
w	, Should have built in power amplifier with 30W RMS, 80W continuous program,		
x	, Should have frequency response 45Hz to 20kHz at -10dB, 100Hz to 20kHz at ±3dB,		
y	, Should have 5.25” polypropylene cone with rubber edge woofer		
z	Should have 0.5" Mylar dome tweeter,		
a	Should have control knob for Volume, Bass & Treble control, Should have input connectors : Line level unbalanced stereo audio on a 3.5mm mini jack, Line level balanced stereo audio on a terminal block connector, Line level unbalanced stereo audio on left and right RCA connectors		

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b	Should have Auto Power — Shuts off when system is not in use, indicated by a LED		

9.	**HDMI cable**	**Make Quoted**	
SITC of Flexible high−performance cable		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Should support signals up to 4K@60Hz (4:4:4), Deep Color		
	Should have 24k gold Plated pins		
c.	Should have lockable connectors		
d.	Should be 30 AWG		
e.	Should have Bending Radius of 58mm		
f.	Should be high speed with HDMI Ethernet Channel		
g.	should beTriple Shielded for maximum EMI protection		
h.	Should support Safety Rating: (NEC/UL/CSA): VW–1/CMG–FT4, Environmental: RoHS 2011/65/ EU		

10.	**Audio stereo/control cable**	**Make Quoted**	
SITC audio stereo/control cable		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Should come with 2 element, 22 AWG copper cable		
	Should come with stranded tinned copper conductors insulated by polypropylene and PVC jacket,		
i.	Should work in operating temperature of -20°C to +70°C.		

11.	**STP cable**	**Make Quoted**	
SITC of Category 6 STP Solid cable Conductor: 23 AWG(0.583 ±0.007mm), Multi-cores (Solid), Conductor Metal: Bare Copper Insulation Material: HD-PE OD: 1.12 ±0.05mm Average Thickness: 0.26 mm Outside-Tape Metal: MYLAR Overlap Rate: 25% Drain Wire: 24 AWG(0.500 ±0.007mm) Jacket hardness: 45P (90A ± 2A, Shore)		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Should be a Category 6 STP Solid cable Conductor: 23 AWG(0.583 ±0.007mm)		
	Should have Conductor Metal: Bare Copper Insulation Material: HD-PE OD: 1.12 ±0.05mm		

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j.	Should have Average Thickness: 0.26 mm		
k.	Overlap Rate: 25% Drain Wire: 24 AWG(0.500 ±0.007mm)		
l.	Jacket hardness: 45P (90A ± 2A, Shore)		

12.	**USB cable**	**Make Quoted**	
SITC of USB cable		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
1	Should be USB 3.2 GEN-2 full featured Type C (M) to Type C (M) cable		
	Cable should have K-Lock Mechanism		
	This should support video transfer @4K@60 with the data speed 10G at least		
	should support charging power 100 Watts or better,		
	should be compatible with MAC & Mobile devices		
	should support backward compatibility for 1.0, 1.1, 2.0 and 3.0,		
	Cable length should be 6 feet		
	should support USB 3.2 Gen2 with ETH support 10/100/1000 Mbps		
	Cable should be Nickel plated K–Lock connector with gold pins		
	Jacket material should be PVC,		
	Should support CE & FCC standard along with Flammability Rating: VW–1 compliance		

13.	**Audio stereo/control cable**	**Make Quoted**	
SITC audio stereo/control cable		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Should come with 2 element, 22 AWG copper cable		
	Should come with stranded tinned copper conductors insulated by polypropylene and PVC jacket,		
c.	Should work in operating temperature of -20°C to +70°C.		

14.	**AV rack**	**Make Quoted**	
SITC of 9U 600X600 U Rack with Glass door, fans, 3 Shelves, Power unit with 8 no of 5A power sockets, Castors, screws and all required accessories.		**Model Quoted**	

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Bill Of Material- Conference room with projector

SL No	Item	Approved Makes	Quantity	Unit
16.	Projector	Epson / Barco/Christie	1	Nos
17.	Ceiling mount for projector	nT/Vogels/Legrand	1	Nos
18.	Tab tensioned screen	Milan/Dalite/Harkness	1	Nos
19.	Cable cubby	Magnum/Extron/Kramer	1	Nos
20.	Auto switcher	QSC/Kramer/Extron	1	Nos
21.	Transmitter	QSC/Kramer/Extron	1	Nos
22.	Mounting bracket	nT/Vogels/Legrand	2	Nos
23.	Receiver	QSC/Kramer/Extron	1	Nos
24.	Speakers(Pair)	QSC/PEAVY/HK	1	Nos
25.	HDMI cable	Kramer/ Extron/Belden	5	Nos
26.	USB cable	Kramer/ Extron/Thomann	2	Nos
27.	Audio stereo/control cable	Kramer/ Extron/Belden	10	Metres
28.	STP cable	Dlink/Extron/Belden	20	Metres
29.	AV rack	Valrack/WQ	1	Nos
30.	Installation, Commissioning,Design and Consultancy , User Training, Site Survey,Drawings – (conduiting layouts, schematics etc.)and documentation charges	Custom	1	Nos
31.	Cabling and termination charges	Custom	1	Nos

Tender Specification

1	Projector	Make Quoted	
SITC of Projector		Model Quoted	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
m.	Should come with 5000 Lumens brightness projector with short throw lens		
n.	Should have Contrast ratio should be 2,5000,000:1 or better		
o.	should have 3xHDMI ports		
p.	Should have HDBaseT ports		

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q.	Should have 1xUSB 2.0 Type A port		
r.	Should have Ethernet and RS232C ports for control		
s.	Should have audio out for audio de-embedding		
t.	throw ratio should be between 0.29 -0.35		
u.	Should have vertical and horizontal keystone of ±3°,		
v.	Should have Laser diode light source		
w.	Should support upto 20,000 hours of laser light source		

15.	**Ceiling mount for projector**	**Make Quoted**	
SITC of Short throw adjustable heavy duty projector mount		**Model Quoted**	

16.	**Tab tensioned screen for projector with tab tension**	**Make Quoted**	
SITC of screen for projector with tab tension		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Screen size Should be at least 119 inches or above		
	Should support aspect ratio of 16:9		
	Should have the Low Voltage Controller and remote with black drop of 1 ft		

17.	**Cable cubbty**	**Make Quoted**	
SITC of cable cubby		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Should have 2 Power sockets		
	Should have pass through holes		
	should be designed to be installed into a table presentation system and provide easy access to the end-users		
	should have two un-switched AC outlets 110v-240 volts and 50/60 Hz 10 A outputs		
	should have 3.5mm audio mini stereo audio jack		
	Should have Two CAT RJ45 Network/ Data Connectors		
	Should have one HDMI cable		
	Should have and one USB cable		
	Should have compact size with square cut bezels with cut-out dimensions 217mm x 120mm.		

18.	**Auto switcher**	**Make Quoted**	
SITC of HDMI and USB C switcher		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	4k60 HDMI and USB C switcher		
	Should have a DP Alt Mode & PD 3.0 USB-C port on a USB type-C female connector for versatile		

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	connectivity options and power delivery capability and 2 HDMI ports on HDMI female connectors		
	Should have video capabilities with a maximum data rate of 18Gbps bandwidth (6Gbps per graphic channel)		
	Should be supporting resolutions up to 4K@60Hz (4:4:4) with HDCP 2.3 content protection		
	Should have HDMI features such as Deep Color, 3D, and HDR as specified in HDMI 2.0b		
	Should have HDMI Loop port on an HDMI female connector, enabling convenient looping of HDMI signals for extended setups		
	Should have a USB 3.1 Host port on a USB-C female connector, two USB 3.1 Host ports on USB-B female connectors, and four USB 3.1 Device ports on USB type-A female connectors,		
	Should have USB features including USB 3.1 data rate up to 10Gbps		
	Should have integrated USB hubs (1), and compliance with USB 3.2 GEN 2, 2.0, and 1.1 standards, ensuring seamless USB connectivity and compatibility		
	Should have a Balanced Stereo Audio Line on a 5-pin terminal block connector for professional audio applications		
	Should have an IR port on a 3.5mm mini jack for remote control extension capabilities		
	Should have an RS-232 port on a 3-pin terminal block for serial communication, and two GPIO ports on a 2-pin terminal block for flexible input/output functions,		
	Should have two GPIO ports on a 2-pin terminal block for flexible input/output functions		
	Should have flexible power options including power adapters and Power over Ethernet (PoE), with USB-C charging supporting up to 60W with PD 3.0 compliance, and USB device charging with a maximum total current of 2A for simultaneous charging of multiple devices		
	Should have a built-in Intelligent Control Gateway enabling remote IP-driven intelligent control of connected AV, USB, and sensor devices via CEC, RS-232, IR, or I/O, eliminating the need for an external control gateway and reducing installation complexity and costs.		

19.	**Transmitter**	**Make Quoted**	
SITC of HDMI transmitter		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Should support 4k60 4:4:4 HDMI transmission over HDBaseT		
	Should accept HDMI and give out HDBaseT signal, Should support bi-directional RS-232 and IR signals, Should		

	Should support bi-directional RS-232 and IR signals,		
	Should support a minimum data rate of 18Gbps		
	Should carry HDMI signal over Up to 40m (130ft) at 4K@60Hz (4:4:4), Up to 70m (230ft) at up to 4K@30Hz (4:4:4)		
	Should be HDTV and HDCP 2.2 compatible		
	Should have 1080p, 2K and 4K@60Hz 4:4:4 & HDR 10 support,		
	Should have EDID pass through		
	Should have support for Deep Color, x.v.Color™, Lip Sync, HDMI Uncompressed Audio Channels, Dolby TrueHD, DTS-HD, CEC,		
	should be CE, ISO 9001, ISO 14001, OHSAS 18001 compliant		

20.	**Table mounting bracket**	**Make Quoted**	
SITC of Table mounting bracket		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
1	As found necessary as per mounting plan for equipments		

21.	**Receiver**	**Make Quoted**	
SITC of HDMI Receiver		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Should support 4k60 4:4:4 HDMI transmission over HDBaseT		
	Should accept HDMI and give out HDBaseT signal, Should support bi-directional RS-232 and IR signals, Should		
	Should support bi-directional RS-232 and IR signals,		
	Should support a minimum data rate of 18Gbps		
	Should carry HDMI signal over Up to 40m (130ft) at 4K@60Hz (4:4:4), Up to 70m (230ft) at up to 4K@30Hz (4:4:4)		
	Should be HDTV and HDCP 2.2 compatible		
	Should have 1080p, 2K and 4K@60Hz 4:4:4 & HDR 10 support,		
	Should have EDID pass through		
	Should have support for Deep Color, x.v.Color™, Lip Sync, HDMI Uncompressed Audio Channels, Dolby TrueHD, DTS-HD, CEC,		
	should be CE, ISO 9001, ISO 14001, OHSAS 18001 compliant		

22.	**Speakers**	**Make Quoted**	
SITC of powered speakers(Pair)		**Model Quoted**	

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SL No	Minimum Functional Specification	Compliance (Yes / No)	Remarks of Deviation if any.
1	5.25" powered on on wall speakers		
	should be 2-way powered,		
	, Should have built in power amplifier with 30W RMS, 80W continuous program,		
	, Should have frequency response 45Hz to 20kHz at -10dB, 100Hz to 20kHz at ±3dB,		
	, Should have 5.25” polypropylene cone with rubber edge woofer		
	Should have 0.5" Mylar dome tweeter,		
	Should have control knob for Volume, Bass & Treble control, Should have input connectors: Line level unbalanced stereo audio on a 3.5mm mini jack, Line level balanced stereo audio on a terminal block connector, Line level unbalanced stereo audio on left and right RCA connectors		
	Should have Auto Power — Shuts off when system is not in use, indicated by a LED		

23.	HDMI cable	Make Quoted	
SITC of Flexible high−performance cable		Model Quoted	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Should support signals up to 4K@60Hz (4:4:4), Deep Color		
	Should have 24k gold Plated pins		
r.	Should have lockable connectors		
s.	Should be 30 AWG		
t.	Should have Bending Radius of 58mm		
u.	Should be high speed with HDMI Ethernet Channel		
v.	should beTriple Shielded for maximum EMI protection		
w.	Should support Safety Rating: (NEC/UL/CSA): VW–1/CMG–FT4, Environmental: RoHS 2011/65/ EU		

24.	Audio stereo/control cable	Make Quoted	
SITC audio stereo/control cable		Model Quoted	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Should come with 2 element, 22 AWG copper cable		
	Should come with stranded tinned copper conductors insulated by polypropylene and PVC jacket,		
x.	Should work in operating temperature of -20°C to +70°C.		

25.	STP cable	Make Quoted	

SITC of STP cable		Model Quoted	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Should be a Category 6 STP Solid cable Conductor: 23 AWG(0.583 ±0.007mm)		
	Should have Conductor Metal: Bare Copper Insulation Material: HD-PE OD: 1.12 ±0.05mm		
y.	Should have Average Thickness: 0.26 mm		
z.	Overlap Rate: 25% Drain Wire: 24 AWG(0.500 ±0.007mm)		
aa	Jacket hardness: 45P (90A ± 2A, Shore)		

26.	**USB cable**	**Make Quoted**	
SITC of USB cable		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
1	Should be USB 3.2 GEN-2 full featured Type C (M) to Type C (M) cable		
j	Cable should have K-Lock Mechanism		
	This should support video transfer @4K@60 with the data speed 10G at least		
	should support charging power 100 Watts or better,		
	should be compatible with MAC & Mobile devices		
	should support backward compatibility for 1.0, 1.1, 2.0 and 3.0,		
	Cable length should be 6 feet		
	should support USB 3.2 Gen2 with ETH support 10/100/1000 Mbps		
	Cable should be Nickel plated K–Lock connector with gold pins		
	Jacket material should be PVC,		
	Should support CE & FCC standard along with Flammability Rating: VW–1 compliance		

27.	**Audio stereo/control cable**	**Make Quoted**	
SITC audio stereo/control cable		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Should come with 2 element, 22 AWG copper cable		
	Should come with stranded tinned copper conductors insulated by polypropylene and PVC jacket,		
f.	Should work in operating temperature of -20°C to +70°C.		

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28.	AV rack	Make Quoted	
SITC of 9U 600X600 U Rack with Glass door, fans, 3 Shelves, Power unit with 8 no of 5A power sockets, Castors, screws and all required accessories.		Model Quoted	

Bill Of Material-Lecture Hall

SL No	Item	Approved Makes	Quantity	Unit
32.	Projector	Epson / Barco/Christie	1	Nos
33.	Lens	Epson / Barco/Christie	1	Nos
34.	Ceiling mount for projector	nT/Vogels/Legrand	1	Nos
35.	Tab tensioned screen	Milan/Dalite/Harkness	1	Nos
36.	Wall plate	Comprehensive/ Kramer/Extron	1	Nos
37.	Network based transreciever	QSC/Kramer/Extron	2	Nos
38.	Podium (By client)			
39.	Wireless handheld microphone	Shure/Thomann/Beyerdynamic	2	Nos
40.	Lapel mic	Shure/Thomann/Beyerdynami	1	Nos
41.	Antenna power distribution system	Shure/Thomann/Beyerdynamic	1	Nos
42.	Omnidirectional antenna	Shure/Thomann/Beyerdynamic	2	Nos
43.	Antenna booster	Shure/Thomann/Beyerdynamic	2	Nos
44.	Coaxial cable	Shure/Thomann/Beyerdynamic	2	Nos
45.	Coaxial cable	Shure/Thomann/Beyerdynamic	8	Nos
46.	Wired gooseneck microphone	Shure/Thomann/Beyerdynamic	1	Nos
47.	Mount for gooseneck microphone	Shure/Thomann/Beyerdynamic	1	Nos
48.	DSP	QSC/AHM/Wokpro	1	Nos
49.	Hardware or Software based control system with perpetual licenses	QSC /Control4/ Extron	1	Nos
50.	Hardware or Software based control system with perpetual licenses	QSC /Control4/ Extron	1	Nos
51.	Expansion module	QSC/PEAVY/HK	1	Nos
52.	Amplifier	QSC/PEAVY/HK	1	Nos
53.	Speakers	QSC/PEAVY/HK	2	Nos
54.	Touch screen	QSC /Control4/ Extron	1	Nos
55.	Network switch	Netgear / Juniper/Cisco	1	Nos
56.	HDMI cable	Kramer/ Extron/Belden	6	Nos
57.	USB cable	Kramer/ Extron/Thomann	2	Nos
58.	Speaker cable	Kramer/ Extron/Belden	200	Metres
59.	Microphone cable	Kramer/ Extron/Belden	75	Metres
60.	Audio stereo/control cable	Kramer/ Extron/Belden	50	Metres
61.	STP cable	Dlink/Extron/Belden	300	Metres
62.	AV rack	Valrack/Salamander/Middle Atlantic	1	Nos
63.	Installation charges	Custom	1	Nos
64.	Cabling and termination charges	Custom	1	Nos
65.	Acoustic work	Knauf Ceiling Solutions/AMF/Daiken	1	Sq.meters

Tender Specification

29.	Projector	Make Quoted	
SITC of 8500 Lumens brightness projector		Model Quoted	

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SL No	Minimum Functional Specification	Compliance (Yes / No)	Remarks of Deviation if any.
x.	Should have a minimum Brightness of 8500 ANSI Lumens		
y.	Should have WUXGA resolution (1920 x 1200)		
z.	Should accept 4k signals		
aa.	should have HDR support		
bb.	Contrast ratio should be 5,000,000:1 or better		
cc.	should have minimum 1 HDMI in		
dd.	Should have minimum 2 x USB 2.0 Type A ports		
ee.	Should have Ethernet and RS232C ports for control		
ff.	Should have HDbaseT connection		
gg.	Should have audio out for audio de-embedding		
hh.	Should have VGA in		
ii.	Should have ±45% Vertical and ±30% Horizontal keystone correction		
jj.	Should support minimum upto 25,000 hours of laser light source		
kk.	Should be able to project on screen sizes ranging from 50" to 1000" diagonal.		

30.	Lens	Make Quoted	
SITC of Standard throw lens for projector		Model Quoted	
SL No	Minimum Functional Specification	Compliance (Yes / No)	Remarks of Deviation if any.
	should have wide lens shift for added flexibility		
	should support at least screen sizes of 1000" diagonal		
	focal length should be in the range of 18mm-23mm or better		
	should weigh around 3 lbs or less		
	should have zoom ratio in the range of 1-1.3 or better		

31.	Ceiling mount for projector	Make Quoted	
SITC of Ceiling mount for projector		Model Quoted	
SL No	Minimum Functional Specification	Compliance (Yes / No)	Remarks of Deviation if any.
	Should have at least 3 to 6 ft descent		
	Should have minimum of 12 Kgs weight carrying capacity		
	Should be with maximum mounting diameter of 12mm.		

32.	Tab tensioned screen for projector	Make Quoted	
SITC of 137" Matt White Tab tensioned screen		Model Quoted	
SL No	Minimum Functional Specification	Compliance (Yes / No)	Remarks of Deviation if any.
	Screen size Should be at least 137 inches or above		
	Should support aspect ratio of 16:10		
	Should have the Low Voltage Controller and remote with black drop of 1 ft		

33.	Wall plate	Make Quoted	

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SITC of wallplate		Model Quoted	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Should have atleast 1 HDMI input		
	Should have atleast 1 USB -C input		

34.	**Network based Transreciever**	**Make Quoted**	
SITC of Network Video Encoder and Decoder for video distribution		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Can be configured as encoder or decoder by using a software		
	should have atleast 1x HDMI and 1xUSB C inputs for video distribution		
	should support audio video bridging		
	should have 1xHDMI out with inbuilt scaling		
	Should support HDMI audio embedding and de-embedding		
	should support 4K60 4:4:4 video resolution		
	should be powered via Power Over Ethernet (POE)		
	should have RS 232 port for control,		
	Mounting hardware should be included		
	should have operating temperature in the range of 0° to 30° C		

35.	**Wireless handheld mic**	**Make Quoted**	
SITC of wireless handheld microphone system		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Cardoid Dynamic Vocal Microphone and Windshield module, should have cardiod polar pattern		
	Should have frequency range of 50 to 15,000 Hz or Better		
	Should have dynamic range of 100 dB		
	Should have audio input level of -20 dBV maximum at 0dB		
	Should support 10 dBV maximum or better at -10dB		
	Should support gain adjustment range of 26 dB or better		
	Should have 10mv typical RF Transmitter Output		
	weight should be under 220 grams		
	should have battery life of upto 14 hours or better		
	should have operating range of 91 m (300 ft) Line of Sight or Better		
	should have XLR/6.35 mm (1/4") connector		
	Should support a Single channel Receiver		
	should have output impedance of 200 Ω/50 Ω or better		
	Audio output level with XLR connector should be –27 dBV (into 100 kΩ load), audio output level with 6.35 mm (1/4") connector should be –13 dBV (into 100 kΩ load) or better		
	Should have RF Sensitivity of 105 dBm for 12 dB SINAD		
	Should have Image rejection >50 dB or better		
	should have features like Frequency QuickScan, adjustable output levels, and two-color audio status indicator LED.		

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36.	Wireless lapel mic	Make Quoted	
SITC of wireless lapel microphone system		Model Quoted	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
1	Should have an electret condender microphone module.		
	should have frequency response of 45 to 20,000 Hz or Better		
	should have cardiod polar pattern		
	Should have output impedance of 600 Ω or better at 1 KHz		
	should have audio output level of -50.0 dBV/Pa		
	Should have Signal-To-Noise Ratio at 1 KHz: 66 dB or better		
	Maximum SPL of 1000 Ω load at 3% THD should be 145 dB or better		
	Should support dynamic range of 117 dB or better at 1 KHz frequency and 1000 Ω load		
	Should have 4-Pin male and female mini connector (TA4F),		
	cable length for connecting to bodypack transmitter should be 1.1m		
	Should have a water resistant headset microphone		
	Should have maximum audio input level of 16 dBV and minimum of +10 dBV or better		
	Input impedance should be 1 MΩ or better		
	Should have RF transmitter output of 10 mw		
	should support battery life of upto 14 hours or better		
	Should have operating range of 91 m (300 ft) Line of Sight or better		
	Should support a single channel Receiver		
	should have XLR/6.35 mm (1/4") connector		
	audio output level with XLR connector should be –27 dBV (into 100 kΩ load),		
	audio output level with 6.35 mm (1/4") connector should be –13 dBV (into 100 kΩ load) or better		
	should have RF Sensitivity of 105 dBm for 12 dB SINAD		
	Should have Image rejection >50 dB		
	Gain adjustment range should be 26dB or better		
	Should have features like Frequency QuickScan, adjustable output levels, and two-color audio status indicator LED.		

37.	Antenna power distribution system	Make Quoted	
SITC of Antenna power distribution system,		Model Quoted	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
1	should have four splitting channels and one cascade channels, BNC connector type, impedance should be 50 ohms or better, should have frequency range of 470-960 MHz or better, Bias voltage: 15 V DC (150 mA, maximum) (x2), its weight should be under 1.7 kgs, output connector isolation should be 30 dB, typical or better, Output Intercept Point: 21 dBm, typical or better, should have gain of -1 dB to +1 dB.		
	Should support BNC connector type		

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	Impedance should be 50 ohms or better		
	should have frequency range of 470-960 MHz or better		
	Should have Bias voltage: 15 V DC (150 mA, maximum) (x2)		
	Output connector isolation should be 30 dB, typical or better		
	Output Intercept Point: 21 dBm, typical or better		
	should have gain of -1 dB to +1 dB		

38.	**Omnidirectional antenna**	**Make Quoted**	
SITC of omnidirectional antenna		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
1	Should have an omnidirectional dipole reception pattern		
	Should support a BNC female connector		
	impedance should be 50 ohms or better		
	Should have RF Frequency Range of 480 to 1000 MHz or better		
	should be weather resistant and suitable for short-term outdoor use.		

39.	**Antenna Booster**	**Make Quoted**	
SITC of Antenna booster		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
1	should have Absolute Maximum RF Input of +5 dBm, Power Requirements: 10 to 15 V DC bias from coaxial connection, 0.60–0.72 W, 50 ohms impedance.		
	Should support power Requirements: 10 to 15 V DC bias from coaxial connection		
	Should have 0.60–0.72 W, 50 ohms impedance.		

40.	**Coaxil cable**	**Make Quoted**	
SITC of Coaxial cable		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
1	Should support BNC connectors, should be 100' (30m) long, frequency range of 1 GHz or below.		
	should be 100' (30m) long or more		
	frequency range of 1 GHz or below		

41.	**Coaxil cable**	**Make Quoted**	
SITC of Coaxial cable		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
1	Should support BNC connectors, should be 100' (30m) long, frequency range of 1 GHz or below.		
	should be 6' (2m) long or more		
	frequency range of 1 GHz or below		

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42.	Gooseneck microphone	Make Quoted	
SITC of wired gooseneck microphone		Model Quoted	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
1	Condenser (electret bias) module, should have cardiod polar pattern, should have frequency response of 70 Hz to 16,000 Hz or better, S/N Ratio should be 67 dB referenced at 94 dB SPL at 1 kHz or Better, should have maximum SPL of 120 dB 1 kHz at 1% THD, 1 kΩ load or Better, Output impedance should be 180 Ω or better, should have features like Commshield technology guards against unwanted RF interference from portable wireless devices (smartphones, etc.). Included flange mount and snap-fit windscreen.		
	should have frequency response of 70 Hz to 16,000 Hz or better		
	S/N Ratio should be 67 dB referenced at 94 dB SPL at 1 kHz or Better		
	should have maximum SPL of 120 dB 1 kHz at 1% THD, 1 kΩ load or Better		
	Output impedance should be 180 Ω or better		
	should have features like Commshield technology guards against unwanted RF interference from portable wireless devices (smartphones, etc.).		
	should have Included flange mount and snap-fit windscreen		

43.	Digital signal processor	Make Quoted	
SITC of DSP		Model Quoted	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
1	SITC of Digital Signal Processor, should have 8 flex channels which can be software configured as input and output channels as per the requirements, should have 8 x AEC (Acoustic Echo Cancellation) processors on board, should have 8x8 DANTE channels, should have phantom power of +48 VDC, 48 KHz sampling rate, 24 bit A/D-D/A converters, should have input frequency response of +0.5 dB / -0.5 dB in the frequency range of 20 Hz to 20 kHz, should have 7.2 K ohms nominal input impedance, should have -39 dBu minimum input sensitivity range and maxium of +24 dBu input sensitivty range, should have 2 RS232 ports and 8x8 GPIO ports for control purposes, 16 bit Bit depth, power consumption of 35 watts typical, operating temperature should be in the range of 0-50°C, should be FCC, UL and UC compliant.		
	Should have 8 x AEC (Acoustic Echo Cancellation) processors on board or more		
	should have 8x8 DANTE channels or more		
	should have phantom power of +48 VDC		
	Should have 48 KHz sampling rate		

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	Should have 24 bit A/D-D/A converters		
	should have input frequency response of +0.5 dB / -0.5 dB in the frequency range of 20 Hz to 20 kHz		
	should have 7.2 K ohms nominal input impedance		
	Should have -39 dBu minimum input sensitivity range and maxium of +24 dBu input sensitivty range		
	should have 2 RS232 ports and 8x8 GPIO ports for control purposes		

44.	**Shock mount for gooseneck**	**Make Quoted**	
SITC of Shock mount for gooseneck microphone, utilizes a Shock-Stopper development which decreases the transmission of impact or surface commotion by up to 20 dB. Fits a assortment of gooseneck microphones.		**Model Quoted**	

45.	**Control system**	**Make Quoted**	
SITC of Hardware or Software based control system with perpetual licenses		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
1	Should have required ports to control the devices mentioned in BOQ with perpetual licenses to connect Wall/Table mount touch screen controllers		
	Should be able to control iOS and Windows devices as wireless touch controller		
	Should support for creating custom user control interfaces within the system.		

46.	**Control system**	**Make Quoted**	
SITC of Hardware or Software based control system with perpetual licenses		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
1	Should have required ports to control the devices mentioned in BOQ with perpetual licenses to connect Wall/Table mount touch screen controllers		
2	Should be able to control iOS and Windows devices as wireless touch controller		
3	Should support writing scripts and use plugins.		

47.	**Expansion module**	**Make Quoted**	
SITC of Hardware or Software based control system with perpetual licenses		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
1	SITC of 4 Output expansion module, should have four line outputs, should be Power-over-Ethernet capable, should have output audio level range of -36 dBu to +24 dBu, Input Frequency response should be +/- 0.5 dB in the frequency range of 20		

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	Hz - 20 kHz, should have Total Harmonic Distortion (THD) of less than 0.01% at +10 dBu output level, should have 108 dB Output Dynamic Range, output impedance of 150 Ω to 300 Ω, 48 KHz sampling rate, bit depth of 24 bits.		
2	Should have four line outputs		
3	Should be Power-over-Ethernet capable		
zzz	should have output audio level range of -36 dBu to +24 dBu		
aa	Should have Input Frequency response should be +/- 0.5 dB in the frequency range of 20 Hz - 20 kHz		
bb	should have Total Harmonic Distortion (THD) of less than 0.01% at +10 dBu output level		
cc	should have 108 dB Output Dynamic Range		
dd	Should have output impedance of 150 Ω to 300 Ω		
ee	Should support 48 KHz sampling rate, bit depth of 24 bits.		

48.	**Amplifier**	**Make Quoted**	
SITC of 2 channel Class AB type amplifier		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
1	Should come with 2 x 350 watts power output		
3	Should have Frequency response of 20 Hz–20 kHz ± 0.2 dB 8 Hz–50 kHz, + 0/-3 dB,		
ffff	should have 10 kΩ unbalanced and 20 kΩ balanced Input impedance		
ggg	Should have Active Inrush Limiting		
hh	should have Damping factor of greater than 500 for a frequency of 1 KHz and above		
iiiii	should have LED Indicators for metering, status and operating mode		

49.	**Speakers**	**Make Quoted**	
SITC of Compact two way surface mount speakers		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	should have a 10" woofer or better		
	with a 2.5" voice coil		
jjjjj	should have professional quality sound with 300 watts power output		
kk	should have frequency range of 55Hz - 16kHz or better		
llll	coverage angle should be 80 degree or better		
mm	Sensitivity should be 95 dB, 1 W @ 1 m or better		
nn	Should support peak SPL of 124 dB or better		
oo	Shoud support 8 ohms nominal impedance		
pp	Should have frequency response in the range of 70Hz - 16kHz or better		

50.	**Touch screen**	**Make Quoted**	

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SITC of High Definition, Multi-touch Touch Screen Controller		Model Quoted	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Should have 24-bit color display		
	Should have viewable Screen Dimensions (diagonal) – 7-inch		
qq	Should have Resolution - 1280 × 800, Brightness - 400 Nits		
rrr	Should support aspect ratio – 16:10		
ss	should be powered via POE. Mounting – Wall and Tabletop		
ttt	Should have configurable LEDs on both side		
uu	Should support ambient Light Sensor		
vv	Should support proximity Detection.		
ww			

51.	**Network switch**	**Make Quoted**	
SITC of 10 port Network Swicth		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Should have 8 POE+ ports with speeds of 1G each and 2xSFP+ ports		
	Should support L3 Gigabit POE+ Network Swicth with Multicast support		
xx	Should come with IGMP support		
yy	should have IPV4/IPV6 Support		
zz	Should have 1 Gbps Non-blocking ports		
aa	should have a PoE Budget of 210 W or better		
bb	Should support Jumbo Frame support upto 12 Kb		
cc	should have power consumption of 257.9W/880.47Btu/hr or better		

52.	**HDMI cable**	**Make Quoted**	
SITC of Flexible high−performance cable		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Should support signals up to 4K@60Hz (4:4:4), Deep Color		
	Should have 24k gold Plated pins		
dd	Should have lockable connectors		
ee	Should be 30 AWG		
ffff	Should have Bending Radius of 58mm		
gg	Should be high speed with HDMI Ethernet Channel		
hh	should beTriple Shielded for maximum EMI protection		
iiii	Should support Safety Rating: (NEC/UL/CSA): VW–1/CMG–FT4, Environmental: RoHS 2011/65/ EU		

53.	**USB cable**	**Make Quoted**	

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SITC of USB 2.0 Type C (M) to Type C (M) cable		Model Quoted	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Should support maximum date rate of 480 Mbps or better		
	should have current rating of 3A and 5A		
jjjjj	should have molded strain relief on the ends		
kk	should be ROHS compliant,		
llll	Cable length should be 6' (2m) or more		

54.	**Speaker cable**	**Make Quoted**	
SITC of 2 conductor 14 AWG Speaker Cable		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Should come with material tinned copper, surrounded by PVC insulation and PVC outer jacket		
	Should support line level audio		
mm	Should work in operating temperature of -30°C to +80°C,		
nn	Should have maximum pull tension of 48.35 kg.		

55.	**Microphone cable**	**Make Quoted**	
SITC of microphone Cable		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Should come with 2 conductor 24 AWG		
	Should come with material Bare copper having high conductivity, surrounded by PVC insulation and PVC jacket		
oo	Should work in operating temperature of -40°C To +50°C		
pp	Should have maximum pull tension of 4.5 kg or above		

56.	**Audio stereo/control cable**	**Make Quoted**	
SITC audio stereo/control cable		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Should come with 2 element, 22 AWG copper cable		
	Should come with stranded tinned copper conductors insulated by polypropylene and PVC jacket,		
qq	Should work in operating temperature of -20°C to +70°C.		

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57.	STP cable	Make Quoted	
SITC of Category 6 STP Solid cable Conductor: 23 AWG(0.583 ±0.007mm), Multi-cores (Solid), Conductor Metal: Bare Copper Insulation Material: HD-PE OD: 1.12 ±0.05mm Average Thickness: 0.26 mm Outside-Tape Metal: MYLAR Overlap Rate: 25% Drain Wire: 24 AWG(0.500 ±0.007mm) Jacket hardness: 45P (90A ± 2A, Shore)		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Should be a Category 6 STP Solid cable Conductor: 23 AWG(0.583 ±0.007mm)		
	Should have Conductor Metal: Bare Copper Insulation Material: HD-PE OD: 1.12 ±0.05mm		
rrr	Should have Average Thickness: 0.26 mm		
sss	Overlap Rate: 25% Drain Wire: 24 AWG(0.500 ±0.007mm)		
ttt	Jacket hardness: 45P (90A ± 2A, Shore)		

58.	AV rack	Make Quoted	
SITC of Standard 19" Floor Rack 27U, 800x800, With Glass door, 9 Shelves, Power strip to cover 18 Power Sockets 5 amp each, extension cables, Fans, Castors , accessories etc,		**Model Quoted**	
SL No	**Minimum Functional Specification**	**Compliance (Yes / No)**	**Remarks of Deviation if any.**
	Should come with 19" Floor Rack of 27U		
	Should be of dimension 800x800		
uu	Should come With Glass door		
vvv	Should come with 9 Shelves or more		
ww	Should have power strip to cover 18 Power Sockets 5 amp each or better		
xxx	Should come with extension cables, Fans, Castors , accessories etc		

59.	Accoustic ceiling work	Make Quoted	
Providing & Fixing of Ceiling Solutions Mineral Fibre Acoustical Suspended Ceiling System with 15mm thick Sierra OP Tegular 15/90 Edge Tiles with Silhouette 15mm face exposed grid. The tiles shall have smooth laminated visual with Humidity Resistance (RH) of 95%, NRC 0.9 & CAC of 25db as per ASTM E1414, Light Reflectance ≥86% as per ASTM E-1477, Thermal Conductivity λ = 0.040 W/mK, Colour Global White, Fire Performance of class A2-s1, d0 according to EN 13501-1 with 15mm Tegular 15/90˚ edge and 8mm drop in module size of 600 x 600mm. The scrim on the face of the tile shall be cleanable and classified as ISO 14644-1 cleanroom class 5. It shall be suitable for Green Building application, with Recycled content of 43% VOC Emissions (French) class of A+. The tile shall have Environmental Product Declaration as per ISO 14025 and EN 15804+A2. The tile shall have certifications from GRIHA and GreenPro thereby confirming that it is an environment friendly product. SUSPENSION: The tile shall be laid on Silhouette 38 profile grid system with 15mm white flanges incorporating a 6mm central reveal in white/black colour with mitred ends & “bird’s mouth”		**Model Quoted**	

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notches to provide mitred cruciform junctions colour global white (Matching to tile color).Grid shall have double stroke rotary stitching on all T sections i.e. the Main Runner, 1200 mm & 600 mm Cross Tees with a web height of 38mm (all sections). The deflection loading of the system shall be 7.9 kg/m2 (as per standard installation layout mentioned below) and main beam tested as per ASTM C635 (Deflection limit less than L/360) with a deflection loading of 9.5 kg/m. The end details of the cross tee shall be made of pre hardened steel clip fixed to the ends of the cross tee to provide double locking between “cross tee to cross tee” and “cross tee to main beam”. All main beam to main beam and cross tee to cross tee connection shall have a pull out strength of more than 100kg. The T Sections shall be made of 90 gsm as per IS 277 (2003) pre-painted steel with baked polyester paint of 0T bending capability. INSTALLATION: To comprise main runner spaced at 1200mm securely fixed to the structural soffit using Ceiling Solutions suspension system (specifications below) at 1200mm maximum. The First/Last Ceiling Solutions suspension system at the end of each main runner shall not be greater than 450mm from the adjacent wall along with the first and the last main beam shall be at less than 600mm from the wall. Flush fitting 1200mm long cross tees to be interlocked between main runners at 600mm to form 1200 x 600 mm module. Cut cross tees longer than 600mm require independent support. 600 x 600mm module to be formed by fitting 600mm long flush fitting cross tees centrally between the 1200 mm cross tees. Perimeter trim to be Knauf Ceiling Solutions wall angles of size 3000x19x19mm, secured to walls using screws at 450mm centre to centre maximum. Installation shall be carried out as per the manufacturers’ recommended procedure. Ceiling Solutions SUSPENSION SYSTEM accessories supplied by OEM consisting of M6 Anchor Fasteners with hanger hole, pre-straightened hanger wire of dia – 2.5 mm of 1.80 m length having a tensile strength of 344-413 MPa and a minimum loading strength of 110 kgs. (Optionally, adjustable hook clips made of 0.7mm thick Grade 1 C55 galvanized spring steel of dimension 100 x 20mm and 4 mm aquiline wire to be used for level adjustment during installation purpose in main runners).		

ANNEXURE-I

DECLARATION OF LOCAL CONTENT
[For Local Content of Products, Services or Works]

To,

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The Registrar

Indian Institute of Science, Bangalore - 560012

Subject: Declaration of Local Content Tender Reference No:

Name of Tender/Work: **"Supply, Installation, Testing and Commissioning of laboratory furniture , Modular furniture & Unified AV solution for MBU, IISc Bangalore**

With reference to Order No. P- 45021/2/2017-PP(BE-II) dated 16-09-2020 of DPIIT, Ministry of Commerce and Industry, Govt. of India, we fall under the following category of supplier (please tick the correct category) for the items for which this tender has been floated and being bided.

- Class I local supplier – has local content equal to more than 50% at ----------(name of location).
- Class II local supplier – has local content more than 20% but less than 50% at ----------(name of location).
- Non-local supplier – has local content less than or equal to 20% at ----------(name of location).

We are solely responsible for the abovementioned declaration in respect of category of supplier. False declarations will be in breach of the Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which we may can be debarred for up to 2 years as per Rule 151(iii) of the General Financial Rules along with such other actions as may be permissible under law.

Signature & seal of the company Name
and address of the organization

…….

…….

ANNEXURE-II

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Description of Item: "Supply, Installation, Testing and Commissioning of laboratory furniture, Modular furniture & Unified AV solution for MBU, IISc Bangalore"

This is to Certify that …….Authorised Wholesale Distributors for ……is the authorized Wholesale Dealer for ……., for its entire range of …….. & valid till ……

Seal & Signature of the Bidder:
Name of above Authorized Signatory:
Contact No. & e-mail id of Authorized Signatory:

ANNEXURE-III

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NO DEVIATION STATEMNT
[For Tender Technical Specification]

NIL Deviation Declaration

Description of Item: "Supply, Installation, Testing and Commissioning of laboratory furniture, Modular furniture & Unified AV solution for MBU, IISc Bangalore"

We …….. hereby declare that we have completely read & understood the above Tender Document(s) ……. (General Terms & Conditions), Corrigendum or Addendum (if any), & Technical Specification or Drawing or Scope etc. given in the tender and we confirm NIL deviation with respect to it and shall comply with all Commercial/technical specifications and scope given in the tender in toto.

Seal & Signature of the Bidder:
Name of above Authorized Signatory:
Contact No. & e-mail id of Authorized Signatory:

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BOQ for IISC ,Bangalore

Sr. No.	Description	UOM	Qty
A	B	C	D
1	C-Frame Modular Furniture Providing and supply of C-Frames manufactured from standard hollow metal sections; confirming to I.S. Code 7138:1973 (Indian Standard specification for steel tubes for furniture) and all sheet metal components to be of CRCA confirming to IS Code 513:1994. The suspended under-bench fully welded units shall be supported on heavy-duty steel frames fully carrying the load of worktops.. Its superior strength is combined with aesthetically appealing end caps shall give maximum flexibility and modularity while making a layout. C-frame shall be constructed from a rectangular pipe with a cross section of 60mm x 30mm and shall be 2 mm thick and shall be without a vertical front leg to give a clean look. The C-frame legs shall be supplied with adjustable feet (tolerance from -5mm to +20mm) to correct the unevenness of flooring. The tubular enclosed type construction shall discourage dust accumulation and unwanted development of bacteria & fungus. Drai ge gradient shall be well adjusted throughout the length of table and shall have horizontal supports for drai ge systems. The structure shall have a removable back panel to provide access for mainte nce throughout the length of table. The C-frame shall also have skirting at back bottom side. The C-frame shall be suitable for sitting and standing nomi l heights of 750mm & 900mm respectively. The nomi l table depths shall be 620 mm, 770 mm and 920 mm for wall side and 1540mm, 1840mm for Island tables. The Corner Units shall fit well with 770mm & 920mm table depths. All frame-work is to be pre-treated with superior pure epoxy powder coated finish. All metal panel shall go through 9 tanks pretreatment process including 3 Stages Iron phosphating process. (Process mes: 1. Hot Water Rinse -> 2. Knock off Degreasing -> 3. Degreasing I -> 4. Degreasing II -> 5. Water rinse I -> 6. Water rinse II -> 7. Iron Phosphating -> 8. Water rinse III -> 9. Passivation)		
1.1	Common 750 Ht.C-Frame Assy. For Table Depths 770 Wall Side Without Upright , 1540 Island Without Upright & 920 Wall Side With Upright	Nos.	9
1.2	L.H. 750 Ht.C-Frame Assy. For Table Depths 770 Wall Side Without Upright , 1540 Island Without Upright & 920 Wall Side With Upright	Nos.	4
1.3	R.H. 750 Ht.C-Frame Assy. For Table Depths 770 Wall Side Without Upright , 1540 Island Without Upright & 920 Wall Side With Upright	Nos.	4
1.4	Common 900 Ht.C-Frame Assy. For Table Depths 770 Wall Side Without Upright , 1540 Island Without Upright & 920 Wall Side With Upright	Nos.	4
1.5	L.H. 900 Ht.C-Frame Assy. For Table Depths 770 Wall Side Without Upright , 1540 Island Without Upright & 920 Wall Side With Upright	Nos.	4
1.6	R.H. 900 Ht.C-Frame Assy. For Table Depths 770 Wall Side Without Upright , 1540 Island Without Upright & 920 Wall Side With Upright	Nos.	4
2.00	Providing and supply of Welded Cabinets Under bench floor mounted cabinets shall be flush face construction with doors and drawers in the same plane as the cabinet face frame, without overlap. The MOC: MS CRCA: IS – 513 (1994). Thickness: LH/RH side panels, shutter front, Bottom panel, Top front, Drawer separator, shelf, Alignment channel shall be of 1.2mm thk. Removable Back panel, Shutter cover, Fr. Rack strip, Top cover panel shall be of 0.8mmthk. Finish: Powder coating pure epoxy, thickness 40-50 microns Handle: Anodized Aluminium Finish handles (D-Type or Recess-Type) Lock: Units have a locking facility with 180 deg. and 10 lever cam lock mechanism (except for sink and corner unit). Hinge: SS 304 knuckle barrel Hinge of thickness 2.5mm and opening angle 180 deg. Screw: SS 304. Ball Slide: High quality double extension drawers of 500mm Length (approved Make) (required only for drawer unit) Shutter is of twin type construction with sound dampening effect using profeel. Shutter cover is equipping with Bump on for sound dampening. Depth of the cabinets: 530mm All metal panel shall go through 9 tanks pretreatment process including 3 Stages Iron phosphating process. (Process mes: 1. Hot Water Rinse -> 2. Knock off Degreasing -> 3. Degreasing I -> 4. Degreasing II -> 5. Water rinse I -> 6. Water rinse II -> 7. Iron Phosphating -> 8. Water rinse III -> 9. Passivation)		
2.1	WF-C-900-1S-RH-875H	Nos.	1
2.2	WF-SU-2S-750W-875H	Nos.	31
2.3	WF-2S-1D-600W-875H	Nos.	250
2.4	WF-2S-1D-750W-875H	Nos.	32
2.5	WF-CLS-P-580W-875H	Nos.	76
2.6	WF-CLS-P-730W-875H	Nos.	2
2.7	WF-MLS-P-600W-875H	Nos.	151
2.8	WF-MLS-P-750W-875H	Nos.	2
2.9	WF-C-900-1S-RH-875H	Nos.	2
2.10	WF-2S-1D-600W-875H	Nos.	41
3	Providing and supply of Horizontal Members These shall be made from rectangular pipes of 2mm thickness. Cross-sectio l dimensions of the pipe should be 60 x 30 x 2 mm. They shall be made of CRCA MS and coated with pure epoxy powder. These connect two C-Frames together as shown using C-clamps/U-clamps. Together with the C-Frames and Horizontal Members connected together, the skeletal structure of the work-bench is formed on which the worktop can be placed and the hanging-type storage cabinets can be suspended. Horizontal Members determine the width of the lab workbench as they form the member (distance) between two adjacent C-Frames. They shall be available in various widths of 600, 750, 900, 1050, 1200, 1350, 1500, 1650, and 1800		
3.1	1200 Module Length Horizontal Members	Nos.	22
3.2	600 module length horizontal members	Nos.	2
3.3	1200 Module Length Horizontal Members	Nos.	16
4.0	Removable Back Panels:These cover panels cover the service lines that run behind them. These should be easily removable (unclipped) and the service line be accessed for mainte nce. This allows the equipment on workbench to remain undisturbed They should be made of CRCA MS with pure epoxy powder coating and are of 1mm thickness.		
4.1	1200 Module Length -7H	Nos.	11
4.2	600 module length -7H	Nos.	1
4.3	1200 Module Length -9H	Nos.	8
5.00	**Bottom Fixed panel:** Fixed back panel should be made from CRCA MS panels of 1.0mm thickness with pure epoxy powder coating.		
5.1	1200 Module Length - 7H	Nos.	11
5.2	600 module length -7H	Nos.	1
5.2	1200 Module Length -9H	Nos.	8
6	**Providing and supply of Panels:** All other panels used as End cover of the tables in case of Island tables and wall tables to cover the space between two tables or between the table and the wall. The cover panels to be made of 1.0 mm thick CRCA sheet as per IS Code 513:1994		

6.1	1540 Depth Island With Upright & Without Upright End Cover Panel	Nos.	2
6.2	770 Depth Wall Side Without Upright End Cover Panel	Nos.	12
6.3	1540 Depth Island With Upright & Without Upright End Cover Panel	Nos.	4
6.4	1200 module length back cover panel	Nos.	11
6.5	600 module length back cover panel	Nos.	1
7	**Providing and supply of Electrical Trunking** Used for housing electrical switches and sockets, data and voice points, its top panel, bottom panel of the trunking shall be made from 1.0 mm thick CRCA MS panel. It shall be available in both, single sided and double sided configurations. It shall be made from CRCA MS with pure epoxy powder coating. The front surface that houses the electrical points should have a slope.		
7.1	1200 Module Length Double Side Electrical Trunking - Cutouts: 6 Module + 6 Module + 6 Module	Nos.	4
7.2	1050 Module Length Single Side Electrical Trunking - Cutouts: 6 Module + 6 Module + 6 Module	Nos.	1
7.3	1200 Module Length Single Side Electrical Trunking - Cutouts: 6 Module + 6 Module + 6 Module	Nos.	23
7.4	600 Module Length Single Side Electrical Trunking - Cutouts: 6 Module + 6 Module	Nos.	2
7.5	Filler Panel For Island Type Furniture With Upright 1540 Wd X 875H	Nos.	76
7.6	Filler Panel For Wall Side Furniture Without Upright 770 Wd X 875H	Nos.	3
7.7	Filler Panel For Wall Side Furniture With Upright 770 Wd X 875H	Nos.	47
7.8	Filler Panel For Wall Side Furniture Without Upright 920 Wd X 875H	Nos.	2
7.9	Modesty Panel 1200W X 875H	Nos.	8
7.10	Outer Cover For Double-Sided Electrical Trunking	Nos.	4
7.11	Outer Cover For Single-Sided Electrical Trunking	Nos.	13
8.00	**Providing and supply of Sink, Faucets & Accessories :** Polypropylene moulded sinks are made up of 5 mm thick high density and elastic poly propylene with good resistance to organic solvents. Standard bowl size (L x W x D) is 560 x 355 x 300 mm. Faucet shall be 3-way or 1-way type faucet of approved make. Service fittings are of laboratory grade, and water faucets and valve bodies are of cast red brass alloy or bronze forgings, all fittings are of powder plated unless specified otherwise.		
8.1	Pp Drop-In Sink Model S 06 560 Mm (W) X 355 Mm (D)	Nos.	31
8.2	Ss Pegboard 550X420X55, 25 pegs	Nos.	31
8.3	Flexible/F Serated Connector Model : Hp 01 Make: Premier	Nos.	31
8.4	Anti-Siphon Bottle Trap Model : S 04 Make: Premier	Nos.	31
8.5	3 Way Water Faucet Bench Mounted, 8"" Swing Gooseneck Model No. 100/32	Nos.	31
8.6	Back Support Bracket With Upright For 770 Working Depth	Nos.	32
8.7	Back Support Bracket Without Upright For 770 Working Depth	Nos.	123
8.8	Back Support Bracket Without Upright For 920 Working Depth	Nos.	33
8.9	Island Without Upright C-Frame Joining Bracket	Nos.	8
8.10	Back Support Bracket With Upright For 920 Working Depth	Nos.	6
9.00	**Providing and supply of Reagent Racks** Fixed-Type reagent shelves should be provided. It should be complete modular design consisting of 2 stage horizontal storage shelves made of CRCA MS with pure epoxy powder coating and having cutouts for electrical switches and sockets. It should have provision for placing Granite pieces (as per requirement in BOQ)		
9.1	Fixed Type Reagent Shelf (Add On Type) 1200 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only)	Nos.	50
9.2	Fixed Type Reagent Shelf (Main Type) 900 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only)	Nos.	26
10	**Providing and supply of Electrical Trunking** Used for housing electrical switches and sockets, data and voice points, its top panel, bottom panel of the trunking shall be made from 1.0 mm thick CRCA MS panel. It shall be available in both, single sided and double sided configurations. It shall be made from CRCA MS with pure epoxy powder coating. The front surface that houses the electrical points should have a slope.		
10.1	1200 Module Length Double Side Electrical Trunking - Cutouts: 6 Module + 6 Module + 6 Module	Nos.	24
10.2	900 Module Length Double Side Electrical Trunking - Cutouts: 6 Module + 6 Module	Nos.	12
10.3	1050 Module Length Single Side Electrical Trunking - Cutouts: 6 Module + 6 Module + 6 Module	Nos.	2
10.4	1200 Module Length Single Side Electrical Trunking - Cutouts: 6 Module + 6 Module + 6 Module	Nos.	26
10.5	600 Module Length Single Side Electrical Trunking - Cutouts: 6 Module + 6 Module	Nos.	2
10.6	900 Module Length Single Side Electrical Trunking - Cutouts: 6 Module + 6 Module	Nos.	2
10.7	Outer Cover For Double-Sided Electrical Trunking	Nos.	24
10.8	Outer Cover For Single-Sided Electrical Trunking	Nos.	27
10.9	1350 Module Length Single Side Electrical Trunking - Cutouts: 6 Module + 6 Module + 6 Module	Nos.	2
10.1	1500 Module Length Single Side Electrical Trunking - Cutouts: 6 Module + 6 Module + 6 Module	Nos.	1
11	**Providing and supply of Electrical accessories**		
11.1	16A, 1 Way Switch Model No: M0130	Nos.	1514
11.2	6 Module Plate - Model No: Cs956M-S	Nos.	757
11.3	6/16A, 6 Pin Shutter Socket - Model No: M1332	Nos.	1514
14	**Providing and supply of Welded Top Units :** The construction shall be the same as the under-bench cabinets. The height of these cabinets shall be around 635mm while the depth shall be around 340mm. The shutters shall be available in two options: Metal shutters and Metal frame with inserted glass. There shall be one height-adjustable shelf inside each cabinet. Other construction shall be similar to under-bench cabinet.		
14.1	WT-1S-GS-RH-300W-635H	Nos.	1
14.2	WT-1S-GS-RH-450W-635H	Nos.	1
14.3	WT-2S-GS-600W-635H	Nos.	149
14.4	WT-2S-GS-750W-635H	Nos.	5
15	**Providing and supply of Welded Cabinets** : Under bench **mobile** cabinets shall be flush face construction with doors and drawers in the same plane as the cabinet face frame, without overlap. The MOC: MS CRCA: IS – 513 (1994). Thickness: LH/RH side panels, shutter front, Bottom panel, Top front, Drawer separator, shelf, Alignment channel shall be of 1.2mm thk. Removable Back panel, Shutter cover, Fr. Rack strip, Top cover panel shall be of 0.8mmthk. Finish: Powder coating pure epoxy, thickness 40-50 microns Handle: Anodized Aluminium Finish handles (D-Type or Recess-Type) Lock: Units have a locking facility with 180 deg. and 10 lever cam lock mechanism (except for sink and corner unit). Hinge: SS 304 knuckle barrel Hinge of thickness 2.5mm and opening angle 180 deg. Screw: SS 304. Ball Slide: High quality double extension drawers of 500mm Length (approved Make) (required only for drawer unit) Shutter is of twin type construction with sound dampening effect using profeel. Shutter cover is equipping with Bump on for sound dampening. Depth of the cabinets: 530mm		

15.1	WFM-1S-1D-LH-450W-485H	Nos.	5
15.2	WFM-1S-1D-RH-450W-485H	Nos.	6
16	**Providing and supply of Welded Cabinets** : Under bench **Suspended** cabinets shall be flush face construction with doors and drawers in the same plane as the cabinet face frame, without overlap. The MOC: MS CRCA: IS – 513 (1994). Thickness: LH/RH side panels, shutter front, Bottom panel, Top front, Drawer separator, shelf, Alignment channel shall be of 1.2mm thk. Removable Back panel, Shutter cover, Fr. Rack strip, Top cover panel shall be of 0.8mmthk. Finish: Powder coating pure epoxy, thickness 40-50 microns Handle: Anodized Aluminium Finish handles (D-Type or Recess-Type) Lock: Units have a locking facility with 180 deg. and 10 lever cam lock mechanism (except for sink and corner unit). Hinge: SS 304 knuckle barrel Hinge of thickness 2.5mm and opening angle 180 deg. Screw: SS 304. Ball Slide: High quality double extension drawers of 500mm Length (approved Make) (required only for drawer unit) Shutter is of twin type construction with sound dampening effect using profeel. Shutter cover is equipping with Bump on for sound dampening. Depth of the cabinets: 530mm		
16.1	WFU-2S-1D-600W-635H	Nos.	8
17	Providing and supply of Master Upright : Master Upright shall be of the dimensions: 300 x 150 x 1.2 mm. It shall be made from 1.2mm thick CRCA MS with pure epoxy powder coating. It should have an open-able door for easy service mainte nce and should extend till the false ceiling.		
17.1	Master Upright Without Cutout	Nos.	62
17.2	2100 Ht.Wall Side Plain Upright & Cover With Cutout	Nos.	2
17.3	2100 Ht.Wall Side Upright With Cutout & Cover With Cutout	Nos.	4
18	Providing and supply of Electrical Boom : Horizontal service boom shall be made out of 18 gauge CRCA steel panels and should span the length between uprights and shall be provided with removable service panels. Electrical and GDS supplies shall be supplied through this horizontal service boom. Boom shall be supplied with factory fitted combi tions of switch & sockets with 15amps standard grade.		
18.1	1050 Module Length Wall Electrical Boom - Cutout : 6 Module + 6 Module	Nos.	2
18.2	1350 Module Length Wall Electrical Boom - Cutout : 6 Module + 6 Module	Nos.	2
19	**Providing and supply of Welded Top Units** : The construction shall be the same as the under-bench cabinets. The height of these cabinets shall be around 635mm while the depth shall be around 340mm. The shutters shall be available in two options: Metal shutters and Metal frame with inserted glass. There shall be one height-adjustable shelf inside each cabinet. Other construction shall be similar to under-bench cabinet		
19.1	WT-1S-GS-RH-300W-635H	Nos.	1
19.2	WT-2S-GS-600W-635H	Nos.	19
19.3	1050 Module Length	Nos.	2
19.4	1350 Module Length	Nos.	2
20	**Providing and supply of Granite Work Top:** It shall be 19mm (+/- 2mm) thick Jet Black Granite worktop. The exposed edges of the worktop shall be chamfered and smoothened. The bottom of the worktop shall be polished and there shall be a V-groove throughout the length of the exposed edges to protect the cabinets from coming in contact with the spillages. The overhang on the storage cabinet is 25 mm at the front side and 30 mm at the sides. The backing material used is a neoprene mat of 6 mm thickness.		
20.1	Jet Black Granite (Sq.Mt.) 20 (±2) Mm Thk	Sq.Mtrs.	296
20.2	Mdf With Lami te, (Nos.) 25Mm [1200Mm X 2400Mm]	Nos.	21
20.3	BRACKETS FOR FIXING INDUSTRIAL LAMI TE TOP, MDF TOP & EPOXY TOP WITH C-FRAME	Nos.	21
20.4	6MM Self Adhesive tural Rubber Strip	R.Mtrs.	1260
20.5	Silicon Sealant - Black	Nos.	35
20.6	Masking Tape	R.Mtrs.	35
21	**4 FEET BENCHTOP LCV FUME HOOD WITHOUT ANY ACCESSORIES** (as per the specifications mentioned in the tender specification sheet)	Nos.	15
21.1	Airflow monitor for Fumehood	Nos.	15
21.2	3 Module Plate With Socket & Tiny Trip For Aeolus Fume Hood	Nos.	60
21.3	Apparatus Grid For 4 Feet Benchtop Aeolus Fumehood (Epoxy)	Nos.	15
21.4	Back Panel Set For Frame Based Understructure For 4 Feet Benchtop Aeolus Fumehood	Nos.	15
21.5	Ceiling Front Cover Panel For 4 Feet Aeolus Fumehood	Nos.	15
21.6	Ceiling LH/ RH Side Cover Panel For Aeolus Fumehood	Nos.	15
21.7	Compressed Air (Flexible Tubing Service Valves For Benchtop Aeolus Fumehood)	Nos.	15
21.8	Eco Panel (2 Hp) With Tl/ Bl For Aeolus Fumehood	Nos.	15
21.9	FRAME BASED UNDERSTRUCTURE FOR 4 FEET BENCH TOP AEOLUS FUMEHOOD WITH NO CUT-OUT ON TRUNKING	Nos.	15
21.10	Inner Lining - Compressed Lami te	Nos.	1
21.11	LED LIGHT FOR 4 TO 6 FT AEOLUS FUMEHOOD	Nos.	15
21.12	Nitrogen (Flexible Tubing Service Valves For Benchtop Aeolus Fumehood)	Nos.	15
21.13	Full PP Acid Storage Mobile without any metal component- 540 Mm	Nos.	30
21.14	Raw Water (Flexible Tubing Service Valves For Benchtop Aeolus Fumehood)	Nos.	15
21.15	SIDE PANEL SET FOR FRAME BASED UNDERSTRUCTURE BENCHTOP AEOLUS FUMEHOOD	Nos.	15
22	**Furnituer for Staff and Students**		
22.1	**Student Chair**	**Nos**	**240**

	SEAT ASSEMBLY: The seat assembly should be made up of 1.2 ±0.1cm. thick hot-pressed plywood , upholstered with fabric upholstery covers and moulded Polyurethane foam. SEAT SIZE: 47.0 cm. (W) x 48.0 cm. (D). BACK ASSEMBLY: The back asembly. should be made of powder coated (OFT 40-60 microns) tubular frame of 0 2.54 ±0.03cm. x 0.2 ±0.016cm.thk. MS ERW tube designed with contoured lumbar support for extra comfort. The back should be upholstered using double layer spacer mesh fabric with high te city yarn. BACK SIZE : 46.5 cm (W) x 60.5 cm (H). HIGH RESILIENCE (HR) POLYURETHANE FOAM: The HR polyurethane foam should be moulded with density =45+/-2 kg/m3 and hardness load 16 ± 2 kgf for 25% compression. ARMRESTS: The one-piece armrests should be injection moulded from black Co-polymer Polypropylene. CENTRE-TILT mechanism: The mechashould be m should be designed with the following features: • 360° revolving type. • 17° ±2° maximum tilt on pivot at centre • Upright position locking. • Tilt tension adjustment. . PNEUMATIC HEIGHT ADJUSTMENT: The pneumatic height adjustment has an adjustment stroke of 11.0 ±0.3cm. TELESCOPIC BELLOW ASSY: The bellow should be 3 piece telescopic type and injection moulded in Black Polypropylene. PEDESTAL ASSEMBLY: The pedestal should be injection moulded in black 33% glass-filled Nylon66 and fitted with 5 nos. twin wheel castors. The pedestal should be 66.3 ±0.5cm. pitch-center dia. (76.3 ±1.0cm with castors.) TWIN WHEEL CASTORS: The twin wheel castors should be injection moulded in black nylon. Overall Dimensions of Chair Seat Height - min 43.3 to max 54.3cm. Height - min 89.5 to max 100.5cm. Width & Depth of Chair as measured from pedestal - Width-76.3 cm and Depth-76.3 cm.		
22.2	**Visitor Chair**	**Nos**	**40**
	SEAT ASSEMBLY: The seat assembly should be made up of 1.2 ±0.1cm. thick hot-pressed plywood , upholstered with fabric upholstery covers and moulded Polyurethane foam. SEAT SIZE: 47.0 cm. (W) x 48.0 cm. (D) BACK ASSEMBLY: The back asembly. should be made of powder coated (OFT 40-60 microns) tubular frame of 0 2.54 ±0.03cm. x 0.2 ±0.016cm.thk. MS ERW tube designed with contoured lumbar support for extra comfort. The back should be upholstered using double layer spacer mesh fabric with high te city yarn. BACK SIZE : 46.5 cm. (W) x 60.5cm. (H) HIGH RESILIENCE (HR) POLYURETHANE FOAM: The HR polyurethane foam should be moulded with density =45+/-2 kg/m3 and hardness load 16 ± 2 kgf for 25% compression. ARMRESTS: The one-piece armrests should be injection moulded from black Co-polymer Polypropylene. . TUBULAR FRAME: The powder coated (DFT 40-60.microns) tubular frame should be cantilever type & made of Ø2.54 ±0.03cm. x 0.2 ±0.016cm thick M.S.E.R.W. Tube. Overall Dimensions of Chair Seat Height - 46.5cm. Height - 93.5cm. Width & Depth of Chair as measured from pedestal - Width-61.0 cm and Depth-64.5 cm.		
22.3	**10 Seater Conference Table**	**Nos**	**1**
	3000 X 1150 X 740.Work top--Made of 25mm thick MDF-one side pre-lami te board conforming to IS-14587:1998 with 0.4mm PVC membrane pressed on to top and having chamfered edge. Access panels provided with soft closing hinges Understructure-The Under-structure consists of mixture of 25mm and 18mm Pre-lami ted twin board of E1-P2 grade and approved shade conforming to IS-12823:1990, Edge banded with matching 2 mm thick PVC lipping. Anodised aluminium alloy 63400 - WP profile is added at bottom edges for improving the aesthetics. The product has a knock-down construction. Wire Raiser-A wire raiser made of 0.8mm CRCA MS IS:513. It is epoxy polyester powder coated (DFT 40-60 microns) for flow of wires and cables. Cutout provision below Access flap at two locations for standard 8 module Anchor Roma is provided. Beside each cutout, an additio l cutout with plate is provided for mounting Audio Visual Cables (eg.HDMI, VGA-A,etc).		
22.4	**Lab Stool**	**Nos**	**170**
	SEAT ASSEMBLY: The seat should be made up of 1.2±0.1cm thick flat plywood and with moulded Polyurethane foam and should be . upholstered with replaceable synthetic leather covers. SEAT SIZE: Diameter 40.0 cm ADJUSTMENTS: 360° Revolving type BACK ASSEMBLY: The back foam should be designed with contoured Lumbar support for extra comfort. The upholstery should be available in synthetic leather. BACK SIZE: 45.0 cm (W) covered with polyurethane foam . HIGH RESILIENCE (HR) POLYURETHANE FOAM:The HR polyurethane foam should be moulded with density = 45 +/-2 kg/m3 and Hardness load 16 ± 2 kgf for 25% compression. HEIGHT ADJUSTMENT: The manual height adjustment should be very easy to operate with a help of a knob.. It can be easily locked at the most comfortable position. PEDESTAL ASSEMBLY: The five-prong pedestal should be fabricated from 0.2 ± 0.02 cm :thick HR sheet.(should be :. DD 1079 / HR), powder coated (DFT 40-60 microns) and fitted with an injection moulded black Polypropylene Hub Cap and 5 nos. twin wheel castors. The pedestal-should be 55.0±0.5cm pitch-circle-diameter- (65.0±-1,0cm-with-castors).-Circular-foot-ring of 052.0±0.2cm made up of 01.9±0.2 x 0.12±0.0096cm thk MS ERW Tube for foot support in High-base stool. TWIN WHEEL CASTORS: The twin wheel castors should be injection moulded in Black Nylon. Width- 65.0cm, Depth- 65.0 cm, Height- 88.0cm to 99.5cm Seat Height- 67.0 to 78.5cm		
22.5	**Compactor of size 4000L X1200W X 2047 H (1Nos single static , 1Nos single mobile , 3Nos of Twin Mobile with guided rail)**	**Nos**	**1**

	Overall Dimensions of SS1 - Single Static 1 Bay Push Pull Type (U/C + Fittings) shall be 1200mm(W)x400mm(D)x2082mm(H). The Construction shall be rigid knock down made out of 0.8 thick CRCA steel conforming to IS : 513.Each body shall have a main unit plus and then one add on unit depending upon requirement. Each unit having 5 loading levels formed by 4 nos. adjustable shelves. The front cover having pattern of holes on the front surface for ventilation purpose. Fi l finish consists of epoxy polyester powder coating of approved color & shade with a Dry Film Thickness of minimum 40 microns.Shelf construction shall be with 12 bend panel made from CRCA steel 0.7 mm thick IS:513, Gr.D.Uniformly distributed load capacity of 100 Kg . Undercarriage shall have construction in welded frame CRCA sheet 2 mmthk conforming to IS:513. The movements of the system shall be Push pull configuration (TYPE-P1/TYPE-P2) : Movement of units achieved by pushing or pulling 'C' type plastic handle (mounted on each double & single movable units) & rigidly fixed at suitable height on body side. Each movable body also has an understructure with 4 nos. of antifriction ball bearings for rolling on channels. The twin moving body, i.e. TM, has 4 nos. of bearing fitted horizontally to restrict the lateral movement of the body on rail while the single moving body, i.e. SL, body has 2 nos. of a special anti-tilt bearing assembly fitted to the understructure which not only restricts lateral movement but also prevents SL from toppling. A Centralized locking arrangement is provided through Locking Stiffener mounted onto back of Single Last unit, i.e. SL body. It gets locked into the channels when all the units are brought together, and the lock is turned. The Recess handle lock is of Godrej make & placed at a height of 940mm from ground level. The locking stiffener is made of 1.2 mm thk conforming to IS:513.Hinged doors have Recessed Die cast Handle cum lock with 3 way locking through a lever & shooting bolts.The nuts & bolts are galvanized / blackodized / Zn Plated. Also total no. of loading levels per understructure shall be 5 for SS1. Label Holder: It is an aluminium extrusion of length 396mm for SL/SS and 796mm for TM, fitted on to front cover of body. The Paper is 300GSM matt milky white sticker paper, to be inserted into the aluminium extrusion. The length of paper is 394mm for SL/SS and 794mm for TM. Over that a transparent plastic of corresponding length of 150-200 micron polythene is to be inserted. Overall Dimensions of SL1 - Single Last 1 Bay Push Pull Type (U/C + Fittings) shall be 1200mm(W)x400mm(D)x2082mm(H). The Construction shall be rigid knock down made out of 0.8 thick CRCA steel conforming to IS : 513.Each body shall have a main unit plus and then one add on unit depending upon requirement. Each unit having 5 loading levels formed by 4 nos. adjustable shelves. The front cover having pattern of holes on the front surface for ventilation purpose. Fi l finish consists of epoxy polyester powder coating of approved color & shade with a Dry Film Thickness of minimum 40 microns.Shelf construction shall be with 12 bend panel made from CRCA steel 0.7 mm thick IS:513, Gr.D.Uniformly distributed load capacity of 100 Kg . Undercarriage shall have construction in welded frame CRCA sheet 2 mmthk conforming to IS:513. The movements of the system shall be Push pull configuration (TYPE-P1/TYPE-P2) : Movement of units achieved by pushing or pulling 'C' type plastic handle (mounted on each double & single movable units) & rigidly fixed at suitable height on body side. Each movable body also has an understructure with 4 nos. of antifriction ball bearings for rolling on channels. The twin moving body, i.e. TM, has 4 nos. of bearing fitted horizontally to restrict the lateral movement of the body on rail while the single moving body, i.e. SL, body has 2 nos. of a special anti-tilt bearing assembly fitted to the understructure which not only restricts lateral movement but also prevents SL from toppling. A Centralized locking arrangement is provided through Locking Stiffener mounted onto back of Single Last unit, i.e. SL body. It gets locked into the channels when all the units are brought together, and the lock is turned. The Recess handle lock is of Godrej make & placed at a height of 940mm from ground level. The locking stiffener is made of 1.2 mm thk conforming to IS:513.Hinged doors have Recessed Die cast Handle cum lock with 3 way locking through a lever & shooting bolts.The nuts & bolts are galvanized / blackodized / Zn Plated. Also total no. of loading levels per understructure shall be 5 for SL1. Label Holder: It is an aluminium extrusion of length 396mm for SL/SS and 796mm for TM, fitted on to front cover of body. The Paper is 300GSM matt milky white sticker paper, to be inserted into the aluminium extrusion. The length of paper is 394mm for SL/SS and 794mm for TM. Over that a transparent plastic of corresponding length of 150-200 micron polythene is to be inserted.		
22.6	**PI Chair**	**Nos**	**15**
	SEAT/BACK A SSEMBLY: The seat is made up of 1.2 ± 0.1cm thk. hot pressed plywood measured.The Back is made up of injection mou1ded glass filled nylon & upholstered using Mesh fabric with high te city yarn. * SEAT SIZE : 47.0 cm. (W) x 51.5 cm (D) * BACK SIZE : 45.0 cm. (W) x 65.3 cm. (H) HIGH RESILIENCE (HR) POLYURETHANE FOAM: The HR polyurethane seat foam is moulded with density 45+/-2 kg/m° and hardness 16 ± 2 kgf as per IS:7888 for 25% compression. ARMRESTS : The adjustable armrest is designed with the following features : • Up-Down adjustment- 8 steps (8 0±0.Scm range) • Height adjustable armrest structure which is Powder Coated & fitted with an armrest top. • Fixed Armrest Top is PU moulded over metal insert. LUMBAR SUPPORT ASSEMBLY: The Lumbar support consists of polypropylene pad with moulded polyurethane foam & covered with polyester fabric.The Height of Lumbar pad can be adjusted through two projecting knobs provided on the rear side of the pa6. Lumbar pad has an adjustment of 8.0 ± 0.5 cm in height. FRONT PIVOT SYNCHRO MECHANISM: The adjustable tilting mechanism is designed with the following features. • 360° revolving type. • Single point control. • Front-pivot for tilt with feet resting on ground ensuring more comfort. • Tilt tension adjustment. • 4-position locking with anti-shock feature. • Seat/back tilting ratio of 1:2. PNEUMATIC HEiGHT ADJUSTMENT. The pneumatic height adjustment has an adjustment stroke oi 10.0 ± 0.3 cn°. Pedestal Assembly : the pedestal is injection moulded in black 30% glass filled nylon and fitted with 5 nos. twin wheel castors. The pedestal pitch center dia is 66.1± 0.5 cm. TWIN WHEEL CASTORS: The twin wheel castors are injection moulded in black Nylon.		
22.7	**19 Seater Conference Table (5400Lx600Dx740H) with Head board (1800 X 850 X 740)**	**Nos**	**1**
	Work Surface-Made of 25mm Thick Pre-lami ted twin board of E1-P2 grade and approved shade conforming to IS-12823:1990, Edge banded with matching 2 mm thick PVC lipping.Plastic ABS access flap is provided for easy access to wires and cables. Work top is available in various shapes. Understructure-It consist of 18mm Thick Pre-lami ted twin board of E1-P2 grade and approved shade conforming to IS-12823:1990, Edge banded with matching 2 mm thick PVC lipping.Aluminium alloy 63400 - WP profile is used for connecting panels together. The product has a knock-down construction. Modesty Panel-Made of 18mm Thick Pre-lami ted twin board of E1-P2 grade and approved shade conforming to IS-12823:1990, Edge banded with matching 2 mm thick PVC lipping. Powder coated accent metal strip provided below work surface to enhance aesthetics. It is made of 0.8mm CRCA as per IS 513,epoxy polyester powder coated (DFT 40-60 microns). Wire Ma gement-An array of panels made of 0.8mm CRCA MS IS:513, epoxy polyester powder coated (DFT 40-60 microns) is used for flow of wires and cables. Provision to mount Anchor Roma 6 module plate is provided below worktop. Cutout on top with two piece injection moulded plastic part polymer component is fitted to pull out audio,video cables onto worktop and connect devices charger to power socket below worktop.		
22.8	**Lecture Hall Desk cum Bench**	**Nos**	**99**

	Legs are made of MS ERW tube section (IS:7138) of size 75x25x2 mm thick oval tube with 5 mm thk HR brackets as per IS:2062 and 2mm thk CRCA brackets as per IS-513welded on to the tubes. Assembly is powder coated with epoxy polyester.Leg height varies from 705 to 1005 in pitch of 50 as per layout.Sturdy anchoring by anchor bolts on to base of 8mm thk plate for proper resting of Leg**.Shoe made of ultramid -Nylon are provided at the bottom for covering the base plate. B)Side clads: Two side clads made of e18 mm thk plate with 0.8mm thk pvc lipping and on the outside covered with welded metal structure made of 2 mm thk CRCA as per 1S-513 powder coated with Epoxy polyester . C)Worktop: Worktop are made of 25 mm thick Pre-Lami ted Board of El-P2 Grade and approved shade conforming to IS:12823:1990. All the edge of work surface are provided with machine pressed 2mm thick pvc edge band glued with hot melt glue. D)Seat: Seat has self closing mechanism which will operate by means of dead weight . Seat understructure is made from combi tion of welded fabricated structure of 5mm Thk HR as per IS:2062 and 8mm thk ply as per IS:303 with moulded PU foam of density 55 kg/cu.mtr. on top which in turn is covered with stitched upholstery made of leatherite or foam back fabric.Seat assembly is covered on bottom side by means of seat cover made of pp. E)Seat Back: Seat back is made from combi tion of 8mm thk ply as per IS:303 with moulded foam on top which in turn is covered with stitched upholstery made leaterite as per or foam back fabric. F) Seat Support Frame : Seat support frame is made from combi tion of MS ERW tube section (IS 7138) of size 80x40x2.5 mm thick rectangular tube and MS ERW tube section(IS 7138), of size 48x19.1x2 mm thick oval tube welded together . Assembly is powder coated with Epoxy polyester. CAP made of ultramid are provided from front to cover the oval tubes. G)Modesty: Modesty is made of 25mm thick pre-lami ted twin board of E1-P2 Grade and approved shade conforming to IS:12823:1990. All the edge of modesty are provided with machine pressed 2 mm Thick pvc edge band glue with hot melt glue.		
22.9	**Upstorage cabinets 900(W)mm X 328**(D)mm X 785(H)mm.**	**Nos**	**15**
	Product Size - 900(W)mm X 328**(D)mm X 785(H)mm. Installation - The Up storage cabinet should be installed on concrete or solid brick wall only Construction & Material - Aesthetically appealing complete knonk-down construction made from 0.5mm(#0.07 mm)THK CRCA as per IS-513 for back panel,side panel, side end cover panel, top panel, bottom panel & bottom panel cover. Doors - Wooden doors are made from 18mm Thick Pre-laminated twin board of E1-P2 grade and approved shade, Edge banded with matching 2mm thick PVC lipping. Locking - Cam lock with lock lever at the bottom of the door Shelving - Fixed shelves made up of 10 bend panel made of 0.6mm (for 300mm and 450mm Width land 0.8mm (for 600mm and 900mm width) Thick CRCA (D Grade, IS-513) A4 SIZE BOX FILES (85W×345Hx285D) can be stored vertically as shown in page 4. Number of files that can be stored on each shelf is For width 900w - 9 Nos. Each shelf has max Load Capacity of 36.5kg of UDL for 900W unit Finish - Epoxy powder coated to the thickness of 50 microns (+10)		
22.10	**Upstorage cabinets 450(W)mm X 328**(D)mm X 785(H)mm.**	**Nos**	**1**
	Product Size – 450(W)mm X 328**(D)mm X 785(H)mm. Installation - The Up storage cabinet should be installed on concrete or solid brick wall only Construction & Material - Aesthetically appealing complete knonk-down construction made from 0.5mm(#0.07 mm)THK CRCA as per IS-513 for back panel,side panel, side end cover panel, top panel, bottom panel & bottom panel cover. Doors - Wooden doors are made from 18mm Thick Pre-laminated twin board of E1-P2 grade and approved shade, Edge banded with matching 2mm thick PVC lipping. 450W units have single RH door with lock. 600W, 900W units have LH door & RH door with single lock on RH door. Soft closing Hinges Available with 105° door opening angle Handleless Doors Locking - Cam lock with lock lever at the bottom of the door Shelving - Fixed shelves made up of 10 bend panel made of 0.6mm (for 300mm and 450mm Width land 0.8mm (for 600mm and 900mm width) Thick CRCA (D Grade, IS-513) A4 SIZE BOX FILES (85W×345Hx285D) can be stored vertically as shown in page 4. Number of files that can be stored on each shelf is For width 900w - 9 Nos. Each shelf has max Load Capacity of 36.5kg of UDL for 900W unit Finish - Epoxy powder coated to the thickness of 50 microns (+10		
2.11	**Upstorage cabinets penta corner 600(W)mm X 600(W2)328mm**(D)mm X 785(H)mm.**	**Nos**	**1**
	Product Size - Penta Unit- 600(W)mm*600(W)mm*328*(d)mm*785(H)mm **- Depth includes door thickness. Body depth is 308mm Stackability - Any width of add-on units can be stacked with any width of main unit and penta unit. - The Up storage cabinet should be installed on concrete or solid brick wall only Construction & Material - Aesthetically appealing complete knonk-down construction made from 0.5mm(#0.07 mm)THK CRCA as per IS-513 for back panel,side panel, side end cover panel, top panel, bottom panel & bottom panel cover. Doors - Wooden doors are made from 18mm Thick Pre-laminated twin board of E1-P2 grade and approved shade, Edge banded with matching 2mm thick PVC lipping. Doors - Wooden doors are made from 18mm Thick Pre-laminated twin board of E1-P2 grade and approved shade, Edge banded with matching 2mm thick PVC lipping Locking - Cam lock with lock lever at the bottom of the door Shelving - Fixed shelves made up of 10 bend panel made of 0.6mm (for 300mm and 450mm Width land 0.8mm (for 600mm and 900mm width) Thick CRCA (D Grade, IS-513) A4 SIZE BOX FILES (85W×345Hx285D) can be stored vertically as shown in page 4. Number of files that can be stored on each shelf is For width 900w - 9 Nos. Each shelf has max Load Capacity of 36.5kg of UDL for 900W unit Finish - Epoxy powder coated to the thickness of 50 microns (+10)		
22.12	**PI Table 1500x750 main + 900x450 ERU**	**Nos**	**19**

	Providing metal powder coated CUBE leg. Legs are for standard workstation height of 750mm. Cube legs are fabricated by Argo Shield welding MS ERW Tube 40 mm x 40 x 1.2 mm thk, with the base of the MS tube a polycarbonate cap with M8 metal insert is fixed, on to which a straight M8 leveler fitted to a bottom translucent cap which allows for adjustment of the height by 50mm. Support brackets of 3 mm thk HR are welded on top surface of Leg for fixing top. UNDERSTRUCTURE: Comprising of metal powder coated cross connectors between legs and legs. Made up of metal powder coated finish and the entire assemply is fixed to the worktop. These are the supporting members that span across the leg assemblies and form the understructure of a workstation. These shall be fabricated by CO2 welded MS powder coated and Powder used for powder coating will be LEAD-free, the tube shall be made from section 50 mm x 25 mm x 1.2mm thick. Cross members are assembled by friction fit PDC joinery and Grub screws. Certain cross connectors shall be fabricated with Argo shield welding with a 3mm thick HR plate at the end. WIREMANAGEMENT: For 750 high workstations-The wire raisers shall be made from 0.8 mm thick CRCA with bottom support made from 5 mm thick HR and 2 mm thick CRCA fabricated with Argo shield welding, shall be fixed on single/dual power box. The variety of raiser available are "MODESTY : Metal modesty: Lazer cut perforated Metal modesty Metal modesty are mounted on the worktop with the help of the modesty mounting brackets Modesty terminates at 400 mm from ground. Metal modesty shall be made of 0.8 mm thick CRCA. Internal tapped stud is welded to the modesty for mounting. Internal tapped stud shall be welded to the modesty for mounting. Metal modesty are mounted on the worktop with the help of the modesty mounting brackets made of 3 mm thick HR. It would terminate at 400 mm from the ground." WORKSURFACE - Out of 25 mm thk prelam particle board with flat pvc lipping edge banding of size 1500 mm w x 750 mm d for Main table, 900 mm w x 450 mm d for Return unit. Worktop shall be made of 25MM thick Pre-Laminated E1 grade E1 grade Board. The top shall be laminated with a laminate of 0.6 mm thickness of approved shade. All the edges of the work surface shall be provided with machine pressed 2 mm thick PVC lipping glued with low emitting hot melt EVA glue and configuration of access flap or grommet cut out. The bottom shall have a backing laminate of 0.6 mm thickness. Metal Pedestal: 2 boxes + 1file: minimum Size-390 (W) x 440 (D) x 650 (H)mm. Its welded assembled of 21 gauge thick CRCA for body shell, drawer front & tray, front side stiffener, rear side stiffener & bottom, 18 gauge thick CRCA top stiffener & bottom stiffener. Drawer Fronts & Metal Front Straight Edge. All Drawers with Double extension precision ball slide shall be provided. For Drawer pulling, side wise tapered recess provided in shell behind Drawer Fronts. Locking: 10 lever Cam Lock & Central RH locking with actuator & lock channel mechanism Godrej/ Hafele/ Hettich make lock. Castors: Swiveling nonlockable Castors mounted below the body shell. Finish: Epoxy Polyester Powder coated to the thickness of 50 microns (+/-10). Metal Tray Tray is made of 0.9 mm thick CRCA 'D' Grade as per IS-513.(Size-482(W)x280(D)x40(H))Ball-slideSingle Extension 350 mm(long)x11.8mm(Thk) Single extension (Stroke: 230mm) Ball-slideMade of Ball Slide assembly combination of 1.2/1.5mm thk roll-formed CRCA 'D' Grade as per IS-513. Tray Mouse Mouse Tray Option retrofit mouse tray is provided which could be fitted at right hand or left hand as per user requirement. Mouse tray (size 210 x 210) is made of 0.9 mm thick CRCA 'D' Grade as per IS-513. CPU Trolley is made of 1.0 mm thick MS CRCA Sheet and Side support is made of 0.8 mm thick MS CRCA Sheet. Castor Castor Lockable/Non-lockable twin		
22.13	**Student Workstation:- 1500x750 with storage**	**Nos**	**21**
	Linear Workstation size 1500Wx750D PARTIAL SCREENS: 8mm thk Lami ted glass marker screen. Available in 300mm ht., mounted on Studs. The screen shall be made from 3.5 mm clear annealed with 1 mm PVB film and 3.5 mm clear annealed. LEGS: Providing metal powder coated CUBE leg. Legs are for standard workstation height of 750mm. Cube legs are fabricated by Argo Shield welding MS ERW Tube 40 mm x 40 x 1.2 mm thk, with the base of the MS tube a polycarbo te cap with M8 metal insert is fixed, on to which a straight M8 leveler fitted to a bottom translucent cap which allows for adjustment of the height by 50mm. Support brackets of 3 mm thk HR are welded on top surface of Leg for fixing top. UNDERSTRUCTURE: Comprising of metal powder coated cross connectors between legs and legs. Made up of metal powder coated finish and the entire assemply is fixed to the worktop. These are the supporting members that span across the leg assemblies and form the understructure of a workstation. These shall be fabricated by CO2 welded MS powder coated and Powder used for powder coating will be LEAD-free, the tube shall be made from section 50 mm x 25 mm x 1.2mm thick. Cross members are assembled by friction fit PDC joinery and Grub screws. Certain cross connectors shall be fabricated with Argo shield welding with a 3mm thick HR plate at the end. WIRE MA GEMENT: For 750 high workstations- For vertical wireme gement, Shared legs / wire risers with cover are considere. For horizontal wirema gement - Wire Tray with integrated power box. Access flap will be provided. Switch plate of (8+3 Anchor Roma) module is considered for Power and Data points. This is used to carry data & electrical wires through the length of the workstation cluster to give a concealed look. A wire carrier shall be made with a combi tion of 0.6 mm thick CRCA outer body along with 0.8 mm thick CRCA switch plate (8+3 Anchor Roma) module cut out as standard. These are mounted either on leg lateral members or cross members with a bracket made from 3 mm thick HR. WORKSURFACE - Out of 25 mm thk prelam particle board with flat pvc lipping edge banding of size 1200 mm w x 750 mm d. Worktop shall be made of 25MM thick Pre-Lami ted E1 grade E1 grade Board. The top shall be lami ted with a lami te of 0.6 mm thickness of approved shade. All the edges of the work surface shall be provided with machine pressed 2 mm thick PVC lipping glued with low emitting hot melt EVA glue and configuration of access flap or grommet cut out. The bottom shall have a backing lami te of 0.6 mm thickness. "MODESTY : Metal modesty: Lazer cut perforated Metal modesty Metal modesty are mounted on the worktop with the help of the modesty mounting brackets Modesty termi tes at 400 mm from ground. Metal modesty shall be made of 0.8 mm thick CRCA. Inter l tapped stud is welded to the modesty for mounting. Inter l tapped stud shall be welded to the modesty for mounting. Metal modesty are mounted on the worktop with the help of the modesty mounting brackets made of 3 mm thick HR. It would termi te at 400 mm from the ground." Metal Pedestal: 2 boxes + 1file: minimum Size-390 (W) x 440 (D) x 650 (H)mm. Its welded assembled of 21 gauge thick CRCA for body shell, drawer front & tray, front side stiffener, rear side stiffener & bottom, 18 gauge thick CRCA top stiffener & bottom stiffener. Drawer Fronts & Metal Front Straight Edge. All Drawers with Double extension precision ball slide shall be provided. For Drawer pulling, side wise tapered recess provided in shell behind Drawer Fronts. Locking: 10 lever Cam Lock & Central RH locking with actuator & lock channel mechanism Godrej/ Hafele/ Hettich make lock. Castors: Swiveling nonlockable Castors mounted below the body shell.		
22.14	**Linear Workstation size 1200x600**	**Nos**	**165**

	Linear Workstation size 1200Wx600D PARTIAL SCREENS: 8mm thk Lami ted glass marker screen. Available in 300mm ht., mounted on Studs. The screen shall be made from 3.5 mm clear annealed with 1 mm PVB film and 3.5 mm clear annealed. LEGS: Providing metal powder coated CUBE leg. Legs are for standard workstation height of 750mm. Cube legs are fabricated by Argo Shield welding MS ERW Tube 40 mm x 40 x 1.2 mm thk, with the base of the MS tube a polycarbo te cap with M8 metal insert is fixed, on to which a straight M8 leveler fitted to a bottom translucent cap which allows for adjustment of the height by 50mm. Support brackets of 3 mm thk HR are welded on top surface of Leg for fixing top. UNDERSTRUCTURE: Comprising of metal powder coated cross connectors between legs and legs. Made up of metal powder coated finish and the entire assemply is fixed to the worktop. These are the supporting members that span across the leg assemblies and form the understructure of a workstation. These shall be fabricated by CO2 welded MS powder coated and Powder used for powder coating will be LEAD-free, the tube shall be made from section 50 mm x 25 mm x 1.2mm thick. Cross members are assembled by friction fit PDC joinery and Grub screws. Certain cross connectors shall be fabricated with Argo shield welding with a 3mm thick HR plate at the end. WIRE MA GEMENT: For 750 high workstations- For vertical wireme gement, Shared legs / wire risers with cover are considere. For horizontal wirema gement - Wire Tray with integrated power box. Access flap will be provided. Switch plate of (8+3 Anchor Roma) module is considered for Power and Data points. This is used to carry data & electrical wires through the length of the workstation cluster to give a concealed look. A wire carrier shall be made with a combi tion of 0.6 mm thick CRCA outer body along with 0.8 mm thick CRCA switch plate (8+3 Anchor Roma) module cut out as standard. These are mounted either on leg lateral members or cross members with a bracket made from 3 mm thick HR. WORKSURFACE - Out of 25 mm thk prelam particle board with flat pvc lipping edge banding of size 1200 mm w x 750 mm d. Worktop shall be made of 25MM thick Pre-Lami ted E1 grade E1 grade Board. The top shall be lami ted with a lami te of 0.6 mm thickness of approved shade. All the edges of the work surface shall be provided with machine pressed 2 mm thick PVC lipping glued with low emitting hot melt EVA glue and configuration of access flap or grommet cut out. The bottom shall have a backing lami te of 0.6 mm thickness. "MODESTY : Metal modesty: Lazer cut perforated Metal modesty Metal modesty are mounted on the worktop with the help of the modesty mounting brackets Modesty termi tes at 400 mm from ground. Metal modesty shall be made of 0.8 mm thick CRCA. Inter l tapped stud is welded to the modesty for mounting. Inter l tapped stud shall be welded to the modesty for mounting. Metal modesty are mounted on the worktop with the help of the modesty mounting brackets made of 3 mm thick HR. It would termi te at 400 mm from the ground." Metal Pedestal: 2 boxes + 1file: minimum Size-390 (W) x 440 (D) x 650 (H)mm. Its welded assembled of 21 gauge thick CRCA for body shell, drawer front & tray, front side stiffener, rear side stiffener & bottom, 18 gauge thick CRCA top stiffener & bottom stiffener. Drawer Fronts & Metal Front Straight Edge. All Drawers with Double extension precision ball slide shall be provided. For Drawer pulling, side wise tapered recess provided in shell behind Drawer Fronts. Locking: 10 lever Cam Lock & Central RH locking with actuator & lock channel mechanism Godrej/ Hafele/ Hettich make lock. Castors: Swiveling nonlockable Castors mounted below the body shell.		
22.15	**Student Linear Workstation size 1050x600**	**Nos**	**20**
	LEGS: Providing metal powder coated CUBE leg. Legs are for standard workstation height of 750mm. Cube legs are fabricated by Argo Shield welding MS ERW Tube 40 mm x 40 x 1.2 mm thk, with the base of the MS tube a polycarbo te cap with M8 metal insert is fixed, on to which a straight M8 leveler fitted to a bottom translucent cap which allows for adjustment of the height by 50mm. Support brackets of 3 mm thk HR are welded on top surface of Leg for fixing top. UNDERSTRUCTURE: Comprising of metal powder coated cross connectors between legs and legs. Made up of metal powder coated finish and the entire assemply is fixed to the worktop. These are the supporting members that span across the leg assemblies and form the understructure of a workstation. These shall be fabricated by CO2 welded MS powder coated and Powder used for powder coating will be LEAD-free, the tube shall be made from section 50 mm x 25 mm x 1.2mm thick. Cross members are assembled by friction fit PDC joinery and Grub screws. Certain cross connectors shall be fabricated with Argo shield welding with a 3mm thick HR plate at the end. WIRE MA GEMENT: For 750 high workstations- For vertical wireme gement, Shared legs / wire risers with cover are considere. For horizontal wirema gement - Wire Tray with integrated power box. Access flap will be provided. Switch plate of (8+3 Anchor Roma) module is considered for Power and Data points. This is used to carry data & electrical wires through the length of the workstation cluster to give a concealed look. A wire carrier shall be made with a combi tion of 0.6 mm thick CRCA outer body along with 0.8 mm thick CRCA switch plate (8+3 Anchor Roma) module cut out as standard. These are mounted either on leg lateral members or cross members with a bracket made from 3 mm thick HR. WORKSURFACE - Out of 25 mm thk prelam particle board with flat pvc lipping edge banding of size 1050 mm w x 600 mm d. Worktop shall be made of 25MM thick Pre-Lami ted E1 grade E1 grade Board. The top shall be lami ted with a lami te of 0.6 mm thickness of approved shade. All the edges of the work surface shall be provided with machine pressed 2 mm thick PVC lipping glued with low emitting hot melt EVA glue and configuration of access flap or grommet cut out. The bottom shall have a backing lami te of 0.6 mm thickness. Metal Pedestal: 2 boxes + 1file: minimum Size-390 (W) x 440 (D) x 650 (H)mm. Its welded assembled of 21 gauge thick CRCA for body shell, drawer front & tray, front side stiffener, rear side stiffener & bottom, 18 gauge thick CRCA top stiffener & bottom stiffener. Drawer Fronts & Metal Front Straight Edge. All Drawers with Double extension precision ball slide shall be provided. For Drawer pulling, side wise tapered recess provided in shell behind Drawer Fronts. Locking: 10 lever Cam Lock & Central RH locking with actuator & lock channel mechanism Godrej/ Hafele/ Hettich make lock. Castors: Swiveling nonlockable Castors mounted below the body shell. Finish: Epoxy Polyester Powder coated to the thickness of 50 microns (+/-10).		

23	**Audio Video Solution / Unified communication.**		
23.1	**Lecture Hall - Audio Video Solution / Unified communication.**		
23.1.1	**Display System:** 8500 Lumens brightness projectorEpsonEB-PU1008B Nos1 Standard throw lensEpsonELPLW05 Nos1 Ceiling mount for projectorNTnT 781D Nos1 137" Tab tensioned 16:10, Matt White220 V, with Low Voltage Controller, remote with black drop of 1ftDraper101711U Piece1	Each	1
23.1.2	**Video UC & Switching System:** Wall plate with HDMI and USB-CComprehensive Piece1 HDMI & USB C Network Encoder / Decoder QSC NV-21-HU Piece2	Each	1

23.1.3	**Audio System:** Wireless handheld mic systemShureBLX24RIN/SM58 Piece2 Wireless Lapel mic systemShureBLX14RIN/W85 Piece1 Anten distribution deviceShureUA844+SWB-IN Piece1 Omnidirectio l anten ShureUA860SWB Piece2 Anten BoosterShureUA834WB Piece2 100' Coaxial CableShureUA8100 Piece2 6' Coaxial cableShureUA806 Piece8 Gooseneck MicShureCVG18-B/C-X Piece1 Shock mount for gooseneck micShureA400SM Piece1 Digital Sig l ProcessorQSC Core 8 Flex Piece1 To E ble GUI in QSC touch panel and also in another third party touch panels like Ipad, Zoom room panel or windows based MS teams panelsQSC SLQUD-8N-P Piece1 Q-SYS Scripting for Third-Party Control PluginsQSC SLQSE-8N-P Piece1 4 Output expansion moduleQSC QIO-L4o Piece1 Two Channel amplifier with 350 watts per channelQSC DCA 1622 Piece1 10" Compact two way wall speakersQSC E110 Piece2	Each	1
23.1.4	**Control System :** Touch Panel QSC TSC-70-G3 Piece1 8x1G PoE+ 220W and 2xSFP+ Ma ged SwitchNetgear M4250-8G2XF-PoE+ (GSM4210PX) Piece1	Each	1
23.1.5	**Bulk & Patch Cable - On Actuals :** HDMI Patch Cable 6 ft KramerC-MHM/MHM/6 Piece6 USB 2.0 C cable 6ftKramerC-USB/CC-6 Piece2 Speaker CableBelden8473 Meters200 Microphone CableBelden1812A / Close Eq Meters75 Audio Sterio / Control CableBelden8723 Meters50 STP CableDlinkNCB-C6SGRYR-305 Meters300	Each	1
23.1.6	**Mounting & Accessories :** Std 19" Floor Rack 27U, 800x800, With Glass door, 9 Shelves,Power strip to cover 18 Power Sockets 5 amp each, extension cables, Fans, Castors , accessories etc,Valrack27U Piece1	Each	1
23.1.7	**Installation & Programming :** Installation, Commissioning,Design and Consultancy , User Training, Site Survey,Drawings – (conduiting layouts, schematics etc.)and documentation chargesJob1 Cabling and termi tion chargesLot Lot1	Each	1
23.1.8	**Accoustic ceiling work :** Supply & Installation of Sierra OP 600X600X15mm 0.9 NRC MF Acoustic Tile with Silhouette 38 Grid System & Standard Wall Angle2100 sq.m	Each	1
23.2	**Conference Room- with projector**		
23.2.1	**Display System :** 5000 Lumens brightness projectorEpsonEB-800F Nos1 Ceiling mount for projectorNTnT 781D Nos1 119" Tab tensioned 16:9, Matt White220 V, with Low Voltage Controller, remote with black drop of 1ftDraper 101307U Piece1	Each	1
23.2.2	**Video UC & Switching System :** Cable cubby with x2 Power sockets, and pass through holesMagnumMG112NAPiece1 3x1 Auto switcher with HDMI and USB ConnectivityKramerSWT3-31-HUNAPiece1 HDMI TransmitterKramerTP-583TNAPiece1 Under table mounting bracketnT7GB01NAPiece2 HDMI ReceiverKramerTP-583RNAPiece1	Each	1
23.2.3	**Audio System :** Wall mount speakersKramerTAVOR-5-O(PAIR)/BLACKNAPiece1	Each	1
23.2.4	**Bulk & Patch Cable :** HDMI Patch Cable 6 ft KramerC-MHM/MHM/6NAPiece5 USB 3.2 GEN–2 Full Featured USB–C (M) to USB–C (M) CableKramerC-U32/FFNAPiece2 Audio Sterio / Control CableBelden8723NAMeters10 STP CableDlinkNCB-C6SGRYR-305NAMeters20 SITC of 9U 600X600 standard Rack with Glass door, fans, 3 Shelves, Power unit with 8 no of 5A power sockets, Castors, screws and all required accessories.Valrack/WQ9UNA Job1	Each	1
23.2.5	**Installation & Programming :** Installation, Commissioning,Design and Consultancy , User Training, Site Survey,Drawings – (conduiting layouts, schematics etc.)and documentation chargesJob1 Cabling and termi tion chargesLot Lot1	Each	1
23.3	**Conference Room- with display**		
23.3.1	**Display System :** 98" display, 500 nits brightness, 3840 x 2160 4K UHD resolutionSamsungQM98TNAPiece1 Wall mount for above displayNtnT 788CNAPiece1	Each	1
23.3.2	**Video UC & Switching System :** Cable cubby with x2 Power sockets, and pass through holesMagnumMG112NAPiece1 3x1 Auto switcher with HDMI and USB ConnectivityKramerSWT3-31-HUNAPiece1 HDMI TransmitterKramerTP-583TNAPiece1 Under table mounting bracketnT7GB01NAPiece2 HDMI ReceiverKramerTP-583RNAPiece1	Each	1
23.3.3	**Audio System:** Wall mount speakersKramerTAVOR-5-O(PAIR)/BLACKNAPiece1	Each	1
23.3.4	**Bulk & Patch Cable :** HDMI Patch Cable 6 ft KramerC-MHM/MHM/6NAPiece5 USB 3.2 GEN–2 Full Featured USB–C (M) to USB–C (M) CableKramerC-U32/FFNAPiece2 Audio Sterio / Control CableBelden8723NAMeters10 STP CableDlinkNCB-C6SGRYR-305NAMeters20 SITC of 9U 600X600 standard Rack with Glass door, fans, 3 Shelves, Power unit with 8 no of 5A power sockets, Castors, screws and all required accessories.Valrack/WQ9UNA Job1	Each	1
23.3.5	**Installation & Programming :** Installation, Commissioning,Design and Consultancy , User Training, Site Survey,Drawings – (conduiting layouts, schematics etc.)and documentation chargesJob1 Cabling and termi tion chargesLot Lot1	Each	1