



भारतीय विज्ञान शिक्षा एवं अनुसंधान संस्थान पुणे
INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH PUNE

(An Autonomous Institution of the Ministry of HRD, Govt. of India)

Main Building, Dr. Homi Bhabha Road, Pashan, Pune – 411 008

No: 23(1)/SE/IISER/2015/

17th August 2015

NOTICE INVITING TENDER

The Superintending Engineer on behalf of the Director IISER Pune invites sealed two parts item rates composite tenders from the lab furniture manufacturer, who are eligible as per the minimum requirements defined in clause 2 & 3 of NIT for the work mentioned below.

Sr. No.	Description of work in Brief	Estimated cost in (Rs.)	Earnest Money Deposit (EMD) in (Rs.)	Last date for application & Issue of the tender	Date & time of Pre-bid meeting	Date & time of Submission of tender	Date & time of opening of tender
1	2	3	4	5	6	7	8
1	Name of work: Supply and Installation Lab benches, Fume Hoods and exhaust system in GF Chemistry block, Main Building at IISER Pune. NIT No : 3/IISER/Pune/ 2015-16	128 Lakhs	2,56,000/-	24/08/2015 up to 4.30 P.M.	25/08/2015 At 11.00 A.M.	01/09/2015 up to 3.00 P.M.	01/09/2015 At 3.30 P.M.

Time for completion is two month. The tender forms and other details may be obtained from the office of the Superintending Engineer, IISER, Pune on payment of Rs. 1000/- (non-refundable) payable in the form of pay order or Demand Draft on any Scheduled Commercial bank payable at Pune in favour of Director, IISER, Pune. Eligibility and other details/information can be seen on website <http://www.iiserpune.ac.in> & www.tenders.gov.in

Size= 10 x 10 cm



भारतीय विज्ञान शिक्षा एवं अनुसंधान संस्थान पुणे
INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH (IISER), PUNE
Main building, Dr. Homi Bhabha Road, Pune : 411 008

TENDER FOR

NAME OF WORK: SUPPLY AND INSTALLATION LAB BENCHES, FUME HOODS AND EXHAUST SYSTEM IN GF CHEMISTRY BLOCK, MAIN BUILDING AT IISER PUNE.

NIT-3/ IISER/Pune/2015-16

DATE OF SUBMISSION OF TENDER-

On 01 09 2015 BEFORE 15 00 Hrs

VOLUME-1

TO BE SUBMITTED TO:

The Director,
IISER, Pune, Main Building,
Dr. Homi Bhabha Road, Pashan, Pune - 411 008
Maharashtra. Tel 020 2590 8082

INDEX

S.No.	Particulars	Pages
1	VOL- 1 NIT, General Conditions of Contract , Additional conditions	
2.	Section-I -N.I.T.	3
3.	Instructions to Tenderer / Bidders	16
4.	Letter of transmittal	19
5.	Prequalification Criteria Annexure I proforma A to D1	21
6.	Annexure A	32
7.	Check list for documents of prequalification	35
8.	Special Conditions for works	36-50
9.	Special Conditions for electrical works	51-56
10.	Certificate for Associating Electrical Agency (Annexure-I)	57-60
11.	Memorandum of Understanding for associated agencies electrical, HVAC, gas	61-65
	Annexure – I to IV & MOUs	
12.	Section – II Item rate tender Form	66
13.	SECTION-III General Conditions of Contract	78
14.	General Rules & Directions, Conditions of Contract, Clauses of Contract, Safety Code	79- 141
15.	Safety Code & Model Rules for the protection of Health and Sanitary arrangements for workers employed by IISER, Pune or its contractor.	142-149
16	Contractor' Labour Regulations	159
17.	Form of Performance (Guarantee) Bank Guarantee Bond, Proforma of agreement, B.G. Bid Security, Clause 25 Appendix.	167
18.	Proforma of Schedules A to C	169
19	Additional conditions of contract	178
20	SECTION- IV TECHNICAL SPECIFICATIONS & DRAWINGS VOL-2	1-47
21.	SECTION- V BILL OF QUANTITIES VOL-2	1-34

SECTION-I

NIT

SECTION I -NOTICE INVITING TENDER

1. The Superintending Engineer on behalf of the Director IISER Pune invites sealed two parts item rates composite tenders from the lab furniture manufacturer, who are eligible as per the minimum requirements defined in clause 2 & 3 of NIT for the work mentioned below in two envelope system.

Name of work: Supply and Installation Lab benches, Fume Hoods and exhaust system in GF Chemistry block, Main Building at IISER Pune.

NIT No : 3/IISER/Pune/2015-16

Estimated cost put to tender : Rs 128 Lakh

Period of completion : 2 (Two) Months

Cost of tender documents : Rs. 1000/- (One thousand only(Non – refundable)

Bid security/ EMD : Rs 2,56,000/-

Last Dates & time of application &
issue of Tender document: 24 08 2015 up to 4.00 P.M.

Pre bid meeting date & time : 25/08/2015 at 11:00 hours at the office of
The Superintending Engineer, IISER, Pune
Main Building, Homi Bhabha Road, Pashan,
Pune-411 008

Last date & time of submission of tender: up to 3.00 PM on 01 09 2015

Time & date of opening of Tender : At 3:30 PM on 01 09 2015

2. The bidders who fulfill the following requirements shall be eligible to apply.

Joint ventures are not accepted.

- (a) Should have satisfactorily completed during the last seven years ending last day of the month of May, 2015.
 - i) Three similar works* each costing not less than Rs. 51 Lakhs , or completed two similar works each costing not less than Rs. 77 lakhs, or completed one similar work costing not less than Rs. 102 lakhs.

*Similar work means: Supply and Installation of steel Lab furniture comprising of fume hoods, Lab benches, gas and utility distribution system, etc. Works executed abroad shall

also be considered for the purpose of experience in similar works provided documentary evidence is submitted from the competent authority. Only purchase orders without installations shall not be considered for the purpose of experience in similar works.

Should have had an average annual financial turnover of Rs. 1.00 Crore for, laboratory furniture, fume hood etc. during the immediate last three consecutive financial years ending 31st March 2015.

- (b) In case of foreign company, bidder should have offered services for the self or parent company manufactured fume hood & lab furniture in India at least for the past three years. The bidder or its parent company in India or abroad should have a well established (their own) in house manufacturing unit for the steel lab furniture and fume hood, quality management system as per International standards. The bidder or its parent company in India or abroad should possess the current/valid approval for such equipment manufacturing facility by a statutory certifying authority, like factory inspector etc.
- (c) The bidder / parent company should be an Official member with SEFA (Scientific Equipment and Furniture Association).
- (d) The bidder should have the ability to do ASHRAE testing at site through self or third party. The bidder should submit back-up documents verifying similar tests having been conducted at client site in the past.
- (e) The bidder should be registered company in India or should be a subsidiary of the foreign parent company in India dealing with supply & Installation of Lab furniture in India or an authorised Indian dealer of foreign parent company duly authorized by the parent company for quoting the tender on behalf of parent company. Similar work experience of the parent company shall be acceptable provided documentary evidence is produced to the satisfaction of IISER Pune.
- (f) Should not have incurred any loss in the last two year ending 31st March 2015.
- (g) Should have solvency of Rs 50 Lakhs certified by a Scheduled Bank and obtained not earlier than three months before the date of submission of Bid.

3 CONTRACT ELIGIBILITY CRITERIA

Further, the contract eligibility includes the following:

- 3.1 Experience on similar type of completed works executed during the **last seven years**; and details like monetary value, clients, proof of satisfactory completion. Part completion of the work still not complete can also be accepted provided proper documentary proof is produced.

***Similar work means: Supply and Installation of steel Lab furniture comprising of fume hoods, Steel Lab benches, gas and utility distribution system, etc. Works executed abroad shall also be considered for the purpose of experience in similar works provided documentary evidence is submitted from the competent authority. Only purchase orders without installations shall not be considered for the purpose of experience in similar works.**

This should be certified by an officer not below the rank of Executive Engineer in Govt. Departments and Superintending Engineer/ Chief Project manager or Equivalent in other organizations

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7 % per annum, calculated from the date of completion to the last date of receipt of applications for tenders.

- 3.3 Documentary evidence of adequate financial standing, Certified by Bankers, Audited Profit & Loss A/c and Balance Sheet, Annual turnover in **last five years**, access to adequate working capital.
- 3.4 Information regarding projects in hand, current orders, regarding litigation, exclusion/expulsion or black listing, if any.
- 3.6 Key personnel available and proposed to be engaged for management and supervision of the Project, their qualifications and experience.
- 3.7 Project planning and quality control procedures to be adopted. Manufacturing, installation methodology & Q A manual to be submitted along with the tender.
- 3.8 Bidders who meet minimum criteria will be qualified only if their available bid capacity is more than the bid value. The bid capacity of the contractor shall be determined by the following formula:

$$\text{Bid Capacity} = (A \times N \times 2) - B$$

Where,

'A' = maximum value of similar works executed in any one year during last five years taking in account the completed as well as works in progress duly enhanced at simple rate of 7% per annum.

'B' = Value of existing commitments and ongoing similar works to be completed in the next 'N' years

'N' = Number of years prescribed for completion of the subject contract [Minimum value of N shall be taken as 1 if the time period is less than (1) one year].

3.9 Bidders not meeting the minimum eligibility criteria shall be summarily rejected.

4 The time allowed for carrying out the work will be 2 (Two) months including monsoon period from the date of start as defined in schedule 'C' or from the first date of handing over of the site, whichever is later, in accordance with the phasing, if any, indicated in the tender

5 The bid shall be submitted in the original bid document (as issued by the IISER, Pune being the mentor Institute for IISER Pune) super scribing the name of work as specified below clause 8.

6 Attested / notarized documentary evidence in support of the above said parameters should be enclosed with the technical bid.

7 Bidder shall be evaluated as per evaluation criteria specified in the Annexure-A and to become technically eligible for short listing the bidder must secure at least fifty percent marks in each SH i.e. (a) to (f) mentioned in the Annexure A and sixty percent marks in aggregate.

8 Submission of Bid Documents

8.1 The bid submitted by the Bidder shall comprise the following:

- a) Documents in support of Minimum requirements as per Para 3
- b) Bid Security
- c) Information in Formats, as specified as per Annexure 1.
- d) Priced Bill of Quantities

and any other information required to be completed and submitted by Bidders in accordance with these instructions.

The Bidder shall submit the above documents as below,

A) Part I – Technical Bid

Envelope 1

- Technical bid

- Documents in support of Minimum requirements as per Para 3.
- Information as per Annexure 1

Envelope 2

- Bid security,

B) Part II – Financial Bid

Envelope 3

- Priced bill of quantities

All the envelopes should be sealed & super scribed separately with appropriate Envelope number and heading as defined above.

- 9 Director, Indian Institute of Science Education & Research, Pune shall be the "Accepting Authority" hereinafter referred to as such for the purpose of this Contract.
- 10 Bidding documents may be purchased from the office of The Director, IISER Pune, Main Building, Dr. Homi Bhabha Road, Pashan, Pune-411 008 w.e.f. 17/08/2015 to 24/08/2015 between 10.00 Am to 4.00pm by paying a non-refundable fee of Rs. 1000/-(One thousand only) in the form of pay order or Demand Draft on any Scheduled Commercial bank payable at Pune in favour of "The Director, IISER Pune". Interested Bidders may obtain further information at the same address. Sale of the documents will be only to bidders who satisfy the eligibility criteria.
- 11 Bids must be accompanied by bid-security (Earnest Money Deposit) amount specified for the work in clause 10 payable at Pune and drawn in favour of The Director; IISER Pune Bid Security shall have to be valid for 90 days beyond the validity of the bid.
- 12 Bid Security,**
- 12.1 The bid shall be accompanied by bid security amount of Rs 2,56,000/- The bid security amount may be paid in any one of the following forms:
- a) Deposit at call receipt of a Scheduled Bank Guaranteed by RBI, duly pledged in favour of The Director, IISER Pune payable at Pune.
 - b) Demand draft of any Scheduled Bank, drawn in Favour of The Director, IISER Pune payable at Pune.
 - c) A part of earnest money is acceptable in the form of bank guarantee also.

In such case, 50% of earnest money or Rs. 20 lakh, whichever is less, will have to be deposited in shape prescribed above, and balance in shape of irrevocable Bank Guarantee from a Scheduled Bank and shall be valid 90 days after the validity of the offer (as per standard proforma attached).

12.2 Bid Security of unsuccessful Bidders will be returned to them within 90 days from the date of acceptance of bid of the successful Bidder.

12.3 The Bid Security may be forfeited, if

- a) The Bidder withdraws / modifies his Bid or any item thereof after opening of bid.
- b) The successful Bidder fails within the specified time limit to commence the work.

13 The document in prescribed form duly completed and signed shall be submitted in a sealed cover. The sealed cover Super-scribed "**Name of work: Supply and Installation Lab benches, Fume Hoods and exhaust system in GF Chemistry block, Main Building at IISER Pune..**". Bids must be dropped in the box at Main Building, Dr. Homi Bhabha Road, Pashan, Pune-411 008 on **01 09 2015** between 10:00 hrs to 15:00 hrs. Bids will be opened on the same day at 15.30 hours, in the presence of the Bidders who wish to attend. If the office happens to be closed on the date of receipt of the bids as specified, the bids will be received and opened on the next working day at the same time and venue.

14 A pre-bid meeting will be held on **25/08/2015** at 11 00 hours at the office of The Superintending Engineer, IISER Pune, Main Building, Dr. Homi Bhabha Road, Pashan, Pune-411 008 to clarify the issues and to answer questions on any matter that may be raised at that stage as stated in Clause 15.

15. Pre-bid meeting

15.1 The Bidder or his officially authorized representative is invited to attend a pre-bid meeting, which will take place as referred in clause 14 of NIT. Bidder/ bidder representative who wish to attend Pre-bid meeting should carry a valid identity proof certifying his designation with said firm.

15.2 The purpose of the meeting is to clarify issues and to answer questions on matters that may be raised at that stage.

15.3 The Bidder is requested to submit their questions/ queries/ clarifications in writing or by email/ fax to reach the IISER Pune before the meeting. Bidders can send Pre-

bid queries on their letter head referring tender number by Speed post on above said address so as to reach IISER Pune or on fax No 020-25908187 or on e-mail address ysrajput@iiserpune.ac.in before **25/8/2015** up to 11 00 Hours.

- 15.4 Minutes of the meeting, including the text of the questions raised (without identifying the source of enquiry) and the responses given will be transmitted to all purchasers of the bidding documents. Any modification of the bidding documents which may become necessary as a result of the pre-bid meeting shall be made by the IISER, Pune and shall form part of bidding documents.

16 Cost of Bidding

- 16.1 The Bidder shall bear all costs associated with the preparation and submission of his Bid, and the IISER, Pune will in no case be responsible and liable for these costs.

17 Site visit

- 17.1 The Bidder should inform the IISER Pune in advance about the proposed **site visit to IISER Pune Main Building , Dr. Homi Bhabha road, Pune 411008**
- 17.2 The Bidder, at his own responsibility and risk is encouraged to visit, inspect and survey the Site and its surroundings and satisfy himself before submitting his bid as to the form and nature of the Site, the means of access to the Site, the accommodation he may require, etc.
- 17.3 In general, Bidders shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their bid. A Bidder shall be deemed to have full knowledge of the Site, whether he inspects it or not and no extra claims due to any misunderstanding or otherwise shall be allowed.
- 17.4 The costs of visiting the Site shall be at the Bidders' own expense. Any report shared at the site, by the IISER is subject to verification by the contractor. Any deviations of information in the report and the actual site will not be the responsibility of the IISER.

18 Content of Bidding Documents

- 18.1 Submission of a bid by a Bidder implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be executed and local conditions and other factors having a bearing on the execution of the works.
- 18.2 The Bidder shall submit the Bid, which satisfies each and every condition laid down in the bid documents, failing which, the bid is liable to be rejected.
- 18.3 The Bid shall contain no alterations or additions or overwriting, except those to comply with instructions issued by the IISER, Pune, or as necessary to correct errors

made by the Bidder in which case such corrections shall be initialed by the person or persons signing the bid. Use of correction fluid is not permitted

18.4 This Notice Inviting Tender shall form part of the Contract document.

18.4.1 The documents listed below comprises one set of bid document that are issued to Bidders:

PART-I- Technical Bid

- a) Technical bid document Part-I
- b) Drawings set.
- c) Technical specifications

PART-II – Financial Bid

Schedule of Quantities and Rates

19 Amendment of Bid Documents

19.1 Before the deadline for submission of bids, the IISER Pune may modify the bidding documents by issuing addenda.

19.2 Any addendum so issued shall be part of the bid documents as well as Contract document and shall be communicated in writing or by email / fax to all the purchasers of the bidding documents. Prospective Bidders shall acknowledge receipt of each addendum by email / fax to the IISER, Pune. Original addendum issued by IISER, Pune duly signed should be submitted along with tender documents.

20 Bid Validity

20.1 The bids submitted shall remain valid for acceptance for a period of 90 days from the date of opening of the bid. If any bidder withdraws his tender before the said period or issue of letter of acceptance, whichever is earlier, or makes any modifications in the terms and conditions of the tender which are not acceptable to the IISER, Pune, then the IISER, Pune shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money as aforesaid. Further the bidder shall not be allowed to participate in the re-tendering process of the work.

21 Bid Opening

PART I

- 21.1 On the due date and appointed time as specified in clause 13. IISER, Pune will first open Part I of all bids received, including amendment as per clause 19 if applicable in the presence of the Bidders or their representatives who choose to attend. In the event of the specified date for Bid opening being declared a holiday by the IISER, Pune, and the Bids will be opened at the appointed time and location on the next working day.
- 21.2 If all Bidders have submitted unconditional Bids together with requisite Bid security, then all Bidders will be so informed then and there. If any Bid does not contain Bid security in the manner prescribed in the Bid documents, then that Bid will be rejected and the Bidder informed accordingly. The sealed envelope containing priced BOQ will be returned to him without opening. All other valid Bids shall be considered for evaluation.
- 21.3 It is required that along with the tender the tenderer will submit a list of their sub-vendors for specialists' trades like Electrical, gas piping system etc., conforming to the criteria set out in the tender document. If, however, the sub-vendors so selected by the Contractor are subsequently found not to meet the criteria IISER and Consultant reserve the right to reject this selection and nominate a panel of sub-Vendors from among whom the Contractor should select an agency and get the work executed from this agency only.
- 21.4 Tenderer / Bidder is not allowed to make additions and alternations in the tender document. Any additions and alterations, if incorporated in the tender, shall be liable for rejection.

Conditional tenders violative of the spirit and the scope or the terms & conditions of the tender, are liable to be rejected without assigning any reason. Tenders with conditional rebate etc. shall be summarily rejected.

22 Evaluation criteria

- 22.1** The bidder qualifying initial criteria as set out in Para 2 & 3 and the details furnished by bidders in the Proforma enclosed as Annexure-1 of Section II will be evaluated.

Performa's listed are elaborated below,

- I) Initial bidding capacity Proforma "A."
- II) Financial Information Proforma "B"
- a) Solvency certificates from a scheduled bank - Form I

- b) Details of all works of similar nature completed during the last 7 years ending last day of the May, 2015 Proforma "C"
- c) Project under execution or Awarded Proforma "C1"
- d) Performance report of works referred to in Proforma 'C' & 'C1' – Form II
- e) Organization structure Personnel& Establishment Proforma "D"
- f) Details of technical & administrative personnel to be employed for the Work, Proforma "D1"
- g) ISO certification on works if any Form III.
- h) Confidential report to be obtained by the IISER from the client on the work executed by the contractor during last five year certification if any if required
- i) The bidders qualifying the initial criteria as set out in clause no 3.8 will be evaluated based on the information submitted by bidders as per clause no 22.1 after due verification and selection will be made by IISER, PUNE on the basis of the strength of individual applicants. Main consideration will be the ability of the Principal Contractor to fulfill technical, financial, contractual and legal obligations. Special emphasis will be laid on competence to do good quality works within specified time schedule and in close co-ordination with other agencies over and above the rate structure of the items.
- j) Even though any bidder may satisfy the above requirement, he would be liable to disqualification if he has
 - i) Made misleading or false representation or deliberately suppressed the information in the forms, statements and enclosures as required in the eligibility criteria documents.
 - ii) Records of poor performance such abandoning work, not properly completing the contract, or financial failure/weakness etc.
 - iii) If any information furnished by the bidder is found incorrect at a later stage, he shall be liable to be debarred from tendering/taking up of work in the Institute. The Institute reserves the right to verify the particulars furnished by the bidder independently and also reserves the right to physically verify the performance of the works.
- k) Final eligibility for technical qualification shall be worked out as per Annexure A

PART II

23 Opening of Price bid

- 23.1 After technical evaluation of (part I) bids as per clause 3 only technically qualified bidders will be informed about the date & venue of opening of priced bid. Priced bid will be opened in the presence of representatives of intending bidders on the said date.

24. Clarification of Bids

- 24.1 To assist in the examination and comparison of Bids, the IISER, Pune may, at its discretion, ask any Bidder for clarification of his Bid, including breakdown of unit rates. The request for clarification and the response shall be in writing or by email / fax, but no change in the price or substance of the Bid shall be sought, offered, or permitted except as required to confirm the correction of arithmetic errors discovered by the IISER, Pune in the evaluation of the bids
- 24.2 No, Bidder shall contact the IISER, Pune on any matter relating to his bid from the time of the bid opening to the time the contract is awarded.
- 24.3 Any effort by the Bidder to influence the IISER's bid evaluation, bid comparison or contract award decisions, may result in the rejection of his bid.
25. Indian Institute of Science Education and Research Pune, does not bind itself to accept the lowest or any other bid, and reserves the right to reject any or all of the tenders received without assigning any reasons. Bids in which any of the prescribed conditions are not fulfilled or any conditions including that of the conditional rebate put forth by the bidder shall be summarily rejected.
- 26 If the Bid of the successful Bidder is seriously unbalanced in relation to the Engineer-in-charge or his representative's estimate of the cost of work to be executed under the contract, the IISER, Pune may require the Bidder to produce detailed rate analyses for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those rates with the implementation / construction methods and schedule proposed.

27 Award Criteria

- 27.1. The IISER, Pune shall award the Contract to the Bidder whose evaluated offer / bid has been determined to be the technically suitable and financially lowest and is substantially responsive to the Bidding Document, provided further that the Bidder is determined to be qualified to execute the Contract satisfactorily. The Board of Governors of IISER reserves the right to accept or reject any application and to annul the pre-qualification process and reject all applications at any time, without thereby

incurring any liability to the affected applicants or specifying the grounds for the Employer's action

- 28 The contractor whose tender is accepted will be required to furnish Performance guarantee of 5% (Five Percent) of the tendered amount within the period specified in Schedule C. This guarantee shall be in accordance with the prescribed form. In case the contractor fails to deposit the said performance guarantee within the period as indicated in Schedule 'C' including the extended period if any, the Earnest Money deposited by the contractor shall be forfeited automatically without any notice to the contractor and without prejudice to any other right or remedy.

29 Disclosures

Any change in the constitution of the contractor's firm, where it is a partnership firm, should be disclosed to the IISER, Pune, at any time between the submission of bids and the signing of the contract.

Superintending Engineer

For & on behalf of the Director, IISER, Pune.

INSTRUCTIONS TO THE TENDERERS/BIDDERS

Name of work: Supply and Installation Lab benches, Fume Hoods and exhaust system in GF Chemistry block, Main Building at IISER Pune.

NIT- 3/ IISER/Pune/2015-16

The Tenderer/bidder submitting the Tender should read the schedule of quantities, additional conditions, Specifications for the works and other terms and conditions given in the NIT and drawings. The following conditions, which shall form part of the Tender documents, are specially brought to the notice for compliance while filling the Tender:-

1. The Tenderer/bidder are advised to quote rates in words and figures for each item and work out the total amount in figures.
2. All taxes (except Service Tax), VAT etc. as applicable shall be borne by the contractor. The tenderer/bidder shall quote his rates considering all such taxes. However, in respect of service tax, same shall be paid by the contractor to the concerned department on demand and it will be reimbursed to him by the Engineer-in-Charge after satisfying that it has been actually and genuinely paid by the contractor.
3. IISER Pune is registered with Department of Scientific & Industrial research (DSIR) for the purpose of availing customs duty exemption in terms of Govt. Notification No 51/96- Customs dated 23/7/1996 and Central Excise duty exemption in terms of Govt. Notification No 10/97-Central Excise dated 1/3/1997 as amended from time to time. Hence quoted rate should not include import duty or central excise but shall be inclusive of freight charges, insurance charges, clearance charges etc. Central Excise/ Import duty component if paid by the agency shall be reimbursed to the agency on actual basis on production of documentary evidence. Further IISER Pune is also exempted from paying the Octroi, hence quoted rate shall also not include the Octroi. Necessary documents will be made available as and when required by the successful bidder and liaisoning with the respective authorities shall be done by the bidder.
4. The tenderer/bidder are advised to inspect and examine the site, buildings, drawings and its surroundings and satisfy themselves before submitting their Tender/bid. The tenderer/bidder shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charges consequent on any misunderstanding or otherwise shall be allowed.
5. Tenderers/bidders who propose any alteration in the work specified in the said form of invitation to Tender, or in the time allowed for carrying out the work, which contain any other condition (s) of any sort including conditional rebate will be

summarily rejected. Rates of such Tenders/bids shall neither be read out, not entered in the Tender opening register at the time of opening of Tenders.

6. All the statutory recoveries shall be made from the running bills of the contractor like Security deposit, Income tax, Surcharge, Education cess, etc or any other statutory recovery as per Government of India norms at the prevailing rates and in the manner prescribed by Government of India.
7. The bidder should provide the full list and the full information of all the major work sites / Labs commissioned by them. A panel of the technical experts will be visiting the select sites as part of the technical qualification of the bidder and make a first-hand assessment of the technical capabilities of the bidder. This will form the integral part of the technical qualification of bidder.
8. The main contractor / bidder shall execute the electrical works as a part of the composite contract. The bidder should associate himself with electrical contractor eligible as per criteria laid down in the eligibility document. At the time of submission of tender, the bidder shall have to submit the name of Associated Electrical Contractor / Agency along with complete address & documents. The bidder will obtain a written willingness from the associated electrical contractor to perform the electric portion of the contract as per the conditions of the contract in the Memorandum of Understanding (Proforma attached). The main contractor shall submit this MOU duly completed and signed along with the information under Annexure '1A' (duly signed by him and the Elect. Contractor) at the time of submission of tender, thereafter shall become part of the agreement. The bidder, if so desires, may bring Electrical contractor or his authorized representative, along with him at the time of pre bid conference for any discussion etc. for electrical portion of work.
9. The main contractor/bidder shall execute the gas & utility distribution works as a part of the composite contract. The bidder should associate himself with contractor eligible as per criteria laid down in the eligibility document. At the time of submission of tender, the bidder shall have to submit the name of Associated Gas & Utility Distribution Contractor / Agency along with complete address & documents. The main contractor will obtain a written willingness from the associated gas & utility distribution contractor to perform the gas & utility distribution portion of the contract as per the conditions of the contract in the Memorandum of Understanding (Performa attached). The main contractor shall submit this MOU duly completed and signed along with the information under '3A' (duly signed by him and the gas & utility distribution Contractor) at the time of submission of tender, thereafter shall become part of the agreement. The main contractor, if so desires, may bring gas & utility distribution contractor or his authorized representative, along with him at the time of pre bid conference for any discussion etc. for gas & utility distribution work.

10. Rates quoted by the contractor in item rate tender in figures and words shall be accurately filled in so that there is no discrepancy in the rates written in figures and words. However, if a discrepancy is found, between the rates, figures and words, the rates which correspond with the amount worked out by the contractor shall be taken as correct. If the amount of an item is not worked out by the contractor or it does not correspond with the rates written either in figures or in words, then the rates quoted by the contractor in words shall be taken as correct. Where the rates quoted by the contractor in figures and in words tallies, but the amount is not worked out correctly, the rates quoted by the contractor shall taken as correct and not the amount. In the event no rate has been quoted for any item (s) leaving space both in figure(s) word(s) and amount blank, it will be presumed that the contractor has included the cost of this/these item (s) in other items and rate for such item(s) will be considered as zero and work will be required to be executed accordingly.
11. All rates shall be quoted in the Schedule of Quantity available in Financial bid document. The amount for each item should be worked out and requisite totals given. Special care should be taken to write the rates in figures as well as in words and the amount in figures only, in such a way that interpolation is not possible. The total amount should be written both in figures and in words. In case of figures, the word 'Rs. Should be written before the figure of rupees and word 'P' after the decimal figures, e.g. 'Rs. 2.15 P' and in case of words, the word, Rupees, should precede and the word 'paisa' should be written at the end. Unless the rate is in whole rupees and followed by the word 'Only' it should invariably be up to two decimal places. While quoting the rate in schedule of quantities, the word 'only' should be written closely following the amount and it should not be written in the next line.
12. The rates should be quoted in Indian Rs. Only. No advance payment shall be made.

LETTER OF TRANSMITTAL

From

To

THE DIRECTOR,

INDIAN INSTITUTE OF SCIENCE EDUCATION & RESEARCH (IISER)

MAIN BUILDING, Dr. HOMI BHABHA ROAD,

PASHAN, PUNE – 411 008

SUB: SUBMISSION OF TENDER DOCUMENTS FOR THE WORK OF “ SUPPLY AND INSTALLATION LAB BENCHES, FUME HOODS AND EXHAUST SYSTEM IN GF CHEMISTRY BLOCK, MAIN BUILDING AT IISER PUNE. ”

NIT NO : 3/IISERPUNE/2015-16

Sir,

Having examined the details given in press notification and the tender document for the above work, I/we hereby submit the tender documents and other relevant information.

1. I/We hereby certify that all the statements made and information supplied in the enclosed forms and accompanying statements are true and correct.
2. I/We have furnished all information and details necessary for eligibility criteria and have no further pertinent information to supply.
3. I/We submit the requisite certified solvency certificate and authorize the Director, IISER, Pune – 411 008 to approach the Bank issuing the solvency certificate to confirm the correctness thereof. I/We also authorize Project Engineer, Pune to approach individuals, employers, firms and corporation to verify our competence and general reputation.

4. I/We submit the following certificates in support of our suitability, technical know-how & capability for having successfully completed the following works

Name of Work:	Certificate from
---------------	------------------

1.	1.
2.	2.
3.	3.

Enclosures:

Seal of applicant

Date of submission

Signature(s) of applicant(s)

ANNEXURE 1

PROFORMA 'A'

INFORMATION REGARDING INITIAL BIDDING CAPACITY

The information to be filled in by the Bidder in the following pages will be used for purposes of Pre-qualification as provided above.

1. For Individual Bidders

1.1 Constitution or legal status of Bidder (Attach Copy)

Place of registration:

Principal place of business:

(Power of attorney of signatory of Bid)

1.2 Value of work Completed during the last five years (in Rs. Lacs)

Particular	Year	Value
Total value of Work Executed in the last five years**	2010-11	
	2011-12	
	2012-13	
	2013-14	
	2014-15	

** Immediately preceding the financial year in which bids are received. Attach certificate from Chartered accountant.

1.3 (works for which bids have been submitted and works which are yet to be completed) as on the date of this bid calculated as per **clause 3.8**

(A) Existing commitments and on-going works: (format for **clause 3.8**)

<i>Description Ofwork</i>	<i>Place & state</i>	<i>Contract No.& Date</i>	<i>Name&Addressof Client</i>	<i>Valueof Contract (Rs. Lacs)</i>	<i>Stipulated periodof completion</i>	<i>Valueof work remaining tobe completed</i>	<i>Anticipated dateof completion</i>	Remarks Information regarding the litigation if any

(B) Works for which bids already submitted (format for **clause 3.8**)

<i>Description ofwork</i>	<i>Place &</i>	<i>Nameand Addressof</i>	<i>Value of contract Rs in Lakhs</i>	<i>Stipulated periodof</i>	<i>Datewhen decisionis</i>	<i>Remarks ifany</i>

PROFORMA 'B'

FINANCIAL INFORMATION

- I. Financial Analysis-Details to be furnished duly supported by figures in balance sheet/profit & loss account for the last five years duly certified by the Chartered Accountant, as submitted by the applicant to the Income tax Department (Copies to be attached.)

Years

Year	2010-11	2011-12	2012-13	2013-14	2014-15
Gross annual turn over					
Profit/ Loss					

- II. Financial arrangements for carrying out the proposed work.
- III. Solvency Certificate from Bankers of the bidder in the prescribed Form "I".

Signature of Chartered Accountant with Seal

Signature of Bidder(s)

Form I

FORM OF BANKERS' CERTIFICATE FROM A SCHEDULED BANK

This is to certify that to the best of our knowledge and information that;

(Name of the individual or the firm)

(Name of the proprietor in case of a sole proprietorship concern or names of partners in case of partnership concern as per bank's record, be indicated)

(Address of the customer as per bank record)

is a / are customer(s) of our bank, is/are respectable and can be treated as good for any engagement up to a limit of Rs. _____

(Rupees _____ only)

This certificate is issued without any guarantee or responsibility on the bank or any of the officers.

Signature of the Manager

Seal of Bank

Note : This certificate should be issued on the letter head and addressed to the DIRECTOR ,
IISER, MAIN BUILDING, Dr. HOMI BHABHA ROAD, PASHAN, PUNE – 411 008 in a
Sealed Cover

PROFORMA 'C'

DETAILS OF ALL WORKS OF SIMILAR CLASS COMPLETED DURING THE LAST 7 (Seven) YEARS ENDING LAST DAY OF THE MONTH

S. No.	Name of work/ project and location	Owner or Sponsori- ng organizat- ion	Cost of work in crores of Rupees	Date of commen- cement As per contract	Stipulat- ed date of comple- tion	Actual date of compl- etion	Litigation /arbitrati on cases pending/i n progress with details	Name and address /teleph- one number of officer to whom referen- ce may be made	Remar- ks
1	2	3	4	5	6	7	8	9	10

- Indicate gross amount claimed and amount awarded by the Arbitrator.

SIGNATURE OF BIDDER(S)

PROFORMA "C1"

PROJECTS UNDER EXECUTION OR AWARDED

<i>S No</i>	<i>Name of work/ project and location</i>	<i>Owner or Sponsor ing organiz ation</i>	<i>Cost of work in crores of Rupe- es</i>	<i>Date of commen- cement As per contract</i>	<i>Stipulat- ed date of completi on</i>	<i>Actual date of compl- etion</i>	<i>Litigatio n/arbitr ation cases pending /in progress with details</i>	<i>Name and address / telephon e number of officer to whom reference may be made</i>	<i>Rema- rks</i>
1	2	3	4	5	6	7	8	9	10

Certified that the above list of works is complete and no work has been left out that the information given is corrected to my knowledge and belief.

SIGNATURE OF BIDDER(S)

Form 'II'

PERFORMANCE REPORT OF WORKS REFERRED TO IN PROFORMA 'C' & 'C1'

1. Name of the work/Project & Location.:
2. Agreement No.
3. Estimated Cost
4. Tendered Cost
5. Date of Start
6. Date of completion
 - (a) Stipulated date of completion.
 - (b) Actual date of completion.
7. Amount of compensation levied for delayed Completion if any.
8. Amount of reduced rate items,if any
9. Performance report
 - i) Quality of Work : Very Good / Good / Fair / Poor
 - ii) Financial soundness : Very Good / Good / Fair / Poor
 - iii) Technical Proficiency : Very Good / Good / Fair / Poor
 - iv) Resourcefulness : Very Good / Good / Fair / Poor
 - v) General Behaviour : Very Good / Good / Fair / Poor

DATED:

Executive Engineer or Equivalent

PROFORMA 'D'

STRUCTURE , ORGANISATION AND FACTORY DETAILS

1. Name and address of the applicant
2. Telephone No./Telex No./Fax No.
3. Legal Status (attach copies of original Document defining the legal status)
 - (a) An Individual
 - (b) A proprietary Firm
 - (c) A Firm in partnership
 - (d) A limited Company or Corporation.
4. Particulars of registration with various Government bodies (Attach attested photo-copy)
 - a) Registration Number.
 - b) Organization / Place of registration
 - c) Factory license and other details
5. Names and Titles of Directors and officers with designation to be concerned with this work.
6. Designation of individuals authorized to act for the organization.
7. Was the bidder ever required to suspend construction for a period of more than six months continuously after you commenced the construction? If so, give the name of the project and reasons of suspension of that.
8. Has the bidder, or any constituent partner in case of partnership firm, ever abandoned the awarded work before its completion? If so, give the name of the project and give reasons for abandonment.

9. Has the bidder or any constituent partner in case of partnership firm, ever been debarred / black listed for tendering in any organization at any time? If so, give details:
10. Has the bidder or any constituent partner in case of partnership firm, ever been convicted by a court of law? If so, give detail.
- 11 Any other information considered necessary but not included above.

SIGNATURE OF BIDDER(S)

PROFORMA 'D1'

DETAILS OF TECHNICAL & ADMINISTRATIVE PERSONNEL TO BE EMPLOYED FOR THE WORK

S.N o.	Designation	Str en gth	Allotted for this project	Name	Qualification	Professiona l Experience and details of work carried out	How these would be involve d in this work	Remark s
1	2	3	4	5	6	7	8	9

Signature of Bidders

Form 'III'

PROFORMA ON ISO/SEFA CERTIFICATION, IF ANY

1. Year of Certification

2. Name and Address of Certifying Agency

3. Name of Management Representative

4. Validity of Certificate

Note : Attested copy of certificate (attested by Government Officer or Notary Public) to be enclosed.

SIGNATURE OF BIDDER

WITH SEAL

Annexure-A

	Criteria for evaluation of performance of agency for technical eligibility:			
SH	Attributes		Evaluation	
a)	Financial strength (20 marks)			
	(i) Average annual turnover	Maximum 10 marks	(i) 60% marks for minimum eligibility criteria	
	(ii) Solvency certificate	Maximum 4 marks	(ii) 100% marks for twice the minimum eligibility criteria	
	(iii) Bidding capacity	Maximum 6 marks	In between (i) & (ii) – on pro-rata basis	
b)	Experience in similar (20 marks)		(i) 60% marks for minimum eligibility criteria	
	class of work		(ii) 100% marks for twice the minimum eligibility criteria	
			In between (i) & (ii) – on pro-rata basis	
c)	Performance on works (20 marks)			
	Time over run		Calculation For points	
	Parameter		Score marks	Maximum
	If TOR =		1.00 2.00 3.00 >3.50	20
	(i) Without levy of compensation		20 15 10 10	
	(ii) With levy of compensation		20 5 0 -5	
	(iii) Levy of compensation not decided		20 10 0 0	
	TOR = AT/ST, where AT=Actual Time; ST=Stipulated Time.			
	Note: Marks for value in between the stages indicated above is to be determined by straight line			

d)	Performance of works (Quality) of completed works based on user feedback Maximum (10 marks)	Maximum (10 marks)
	(i) Very Good	10
	(ii) Good	7.5
	(iii) Fair	5
	(iv) Poor	0
e)	In house Plant , Equipment, Factory and certification: Based on documentary evidence (Max. 5 marks)	100% marks for the minimum eligibility criteria and zero marks for not meeting the minimum eligibility criteria. (Maximum marks)
	(i) In house facilities of manufacturing steel Lab furniture, CNC machines for cutting and fabrication, in house powder coating facility and complete online manufacturing facilities for steel furniture and fume hoods, ISO certification, SEFA membership, ability to do ASHRAE testing at site through self or third party	5
SH	Attributes	Evaluation
f)	Finished sample quality: Finish of Steel Lab furniture benches with C frame/fume hood finish, ease of operation, aesthetics and performance (Max. 25 marks)	Maximum (25 marks)
	(i) Very Good	25
	(ii) Good	12.50
	(iii) Fair	10
	(iv) Poor	5
	Total 100 marks	
	Notes:	

1)	To become technically eligible for short listing the bidder must secure at least fifty percent marks in each SH i.e. (a) to (f) mentioned above and sixty percent marks in aggregate.
2)	The IISER Pune, however, reserves the right to restrict the list of such qualified contractors to any number as deemed fit by it.
3)	SH (f) Based on the claims made by the bidder, the technical panel of the Institute may visit the sites of the works executed by the bidder or factory visit or may ask the agency to supply one finished sample of lab furniture to IISER Pune without any additional cost to IISER within one month time frame, so as to assess whether the quality, operation & finish of the product is up to the mark, as a part of the short listing criteria. The finished products of the company shall be evaluated in comparison to the best in its class in the market by a technical panel appointed by the Director, IISER, Pune and decision of technical panel shall be final and binding upon the agency.

CHECK LIST: (Details of Enclosures.)

Sl.No	Description of item	Enclosed	Not enclosed
1.	Pre-Qualification Documents as per Annexure 1 Pro forma A to D Form I to III		
2.	Power of attorney as required		
3.	Certificate of Registration as required		
4.	Memorandum of Articles of association as required		
5.	Audited Balance Sheet and Profit & Loss statement for the past five financial years duly certified by a Chartered Accountant.		
6.	Consent letter from associates if Electrical & Gas services are proposed to be done through Associates, under reference to Para 1.6 A to D under Section-II. Information and Instructions to applicants		
8.	Supporting certificates for technical and financial capability from relevant authorities.		
9	Organization Chart with responsibilities, Curriculum Vitae of personnel proposed for this project, factory license etc.		
10	Any other important information.		

SPECIAL CONDITIONS FOR WORKS

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 IISER Pune
- ii) The President shall mean the Board of Governors, IISER Pune.
- iii) The Engineer-in-charge means Engineer/Officer either from IISER, Pune or consultant notified by The Director (IISER, Pune) who shall supervise and be in-charge of work and who shall act on behalf of the Director, IISER for execution of contract..
- iv) Government or Govt. of India shall mean the Indian Institute of Science Education and Research Pune represented by its Director.
- v) The term Director General of Works shall mean the Chairman, Building & Works Committee of the Institute.
- vi) Accepting authority shall mean the Chairman, Building and Works Committee- Director, IISER Pune or his authorized representative.
- vii) *Site Engineers* shall mean Engineer/Officer either from IISER, Pune or consultant notified by The Director (IISER, Pune) who shall supervise civil and electrical work at site.

2. DUTIES & POWERS :

2.1 *Site Engineers:*

The duties of the Site Engineer(s) are to watch and supervise the works and the workmanship in connection with the works, and to test and examine any materials to be used. He shall have no authority to relieve the contractor of any of his duties or obligations under the contract, except as expressly provided here under, nor to order any work involving delay or any extra payment by the Institute and to make any variation in the works.

The Engineer-in-charge, from time to time in writing, delegates to the Site Engineer(s) any of the powers and authorities vested in them. Any written instruction or written approval given by the Site Engineer (s) to the contractor within the terms of such delegation (but not otherwise) shall bind the contractor and the Institute as though it had been given by the Engineer-in-charge provided always as follows :

- a) Failure of the Site Engineer (s) to disapprove any work or materials shall not prejudice the power of the Engineer in-charge to subsequently disapprove such work or materials and to order the pulling down, removal or breaking up thereof.
- b) If the contractor is dissatisfied by reason of any decision of the Site Engineer (s), he shall be entitled to refer the matter to the Engineer-in-charge, who shall thereupon confirm reverse or vary such decision.

3. ASSIGNMENT & SUBLETTING:

- 3.1 The contractor shall not assign the contract or any part thereof or any benefit or interest therein or there under without the written consent of the Engineer in-charge. The whole of the works included in the contract shall be executed by the contractor except where otherwise provided in the contract. The contractor shall not sublet any part of the works without the written consent of the Engineer in-charge and such consent, 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 sub-contractor, his agents, servants or workmen, as if they were the acts, defaults or neglects of the contractor provided always that the provision of labour contracts on a piece work basis shall not be deemed to be a subletting under this clause.

4. SCOPE OF CONTRACT:

The contract comprises the supply, Installation, completion and maintenance of the works for twelve (12) months after actual date of completion and handing over to IISER, Pune, and the provision of all labour, materials, constructional plant, equipment and transportation, temporary works and everything, whether of a temporary or permanent nature required in and for such construction, completion and maintenance so far as the necessity for providing the same is specified in or reasonably to be inferred from the contract. The contractor shall make his own arrangements for the safe storage of materials, accommodation for his staff etc. and no claim for the temporary accommodation from the contractor shall be entertained.

The contractor shall carry out and complete the said work in every respect in accordance with this contract and as per the directions and to the satisfaction of the Engineer in-charge. Issue of further drawings and / or written instructions, detailed directions and explanations which are hereinafter collectively referred to as instructions of the Engineer in-charge in regards to:

- a) The variation or modification of the design, quality or quantity of works or the addition or omission or substitution of any work.
- b) Any discrepancy in the Drawings or between the Schedule of Quantities and / or Drawings and / or specifications. The 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 IISER.
- c) The removal from the site of any materials brought thereon by the contractor and the substitution of any other material thereof.

- d) The dismissal from the works of any persons employed thereupon.
- e) The opening up for inspection of any work covered up.
- f) The amending / making good of any defects.

The contractor shall forthwith comply with and duly execute any instructions of work comprised in such Engineer in-charge'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 Engineer in-charge, such shall be deemed to be instructions of the Engineer in-charge within the scope of the contract.

5. CONTRACT DOCUMENT:

- 5.1 The several 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 Engineer-in-charge who shall thereupon issue to the contractor its interpretation directing in what manner the work is to be carried out. In case the contractor feels aggrieved by the interpretation of the Engineer-in-charge then the matter shall be referred to the Superintending Engineer and his decision shall be final, conclusive and binding on both parties to the contract.
- 5.2 The bidder shall be responsible for getting the drawings prepared from the consultant proposed by him & approved by the Institute. Delay in issue of drawings, if any shall not be considered for any purpose. The bidder alone shall be responsible for timely arrangement of required drawings and getting them approved from the Engineer-in-Charge.
- 5.3 The approved drawing shall remain in the custody of the Institute. However, two complete sets of drawings, specification and Bill of Quantities shall be furnished by the Engineer-in-charge to the contractor. One complete set shall be kept on the work site and the Engineer-in-charge and his representatives shall be, at all reasonable times, have access to the same. The contractor shall study the drawings thoroughly before the commencement of work. In case of any discrepancy, the contractor shall seek clarification before proceeding with the works. Figured dimensions are in all cases to be accepted in preference to the scaled sizes. Large-scale details shall take preference over small scale ones.

The Engineer-in-charge shall have full powers and authority to supply to the contractor from time to time during the progress of the work such drawings and

instructions as shall be necessary for proper execution and the contractor shall carry out and be bound by the same.

- 5.4 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 there in, technical bid document, CPWD specifications for Civil & Electrical Works, the Special conditions, additional specifications, minutes of the pre bid conference, negotiation letter and the award letter etc. 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.
- 5.5 Commercial tax (VAT/ Work contract tax) @ 2% of the value of work done shall be recovered from the contractors bill.
6. The contractor(s) shall give to the Municipality, police and other authorities all necessary notices etc. that may be required by law and obtain all requisite licenses for temporary obstructions, enclosures etc. and pay all fee, taxes and charges which may be levied on account of these operations in executing the contract. He shall make good any damage to the adjoining property whether public or private and shall supply and maintain lights either for illumination or for cautioning the public at night.
- 7 The Contractor(s) shall take instructions from the Engineer-in-Charge regarding collection and stacking of materials at any place. No excavated earth or building rubbish shall be stacked on areas where other buildings, roads, services and compound walls are to be constructed. However if any change is required, the same shall be done with the approval of Engineer-in-Charge & no extra payment shall be made on this account.
- 8 Contractor(s) shall provide permanent bench marks, flag tops and other reference points for the proper execution of work and these shall be preserved till the end of the work. All such reference points shall be in relation to the levels and locations, given in the Architectural and other related services drawings.
- 9 On completion of work, the Contractor(s) shall submit at his own cost four prints of "as built" drawings to the Engineer-in-Charge within 6 weeks of completion of the work failing which a recovery of Rs.1.00 Lac for each item as listed below, to be made as reasonable compensation. These drawings shall have the following information.
- a. Layout of HVAC and exhaust system with all details.

- b. Layout of all Gas Distribution & drainage pipes together with locations of all control valves manholes and connections.
 - c. Layout of water supply line with diameters, locations of control valves etc.
 - d. All drawings related to fire & electrical installations and services.
10. Water tanks, taps, sanitary, water supply and drainage pipes, fittings and accessories should conform to bye-laws of municipal body/corporation, where CPWD specifications are not available. The Contractor (s) should engage approved, licensed plumbers for the work and get the materials (fixtures/fittings) tested, by the municipal Body/Corporation authorities wherever required at his own cost.
11. The work shall be carried out in accordance with the Architectural drawings and structural drawings issued by the Engineer-in-Charge. Before commencement of any item of work the contractor shall correlate all the relevant drawings, nomenclature of items and specifications etc. issued for the work and satisfy himself that the information available there from is complete and unambiguous. The figure and written dimension of the drawings shall be superseding the measurement by scale. The discrepancy, if any, shall be brought to the notice of the Engineer-in-charge before execution of the work. The contractor alone shall be responsible for any loss or damage occurring by the commencement of work on the basis of any erroneous and/ or incomplete information and no claim whatsoever shall be entertained on this account.
12. Other agencies will also simultaneously execute and install the works of electrification, lifts, fire-fighting etc. of this work and the contractor shall afford necessary facilities for the same. The contractor shall leave such recesses, holes, opening etc. as may be required for other related works and nothing extra shall be payable on this account.
13. The contractor shall conduct his work, so as not to interfere with or hinder the progress or completion of the work being performed by other contractor(s) or by the Engineer-in-Charge and shall as far as possible arrange his work and shall place and dispose off the materials being used or removed, so as not to interfere with the operations of other contractor or he shall arrange his work with that of the others in an acceptable and coordinated manner and shall perform it in proper sequence to the complete satisfaction of others.
14. The Architectural drawings given in the tender other than those indicated in nomenclature of items are only indicative of the nature of the work and materials/fixing involved unless and otherwise specifically mentioned. However, the work shall be executed in accordance with the drawings duly approved by the Engineer-in-Charge.

15. The contractor shall render all help and assistance in documenting the total sequence of this project by way of photography, slides, audio-video recording including photographs, slides, audio-videography etc. and nothing extra shall be payable to the contractor on this account.
16. The contractor shall be fully responsible for the safe custody of materials brought by him at site / issued to him even though the materials may be under double lock and key system. The contractor has to make his own arrangement like shed enclosure etc. for keeping the material, providing security etc. The contractor shall be allowed to make temporary structures for stores, offices, sheds, labour huts etc. The contractor shall remove all the structures erected by him necessary for the execution of the work, after completion of the work and clean the site removing all structures and temporary hutments in all respect as per the direction of Engineer-in-charge.
17. **SPECIALISED WORK**
 - 17.1 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 Engineer-in-Charge and obtain necessary approval:-
 - a) Exhaust system including duct size, layout etc.
 - b) Gas Utility Piping System.
 - c) Electrical works.
 - 17.2 The specialised agency should have an experience of minimum five years in his area of specialisation.
 - 17.3 The specialised agency should have successfully completed at least one work of similar nature having a magnitude equal at least 25% of the quantum of work provided in the tender.
 - 17.4 The specialised agency shall have sufficient experience in execution of turnkey projects.
 - 17.5 The contractor shall submit the following details of the specialised agency before execution of work:
 - a. Proof of the agency in operation since 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 work of one work of similar nature of magnitude equal to the quantum of work proposed in the tender.

18. SAFETY, HEALTH AND ENVIRONMENT

- 18.1 The Contractor(s) shall take all precautions to avoid accidents by exhibiting necessary caution boards during day and night, speed limit boards, red flags, red lights and providing barriers hoarding written in English and Hindi. He shall be responsible for all damages and accidents caused to existing/new work due to negligence on his part. No hindrances shall be caused to traffic during the execution of the work. 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 the same shall be entirely born by the contractor and department shall have no role on this account.
- 18.2 The contractor is required to follow the CPWD Safety code as prescribed in the General condition of the contract 2012 with up to date correction slips.
- 18.3 The contractor shall assign to his workmen, tasks commensurate with their qualification, experience and state of health for driving of vehicles, handling and erection of materials and equipments. All lifting equipments shall be tested certified for its capacity before use. Adequate and suitable lighting at every work place and approach there to, shall be provided by the contractor before starting the actual operations at night.
- 18.4 Hazardous and / or toxic materials such as solvent coating or thinners shall be stored in appropriate containers.
- 18.5 All hazardous materials shall be labeled with the name of the materials, the hazards associated with its use and necessary precaution to be taken.
- 18.6 Contractor shall ensure that during the performance of the work, all hazard to the health of personnel, have been identified, assessed and eliminated.
- 18.7 Appropriate personal protective equipment such as helmets, gloves, goggles, aprons, safety belts etc. shall be provided to the workers employed at the work site as per the requirement and exposure to the hazardous materials or locations.
- 18.8 The contractor has to follow the model rules for the protections of the Health and sanitary arrangement for the workers as provided in the General Condition of the contract with up to corrections.
- 18.9 The contractor shall provide first aid facilities, drinking water facilities, washing facility, Latrines and urinals, shelter during rest, crèches, canteens, anti-malarial

precautions, preventive action for communicable diseases, proper drainage, sewerage, etc. in compliance of model rules for the protection of Health and Sanitary arrangement for the workers.

18.10 The wages of the labour shall be paid as per the guidelines provided in the CPWD contractor labour regulations.

18.11 The contractor has to keep a record of all the workers employed at site, make daily attendance along with the location of the work and follow the CPWD contractors labour regulation. All the labour record shall be made available for inspection and verification to the Engineer-in-charge or his authorized representative as and when required.

18.12 ENVIRONMENTAL MANAGEMENT PLAN

18.12.1 Execution stage :

- (i) All required sanitary and hygienic measures should be in place before starting construction activities and to be maintained throughout the construction phase.
- (ii) A First Aid Room will be provided in the project.
- (iii) Adequate drinking water and sanitary facilities should be provided for construction workers at the site. The safe disposal of waste water and solid wastes generated during the construction phase should be ensured.
- (iv) For disinfection of waste water, use ultra violet radiation, not chlorination.
- (v) If permitted by CGWA, groundwater may be used for flushing of toilets.
- (vi) Rain water disposal pipe should be at least 3 m. above the highest ground water table.
- (vii) All the topsoil excavated during construction activities should be stored for use in horticulture / landscape development within the project site.
- (viii) Construction spoils, including bituminous material and other hazardous materials, must not be allowed to contaminate watercourses and the

dump sites for such material must be secured so that they should not leach into the ground water.

- (ix) The diesel generator sets to be used during construction phase should be low Sulphur diesel type and should conform to E & P Rules prescribed for air and noise emission standards.
- (x) Vehicles hired for bringing construction material to the site should be in good condition and should conform to applicable air and noise emission standards and should be operated only during non-peak hours.

- 18.12.2.1 Emission from the vehicles must conform to environmental norms.
- 18.12.2.2 Sprinkling of water can mitigate dust produce from the vehicular movement and other site activities.
- 18.12.2.3 Construction of bins for disposal of waste.
- 18.12.2.4 The pre-identified dump locations will be a part of solid waste management plan to be prepared by the contractor in consultation with Engineer-In-Charge.
- 18.12.2.5 Contractor will get approved the location of disposal site prior to commencement of the excavation of any section of the project location.
- 18.12.2.6 Contractor will ensure that any spoils of materials will not be disposed off in any municipality solid waste collection bins.
- 18.12.2.7 Curing tank, depressions and other receptacle of water shall be kept clean/closed and treated to prevent than acting as source of Vector Born diseases like dengue etc.
- 18.12.2.8 The contractor shall dispose off malba, rubbish & other unserviceable materials and wastes at their own cost to the notified / specified dumping ground and under no circumstances these shall be stacked / dumped, even temporarily, outside the construction premises.

18.13 WATER POLLUTION :

- 18.13.1 The contractor will take all precautionary measures to prevent the waste water during construction to accumulate anywhere.
- 18.13.2 The wastewater arising from the project is to be disposed off in the manner that is acceptable to the Engineer-in-charge and conforming to Pollution Control norms.

18.14 AIR AND NOISE POLLUTION

- 18.14.1 Contractor will use dust screens and sprinkle water around the site to arrest spreading of dust in the air and surrounding areas.

- 18.14.2 Contractor will ensure that all vehicles, equipment and machinery used for environmental emission standards/norms.
- 18.14.3 For controlling the noise from Vehicles, Plants and Equipments, the Contractor will conform the following:
- (i) All vehicles and equipment used in construction will be fitted with exhaust silencers.
 - (ii) Servicing of all construction vehicles and machinery will be done regularly and checked and if found defective will be replaced.
 - (iii) Noise emission from compactors (rollers) front loaders, concrete mixers, cranes (movable), vibrators and saws should be less than 75 db (A).
 - (iv) As per the Standards/Guidelines for control of Noise Pollution from Stationary Diesel be less than $94+10 \log_{10} (KVA)$. The standards also suggest construction of acoustic enclosure around the DG set and provision of proper exhaust muffler with insertion loss of minimum 25dg(A) as mandatory.
 - (v) Ambient noise levels should conform to residential standards both during day and night.
 - (vi) Adequate measures to reduce air and noise pollution during construction keeping in mind CPCB norms on noise limits.

19 RISK FROM ELECTRICAL EQUIPMENT

- 19.1 The contractor will comply the relevant industrial electrical safety legislations.
- 19.2 The contractor will take adequate precautions to prevent danger from electrical equipment i.e. no material will be so stacked or placed as to cause danger or inconvenience to person or the public.
- 19.3 All necessary fencing and lights will be provided to protect the public.
- 19.4 All electric machines to be used in the construction will conform to the relevant Indian Standards (IS) codes, will be free from patent defect, will be kept in good working order, will be regularly inspected and properly maintained as per IS provision and to the satisfaction of the Engineer-in-charge.

20 PLANTATION/ PRESERVATION / CONSERVATION MEASURES.

- 20.1 The contractor will take reasonable precaution to prevent his workmen and employees from removing and damaging any flora (plant/ vegetation) from the project area.

- 20.2 All fossils, coins, articles of value of antiquity, structures and other remains or things of geological or archaeological interest, discovered on any project location during excavation / construction shall be property of the Government, and shall be dealt with as per provisions of the relevant legislation. The contractor will take reasonable precaution to prevent his workmen or any other persons from removing and damaging any such article or thing. He will, immediately upon discovery thereof official instructions of Engineer-In-Charge for dealing with the same, till then all work shall be stopped.

21 PROGRAMME CHART:

- 21.1 The Contractor shall prepare an integrated programme chart for the execution of work, showing clearly all activities from the start of work to completion, with details of manpower, material, equipment and machinery required for the fulfillment of the programme within the stipulated period or earlier and submit the same for approval to the Engineer-in-Charge within ten days of award of the contract failing which Rs.1000/- per day shall be recovered (non refundable) from the contractor till the date of actual submission.

21.2 The programme chart should include the following:

21.2.1 Descriptive note explaining sequence of the various activities.

21.2.2 Network (PERT / CPM / BAR CHART).

21.2.3 Programme for procurement of materials / equipments / labour by the contractor.

21.3 If at any time, it appears to the Engineer-in-Charge 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.

21.4 The submission for approval by the Engineer-in-Charge 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 Engineer-in-Charge to take action against the contractor as per terms and conditions of the agreement.

22 PROGRESS REPORT:

- 22.1 The contractor shall submit monthly progress report of the work in computerized form. The progress report shall contain the following the information, apart from whatever else may be required as specified. Contractor shall give the Engineer-in-charge on 7th day of each month a progress report of work done during previous

month failing which Rs.500/- per day shall be recovered (non refundable) from the contractor till the date of its actual submission.

22.2 Project information, giving the broad features of the contract.

22.3 Introduction, giving a brief scope of the work under the contract and the broad structural or other details.

22.4 Construction schedule of the various works with a bar chart for the next quarter showing the mile stone, targeted tasks and up to date progress.

22.5 Progress chart of the various components of the work that are planned and achieved for the month as well as cumulative up to the month, with reasons for deviations, if any in a tabular format.

22.6 Plant and machinery statement, i/c those deployed on the work and their working status.

22.7 Man power statement indicating individually the names of all the staff deployed on the work along with their designations.

22.8 Financial Statement i/c the broad details of all the running account payments received up to date, such as gross value of work done, advances taken, recoveries effected, amounts with held, net payments received etc.

22.9 Statement showing the extra & substituted items submitted by the contractors and the payment received against them, items pending for sanction / decision by the department , broad details of the bank guarantees, indicating clearly their validity periods, broad details of the insurance policies taken by the contractor, if any , the advances received and adjusted.

22.10 Progress photographs in colour of the various items / components of the work done up to date to indicate visually the actual progress of work.

22.11 Quality assurance and quality control tests conducted during the month, with the result thereof.

22.12 If the work is carried out in more than one shift or during night, no claim on this account shall be entertained. The contractor has to take permission from the police authorities etc. if required for work during night hours. No claim / hindrance on this account shall be considered if work is not allowed during night time. The requisite supervision shall be made available by the department along with necessary issue of material under joint custody.

22.13 Existing drains, pipes, cables, over-head wires, sewer lines, water lines and similar services encountered in the course of the execution of work shall be protected against the damage by the contractor at his own expense. In case the same are to be

removed and diverted, the same shall be payable to the contractor. The contractor shall work out the cost and the same shall be approved by Engineer-in-Charge. The contractor shall not store materials or otherwise occupy any part of the site in a manner likely to hinder the operation of such services.

- 22.14 The Contractor shall be responsible for the watch and ward / guard of the buildings safety, fittings and fixtures provided by him/ supplied to him against pilferage and breakage during the period of installations and thereafter till the entire work as per agreement is physically handed over to the department. No extra payment shall be made on this account.

23 QUALITY ASSURANCE:

- 23.1 The contractor shall establish, document and maintain an effective quality assurance system as outlined in the specifications and various codes and standards.
- 23.2 The bidder 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.
- 23.3 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 and the details of the person responsible. It is obligatory on the bidder to obtain the approval of every quality assurance document with Engineer-in-charge before he starts using particular document for execution of work.
- 23.4 The approval of quality assurance by Engineer-in-charge does not absolve the contractor of the contractual obligations towards executing the work as per the laid down specification of the work.
- 23.5 The contractor shall produce the quality control, records, on the formats approved by Engineer-in-charge in the quality assurance plan.
- 23.6 The contractor shall ensure towards the enforcement of quality assurance plan by his all specialized agencies as approved by the Engineer-in-charge.
- 23.7 The Engineer-in-charge reserves the right to inspect / witness, review any or stages of the work at shop / site as deemed necessary for quality assurance and / or timely completion of work.
- 23.8 The contractor has to ensure the deployment of quality assurance and quality control engineer (s) depending upon the quantum of work. This QA/QC group shall be fully responsible to carry out the work as per standards and all codes

requirements. In case Engineer-in-charge feels that contractor's QA/Q Engineer(s) are incompetent or insufficient, contractor has to deploy other experienced Engineer(s) as per site requirement and to the full satisfaction of Engineer-in-charge.

- 23.9 The contractor is required to review the quality assurance program at all appropriate stages to ensure the quality, completion of activities in time etc. and if required should deploy additional manpower and resources to ensure the quality and timely completion of the project.
- 23.10 If the contractor fails to deploy the quality assurance team, the necessary recovery shall be made from the contractor's bill as per the rates provided for in the Schedule – F (Clause 34(i)) of the agreement.
- 23.11 The contractor shall be fully responsible for the safe custody of materials brought by him / issued to him even though the materials may be under double lock and key system.
- 23.12 The contractor shall procure the 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 weighing and measuring arrangements at site for checking the weight / dimensions as may be necessary for execution of work. The sealed samples are to be handed over to the approved testing lab by contractor at his own cost.

24 TESTING OF MATERIALS

- 24.1 All the required tests as per Technical Specification have to be got conducted at the risk & cost of the contractor, unless specifically mentioned otherwise.
- 24.2 All necessary tests as per the Contract/CPWD specifications/relevant BIS codes shall be carried out on all the materials whether ISI marked or otherwise. Wherever Contract /CPWD specifications/relevant BIS codes do not specify the frequency of tests, the same shall be carried out as per the directions of the Engineer-in-Charge. Nothing extra whatsoever shall be payable on this account.

25 Testing At Manufacturer's Place

25.1 All materials which are specified to be tested at the manufacturer's works shall satisfactorily pass the tests in presence of the authorized representative of Engineer-in-charge 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 laboratory approved by the Engineer-in-charge. The charges for such testing shall be borne by the contractor.

SPECIAL CONDITIONS FOR ELECTRICAL WORK

- 1.0 The contractor must study carefully all the specifications/schedule of work/drawings/additional specifications and site parameters and quote firm rates after accounting all works. No extra claim on any account shall be paid/entertained other than the agreement/quoted rates.
- 2.0 The order of preference in case of any discrepancy as indicated in condition no. 1 under “Conditions of contract” given in the Standard CPWD Contract form may be read as the following:
- a) Nomenclature of item as per Schedule of Quantities.
 - b) Additional specifications, particular specifications and special conditions
 - c) General conditions.
 - d) Contract Clauses of General conditions of contract.
 - e) Architectural/structural drawings and specifications mentioned in drawings.
 - f) CPWD specifications for electrical works as applicable.
 - g) Indian standard specifications of BIS.
 - h) Sound engineering practice as per directions of the Engineer-in-charge.
 - i) Manufacturers specifications.

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

- 3.0 The work shall be carried out in accordance with the drawings approved by the Engineer-in-charge. Before commencement of any item of work, the contractor shall correlate all the relevant architectural and structural drawings issued for the work and satisfy himself that the information available is complete and unambiguous. The discrepancy, if any, shall be brought to the notice of Engineer-in-charge before execution of work. The contractor himself shall be responsible for any loss or damage occurring by the commencement of work on the basis of any erroneous and or incomplete information.

- 4.0 The contractor shall take all safety precautions to avoid accidents by exhibiting caution boards, red flags, red lights and by providing necessary barriers and all other measures required from time to time. The contractor shall be responsible for all damages and accidents due to negligence on his part.
- 5.0 The contractor shall give due notices to Municipality, Police and/or other authorities that may be required under the law/rules under force and obtain all requisite permissions/licenses for temporary obstructions/enclosures and pay all charges which may be leviable on account of his execution of the work under the agreement. Nothing extra shall be payable on this account.
- 6.0 The contractor shall leave such recesses, holes, openings, etc., as may be required for the electric, air-conditioning and other related works. (For this purpose any required inserts, sleeves, brackets, conduits, base plates, clamps etc. shall be arranged by the contractor and fix the same at appropriate time, if required, and nothing extra shall be payable on this account.
- 7.0 The contractor shall give a trial run of the equipments and machinery for establishing its capability to achieve the specifications within laid down tolerances to the satisfaction of the Engineer-in-charge before commencement of work.
- 8.0 The work will be carried out in close coordination with all other works and other agencies. The contractor will have to employ adequate labour for carrying out the work. No claim regarding the idle labour for any reason will be entertained by the Department.
- 9.0 No tools and plants including special T&P etc. shall be supplied by the department and the contractor will have to make his own arrangements at his expenses.
- 10.0 All tools, plant and machinery provided by the contractor shall, when brought at the site, be deemed to be exclusively intended for the construction and completion of this work and the contractor shall not remove the same or any part thereof (save for the purpose of moving it from one part of the site to another) without the consent of the Engineer-in-charge.
- 11.0 All materials shall be got checked by the Engineer-in-charge on receipt of the same at site before use.

- 12.0 No foreign exchange shall be made available by the department for the purchase of equipments, plants, machinery, materials of any kind or any other items required to be carried out in execution of work.
- 13.0 The contractor shall carry out his work, so as not to interfere with or hinder the progress or completion of the work being performed by other contractor (s) or by the Engineer-in-charge and shall as far as possible arrange his work and shall place and dispose off the materials being used or removed, so as not to interfere with the operations of other contractors, or he shall arrange his work with that of the others in an acceptable and coordinated manner and shall perform it in proper sequence to the entire satisfaction of Engineer-in-charge.
- 14.0 The main agency will be responsible for all acts of omission and commission of the associate contractors including the changed one(s).
- 15.0 The contractor shall give the Engineer-in-charge on the 1st day of each month, a progress report of the work done during the previous month. The progress of work will be reviewed periodically by the Engineer-in-charge with the contractor and shortfalls, if any, sorted out. The contractor shall thereupon take such action as may be necessary to bring back his work to schedule without any additional cost to the department.
- 16.0 The main contractor shall not change the associated contractors/specialized firms. However, if the change is warranted, the same can only be done, with the prior approval of the Project Engineer, IISER. For this, the main contractor has to apply to the Engineer-in-charge giving justification for change along with credentials of the proposed associated agency for carrying out such works.
- 17.0 It shall be responsibility of the main contractor to sort out any dispute involved with the associated contractor without any time and cost overrun to the department. The main contractor shall be solely responsible for settling the dispute/litigation arising out of his agreement with the associate contractor. The contractor shall ensure that the work shall not suffer on this account. No claim of hindrance in the work shall be entertained from the main contractor on this account. No extension of time shall be granted and no claim whatsoever of any kind shall be entertained from the contractor on account of delay in/towards selection/rejection of the associate contractor.
- 18.0 The contractor shall quote his rates considering the specifications, terms & conditions and particular specifications and special conditions etc. and nothing extra shall be payable whatsoever unless otherwise specified.

- 19.0 The main contractor shall be responsible for coordinating the activities of all works and essential progress of works as per milestone and laid down programme.
- 20.0 The contractor shall be responsible for the watch and ward of the site/property/material provided by him and materials issued by the department against pilferage and breakage during the period of execution and thereafter till the work is completed and physically handed over to the department.
- 21.0 Samples of all materials, fittings and other materials/articles required for execution of the work shall be got approved from the Engineer-in-charge. Materials/articles manufactured by the firms of repute as indicated in tender documents and approved by the Engineer-in-charge shall only be used.
- 22.0 The contractor shall ensure quality construction in a planned and time bound manner. Any sub-standard material or work beyond set out tolerance limits shall be summarily rejected by the Engineer-in-charge.
- 23.0 The contractor shall be required to make a sample of each item of work at the earliest opportunity using all approved materials for approval of Engineer in charge before mass scale finishing works are taken up.
- 24.0 Even ISI marked materials shall be subjected to quality test at the discretion of the Engineer-in-charge besides testing of other materials as per the specifications described for the item/material. Whenever ISI marked materials are brought to the site of work; the contractor shall, if required by the Engineer-in-charge, furnish manufacturers test certificates to establish that the material procured by the contractor for incorporation in the work satisfy the provisions of IS codes relevant to the material and/or the work done.
- 25.0 The contractor shall have to engage well experienced skilled labour and deploy modern T&P and other equipments to execute the work.
- 26.0 The firm shall use only chase cutting machine for cutting the chases in the wall for recessed conduit wiring.
- 27.0 The contractor will have to make his own arrangement for storage of materials. No storage space shall be provided by department.

- 28.0 The contractor will have to make his own arrangement for water and power supply for execution of works and testing the installation before handing over to the Department.
- 29.0 The contractor will have to ensure that the skilled labour i.e. wireman etc., engaged in the execution of the work must possess valid electrical license, otherwise he will not be permitted to execute the work.
- 30.0 The associate contractors executing the electrical works must possess the valid electrical contractor license otherwise they will not be permitted to execute the electrical works.
- 31.0 The payment shall be made as under:
- (a) No advance payment shall be made. However secured advance maximum 90% of quoted rate of supply item in agreement or market rate whichever is lower shall be made after receipt of materials at site.
- 32.0 The contractor shall be responsible for removal of all defects in the work during the guarantee/warranty period. The department shall carry out routine maintenance only. However, if any failure is noticed during this period which is attributable to poor quality of material and bad workmanship, the contractor will be required to rectify the same at his own cost, failure of which the department will be at liberty to get the defects rectified at the risk & cost of the contractor. The contractor will also be required to carry out his own inspection/testing during the guarantee/warranty period and attend to any defect taking place during this period.
- 33.0 The complete work executed under the contract shall carry 12 months comprehensive guarantee on all parts, machines, fume hoods, blowers, electronics control and other items supplied under the contract against unsatisfactory performance and/or break down due to defective design, workmanship of material. The material or equipment or any other thereof so found defective during guarantee period shall forthwith be repaired or replaced free of cost, to the satisfaction of the Engineer-in-charge. In case it is felt by the department that undue delay is being caused by the contractor in doing this, the same will be got done by the department at the risk and cost of the contractor. The decision of Engineer-in-charge in this regard shall be final & binding.

- 34.0 Agency is also required to keep spare electrical/electronic operated items as a reserve stock at site for immediate replacement of defective item during the warrantee period and hand over the reserve stock items to IISER Pune after completion of the comprehensive period in working conditions/with new replacement of defective items at free of cost. However initial payment shall be made for spare items required to be kept for immediate replacement under the supply items. Items required to be kept as spare shall be decided in consultation with the Engineer in charge. Routine consumable etc shall however be arranged by the agency and no payment for the same shall be made by IISER. The agency should quote his rates taking into account the above conditions and no separate payment for replacement of defective/worn out items shall be made by IISER.
- 35.0 At least one number Trained technicians/operator/Engineer duly trained by the company with 8 hours duty cycle for six working days in a week shall be deployed at site during the comprehensive warrantee period of 12 months. Technician should be supported by the core team of agency for technical or any additional manpower requirements for attending to maintenance calls. Complete installed furniture, fume hoods, ventilation system i/c all controls shall be operated as per designed parameters, any defective part/item during the warrantee period of 12 months is required to be repaired/replaced within 24 hours of lodging the complain with the agency's authorised personal. In case of non compliance of the above condition penalty of Rs. 5000/- per day shall be levied by IISER and the same shall be recovered from the dues of the agency. The agency should quote his rates by taking into account the cost towards the above and no separate payment shall be made towards this. IISER Pune reserves the right to ask for the replacement of technicians in case of unsatisfactory performance/disobedience is observed.
- 36.0 Further in case of unsatisfactory services from the agency, IISER Pune reserves the right to deploy technician, Engineers, replace/repair the defective or worn out part at the risk and cost of the agency and recover the cost from the dues of the agency as per actual. Security deposit shall be returned after the successful completion of warrantee and operative period of 12 months.

Annexure – I A

CERTIFICATE FOR ASSOCIATING AGENCY

This is certified that we have not deviated from the technical specification and commercial provisions provided in the tender.

The Price bid is unconditional.

This is certified that we have engaged M/s..... as Electrical contractor of appropriate class as detailed below:

- (i) **Name of contractor**
- (ii) **Address**
- (iii) **Class of registration in CPWD, or any other Govt. Department.**
- (iv) **Maximum ceiling limit to execute electrical work set by the registering authority.**
- (v) **Validity of registration**
- (vi) **License no. with validity**

NOTE: All columns of above Performa must be filled in.

Contractor's Signature

CONSENT LETTER

I hereby give my consent to work as electrical contractor till the completion of work. I will be responsible for necessary action to hand over the installation and for rectification of defects and repair during the maintenance period. I will execute the work as per CPWD specification and additional conditions of the contracts.

I will also engage suitable Engineer for the work as per condition of the contract. I further certify that the above particulars pertaining to me are correct.

Signature of Electrical Agency

Annexure - I B

(Non judicial Stamp Paper of Rs.100)

Memorandum of Understanding

This Memorandum of Understanding (MOU) is made on the..... at

Between

.....(main contractor) having its registered office at.....which expression shall unless repugnant to the subject or context include its administrators, successors and assigns.

And

.....(Associate Electrical contractor) having its registered office at.....represented bywhich expression shall unless repugnant to the subject or context include its administrators, successors and assigns.

Whereas, IISER Pune, have issued tender papers to quote for the following work to M/s (main contractor)

Name of Work:

Whereas, This Memorandum of Understanding has been entered into to execute Electrical works for the above work by M/s..... (Elect. Contractor) (Associate electrical contractor).

Whereas, both the parties have gone through and understood the various conditions & clauses of the tender and willingly agree to abide by them.

This MOU shall be valid till the duration of completion of above work and shall be extended if so required by the IISER Pune.

In witnesses thereof we have put our hand and seal on dated

For.....(Main contractor)

For...(Associate contractor)

Witness

Annexure – II A

CERTIFICATE FOR ASSOCIATING AGENCY

This is certified that we have not deviated from the technical specification and commercial provisions provided in the tender.

The Price bid is unconditional.

This is certified that we have engaged M/s..... as **HVAC** contractor of appropriate class as detailed below:

- (i) **Name of contractor**
- (ii) **Address**
- (iii) **Class of registration in CPWD or any other Govt. Department.**
- (iv) **Maximum ceiling limit to execute HVAC work set by the registering authority.**
- (v) **Validity of registration**
- (vi) **License no. with validity**

NOTE: All columns of above Performa must be filled in.

Contractor's Signature

CONSENT LETTER

I hereby give my consent to work as electrical contractor till the completion of work. I will be responsible for necessary action to hand over the installation and for rectification of defects and repair during the maintenance period. I will execute the work as per CPWD specification and additional conditions of the contracts.

I will also engage suitable Engineer for the work as per condition of the contract. I further certify that the above particulars pertaining to me are correct.

Signature of HVAC Agency

Annexure II B

(Non judicial Stamp Paper of Rs.100)

Memorandum of Understanding

This Memorandum of Understanding (MOU) is made on the..... at

Between

.....(main contractor) having its registered office at.....which expression shall unless repugnant to the subject or context include its administrators, successors and assigns.

And

.....(Associate HVAC contractor) having its registered office at.....represented bywhich expression shall unless repugnant to the subject or context include its administrators, successors and assigns.

Whereas, IISER Pune, have issued tender papers to quote for the following work to M/s (main contractor)

Name of Work:

Whereas, This Memorandum of Understanding has been entered into to execute Electrical works for the above work by M/s..... (HVAC Contractor) (Associate HVAC contractor).

Whereas, both the parties have gone through and understood the various conditions & clauses of the tender and willingly agree to abide by them.

This MOU shall be valid till the duration of completion of above work and shall be extended if so required by the IISER Pune.

In witnesses thereof we have put our hand and seal on dated

For.....(Main contractor)

For...(Associate contractor)

Witness

Annexure – III A

CERTIFICATE FOR ASSOCIATING AGENCY

This is certified that we have not deviated from the technical specification and commercial provisions provided in the tender.

The Price bid is unconditional.

This is certified that we have engaged M/s..... as Gas & Utility Distribution contractor of appropriate class as detailed below:

- (i) **Name of contractor**
- (ii) **Address**
- (iii) **Class of registration in CPWD, or any other Govt. Department.**
- (iv) **Maximum ceiling limit to execute Gas & Utility work by the registering authority.**
- (v) **Validity of registration**
- (vi) **License no. with validity**

NOTE: All columns of above Performa must be filled in.

Contractor's Signature

CONSENT LETTER

I hereby give my consent to work as electrical contractor till the completion of work. I will be responsible for necessary action to hand over the installation and for rectification of defects and repair during the maintenance period. I will execute the work as per CPWD specification and additional conditions of the contracts.

I will also engage suitable Engineer for the work as per condition of the contract. I further certify that the above particulars pertaining to me are correct.

Signature of Gas & Utility Distribution Agency

Annexure – III B

(Non judicial Stamp Paper of Rs.100)

Memorandum of Understanding

This Memorandum of Understanding (MOU) is made on the..... at

Between

.....(main contractor) having its registered office at.....which expression shall unless repugnant to the subject or context include its administrators, successors and assigns.

And

.....(Associate Gas & Utility Distribution contractor) having its registered office at.....represented bywhich expression shall unless repugnant to the subject or context include its administrators, successors and assigns.

Whereas, IISER Pune, have issued tender papers to quote for the following work to M/s (main contractor)

Name of Work:

Whereas, This Memorandum of Understanding has been entered into to execute Electrical works for the above work by M/s..... (Gas & Utility Distribution Contractor) (Associate Gas & Utility Distribution contractor).

Whereas, both the parties have gone through and understood the various conditions & clauses of the tender and willingly agree to abide by them.

This MOU shall be valid till the duration of completion of above work and shall be extended if so required by the IISER Pune.

In witnesses thereof we have put our hand and seal on dated

For.....(Main contractor)

For...(Associate contractor)

Witness

SECTION-II

ITEM RATE TENDER & CONTRACT FOR WORKS

SECTION-II

TENDER FORM ITEM RATE TENDER & CONTRACT FOR WORKS

Name of work: Supply and Installation Lab benches, Fume Hoods and exhaust system in GF Chemistry block, Main Building at IISER Pune..

NIT- ../IISER/Pune/2015-16

- (a). Tender(s) to be submitted by (time) **15.00 hours on 196 2015**to Superintending Engineer , Indian Institute of Science Education and Research, Pune
- (b). Tender(s) to be opened in presence of tenderers who may be present at **15.30 hours on 19 6 2015**in the office of the Superintending Engineer , Indian Institute of Science Education and Research ,Pune

Issued to : _____ (contractor)

Signature of officer issuing the documents -----

Designation

Date of Issue :

TENDER

I/We have read and examined the notice Inviting Tender, Schedule, Specifications applicable, Drawings & Designs, General Rules and Directions, Conditions of Contract, clauses of contract, special conditions, Schedule of Rate & other document and Rules referred to in the conditions of contract and all other contents in the tender document for the work.

I/We hereby tender for the execution of the work specified for the Director Of Indian Institute of Science Education and Research Pune (IISER-Pune) within the time specified in Schedule (2) twomonths viz, schedule of quantities and in accordance in all respects with the specifications, designs, drawings and instructions in writing referred to the Conditions of contract and with such materials as are provided for and in respects in accordance with such conditions so far as applicable.

We agree to keep the tender valid for (90) ninety days from the due date of its opening and not to make any modifications in its terms and conditions.

A sum of Rs (figure)------(in words) -----

has been deposited in Deposit at call Receipt of a Schedule bank/demand draft of a scheduled bank/bank guarantee issued by a Schedule Bank as earnest money. If I/we, fail to furnish the

prescribed performance guarantee within prescribed period, I/we agree that the said Director Of Indian Institute of Science Education and Research Pune (IISER-Pune) or his successors in office shall without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money absolutely, if I/we fail to commence work as specified, I/we agree that Director Of Indian Institute of Science Education and Research Pune(IISER-PUNE) or his successors in office shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the said earnest money and the performance guarantee absolutely.

The said Performance Guarantee shall be a guarantee to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to those in excess of that limit at the rates to be determined in accordance with the provision contained in Clause 12.2 and 12.3 of the tender form. Further, I/We agree that in case of forfeiture of Earnest Money or Performance Guarantee as aforesaid, I/We shall be debarred for participation in the re-tendering process of the work.

I/We undertake and confirm that eligible similar work(s) has/have not been got executed through another contractor on back to back basis. Further that, if such a violation comes to the notice of IISER Pune, then I/We shall be debarred for tendering in IISER Pune in future forever. Also, if such a violation comes to the notice of IISER Pune before date of start of work, the Engineer-in-Charge shall be free to forfeit the entire amount of Earnest Money Deposit/Performance Guarantee.

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

Dated

Signature of Contractor
Seal

Postal Address

Witness :

Address:

Occupation:

ACCEPTANCE

The above tender (as modified by you as provided in the letters mentioned hereunder) is accepted by me for and on the Director IISER,Pune for sum of Rs.....(Rupees.....).
.....).

The letters referred to below shall form part of this contract Agreement:-

(a)

(b)

(c)

For & on behalf of the Director, IISER Pune

Signature.....

Dated.....

Designation.....

Appendix 'I'

(vii) Form of Performance Security (Guarantee)

Bank Guarantee Bond

1. In consideration of the Director IISER Pune (hereinafter called "IISER-Pune") having offered to accept the terms and conditions of the proposed agreement between-----
-----and----- (hereinafter called "the said Contractor(s)") for the work -----
----- (hereinafter called "the said agreement") having agreed to production of an irrevocable Bank Guarantee for Rs.----- (Rupees -----only) as a security/guarantee from the contractor(s) for compliance of his obligations in accordance with the terms and conditions in the said agreement.

We ----- (hereinafter referred to as "the Bank") hereby (indicate the name of the Bank) Undertake to pay to the IISER Pune an amount not exceeding Rs-----
-----(Rupees -----only) on demand by IISER Pune

2. We -----do hereby undertake to pay the amounts due and payable (indicate the name of the Bank) under this Guarantee without any demure, merely on demand from the IISER Pune stating that the amount claimed as required to meet the recoveries due or likely to be due from the said contractor(s). Any such demand made on the bank shall be conclusive as regards the amount due and payable by the bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs----- (Rupees-----only)
3. We, the said bank further undertake to pay the IISER Pune any money so demanded notwithstanding any dispute or disputes raised by the contractor(s) in any suit or proceeding pending before any court or Tribunal relating thereto, our liability under this present being absolute and unequivocal.

The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the Contractor(s) shall have no claim against us for making such payment.

4. We, ----- further agree that the guarantee herein contained shall (indicate the name of the Bank) remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to be enforceable till all the dues of the IISER Pune under or by virtue of the said agreement have been fully paid and its claims satisfied or discharged or till Engineer-in-Charge on behalf of the IISER Pune certified that the terms and conditions of the said agreement have been fully and properly carried out by the said Contractor(s) and accordingly discharges this guarantee.
5. We, ----- further agree with the IISER Pune that the IISER Pune (indicate the name of the Bank) shall have the fullest liberty without our consent and without affecting in any manner our obligation hereunder to vary any of the terms and conditions of the said agreement or to extend time of performance by the said Contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the IISER Pune against the said contractor(s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation or extension being granted to the said Contractor(s) or for any forbearance, act of omission on the part of the IISER Pune or any indulgence by the IISER Pune to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.
6. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor(s).
7. We, ----- lastly undertake not to revoke this guarantee except (indicate the name of the Bank) with the previous consent of the IISER Pune in writing.
8. This guarantee shall be valid up to-----unless extended on demand by the IISER Pune. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs----- (Rupees-----only) and unless a claim in writing is lodged with us within six months of the date of expiry or the extended date of expiry of this guarantee all our liabilities under this guarantee shall stand discharged.

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

(viii) Proforma of Agreement

ARTICLE OF AGREEMENT is made at Pune on the day of..... 2012 between Indian Institutes Of Science Education and Research Pune, (IISER Pune) (Herein after referred to as the employer which expression shall includes its successors and assigns where the context so admits) of the one part and -----

(Hereinafter referred to as the “contractor(s) which expression shall include his/their respective heirs, executors, administrators and assigns where the context so admits) of the other part.

WHEREAS the employer is desirous of getting the work.....done and caused drawings, schedule of quantities, terms and conditions and specification describing the work to be executed and completed maintained.(hereinafter called “the works”)and has accepted a tender of the CONTRACTOR for the execution, completion and guarantee of such works.

AND WHERE AS the contractor has deposited a Sum Of Rs.-----
----- With employer as security for the due performance of this agreement as provided in the said Conditions.

NOW IT IS HEREBY agreed and declared by and between the parties as follows.

- (a) In consideration of the payments to be made to him as herein after provided the contractor shall upon and subject to the condition herein contained and the said conditions executed and complete the work shown upon the said drawings and such further detailed drawings which may be furnished to him and described in the said specifications and the said priced schedule of quantities within ----- from the date of order to commence the work.
- (b) The employer shall pay to the contractor such sum that shall become payable hereunder at the times and in the manner specified in the said conditions.
- (c) Time is essence of this agreement and the contractor agrees to pay compensation for delay as per Clause 2 of general Condition of Contract.

- (e) The documents mentioned below under (g) shall form the basis of this agreement and the decision Engineer or the Engineers in Charge, in reference to all matters of dispute as to material and workmanship shall be final and binding on both the parties.
- (f) The employer through the Engineer-in-Charge reserves to himself the right of altering the drawings and the adding to or omitting any items of works or of having portions of the same carried out departmentally or otherwise and such alterations or variations shall not violate agreement.
- (g) This agreement comprises the work said above and the entire subsidiary work connected there with, even though work may not be shown on the drawings or described in the said specifications or the priced schedule of quantities.

This agreement contains the following documents in addition to pages of articles of agreement.

- (a) NIT/WORK ORDER
- (b) Item rate tender form & contract for works.
- (c) General Rules and Directions
- (d) Condition of contracts
- (e) Clauses of contracts
- (f) Safety code
- (g) Models rules for the protection of health, sanitary arrangements for workers employed by IISER Pune or its Contractors.
- (h) Contractors labour regulations
- (i) Proforma of agreement
- (j) Proforma of Schedule A to C
- (k) Special Condition of contracts
- (l) Technical specifications
- (m) Tenders drawings
- (n) Price Schedule/ Schedule of Quantities
- (o) All corresponds between the parties until award of contract.
- (p) Prequalification document

In witness whereof the parties hereto have their respective hands the day and the year herein above written.

Signed by for and on behalf of the employer.

Superintending Engineer.

Witness (1)-----

Witness (2)-----

Signed by the said contractor

Address-----

Witness (1)-----

Countersigned

Witness (2)-----

(IX) PROFORMA BANK GUARANTEE IN LIEU OF BID SECURITY

**(On Non Judicial Stamp paper to be stamped in accordance
with stamp act, the stamp paper to be in name of
Executing Bank)**

Ref.....

Date.....

Bank Guarantee No.....

To **INDIAN INSTITUTE OF SCIENCE EDUCATION & RESEARCH,PUNE**

Dear Sir,

In accordance with your Notice Inviting Tender for _____under your tender
No_____ dated _____ M/s _____ (hereinafter called the
Tenderer) with following directors on their Board of Directors /Partners of the firm.

1_____	2_____
3_____	4_____
5_____	6_____
7_____	8_____
9_____	10_____

Wish to participate in the said tender for the following:

1_____

2_____

3_____

Whereas it is a condition in the tender documents that the tenderer has to deposit Bid Security with respect to the tender, with Indian Institute of Science Education & Research, Pune amounting to Rs..... or alternatively the tenderer is required to submit "Bank Guarantee" from a nationalised bank irrevocable and operative till 28 days after the validity of the offer. (i.e. 120 days from the date of opening of tender), for the like amount which amount is likely to be forfeited on the happening of contingencies mentioned in the tender documents. And whereas the tenderer desires to secure exemption from deposit of Bid Security and has offered to furnish a Bank Guarantee for a sum of Rs..... to the IISER, Pune for the purpose of securing exemption from the deposit of Bid Security.

1. NOW THEREFORE, we the Bank, a body corporate constituted under the Banking Companies (Acquisition and Transfer of undertakings) Act 1969 and having a branch office at..... (hereinafter referred to as the Bank") do hereby undertake and agree to pay on demand in writing by the IISER, Pune the amount of Rs..... (Rupees.....) to the **Indian Institute of Science Education & Research, Pune** without any demur, reservation or recourse.
2. We, the aforesaid Bank, further agree that the IISER, Pune shall be the sole judge of and as to whether the tenderer has committed any breach or breaches of any of the terms and conditions of the tender and the extent of loss, damage, costs, charges and expenses caused to or suffered by or that may be caused to or suffered by the IISER, Pune on account thereof the extent of the bid security required to be deposited by the Tenderer in respect of the said Tender document and the decision of the IISER, Pune that the Tenderer has committed such breach or breaches and as to the amount or amounts of loss, damage, costs, charges and expenses caused to or suffered by or that may be caused to or suffered by the IISER, Pune shall be final and binding on us.
3. We, the said Bank further agree that the Guarantee herein contained shall remain in full force and effect until it is released by the IISER, Pune and change in the constitution, liquidation or dissolution of the Tenderer shall not discharge our liability guaranteed herein.
4. It is further declared that it shall not be necessary for the IISER, Pune to proceed against the Contractor before proceeding against the Bank and the Guarantee herein contained shall be enforceable against the Bank notwithstanding any security which the IISER, Pune may have obtained or shall obtain from the Contractor at the time when proceedings are taken against the Bank for whatever amount may be outstanding or unrealized under the Guarantee.
5. The right of the IISER, Pune to recover the said amount of Rs..... (Rupees) from us in manner aforesaid will not be affected or suspended by reason of the fact that any dispute or disputes have been raised by the said M/s..... (Tenderer) and/or that any dispute or disputes are pending before any authority, officer, tribunal or arbitrator(s) etc.
6. Notwithstanding anything stated above, our liability under this guarantee shall be restricted to Rs.....(Rupees.....) and our guarantee shall remain in force up to..... and unless a demand or claim under the guarantee is made on us in

writing within three months after the aforesaid date i.e. on or before the all your rights under the guarantee shall be forfeited and we shall be relieved and discharged from all liabilities there under.

Date.....

place.....

(Signature)_____

(Printed Name)_____

(Designation)_____

(Bank's Common seal)_____

(Authorisation No.)_____

In the presence of:

Witness

1)_____

2)_____

Accepted

(Signature of the Officer)

For and on behalf of the

INDIAN INSTITUTE OF SCIENCE EDUCATION
AND RESEARCH , PUNE

SECTION – III

GENERAL CONDITIONS OF CONTRACT

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH PUNE

(i) General Rules & Directions

1. All work proposed for execution by contract will be notified in a form of invitation to tender prominently displayed in public places and signed by the officer inviting tender or by publication in Newspapers as the case may be.

This form will state the work to be carried out, as well as the date for submitting and opening tenders and the time allowed for carrying out the work, also the amount of earnest money to be deposited with the application, and the amount of the security deposit and performance guarantee to be deposited by successful tenderer and the percentage, if any, to be deducted from bills. Copies of specification, designs and drawings and any other documents required in connection with the work signed for the purpose of identification by the officer inviting tender shall also be open for inspection by the contractor at the office of officer inviting tender during office hours.

2. In the event of the tender being submitted by a firm, it must be signed separately by each partner thereof or in the event of the absence of any partner, it must be signed on his behalf by a person holding a power of attorney authorizing him to do so, such power of attorney to be produced with the tender, and it must disclose that the firm is duly registered under the Indian Partnership Act' 1952.
3. Receipts for payment made on account of work, when executed by a firm, must also be signed by all the partners, except where contractors are described in their tender as a firm in which case the receipts must be signed in the name of the firm by one of the partners, or by some other person having due authority to give effectual receipts for the firm.
4. Applicable for Item Rate Tender only

Any person who submits a tender shall fill up the usual printed form, stating at what rate he is willing to undertake each item of the work. Tenders, which propose any alteration in the work specified in the said form of invitation to tender, or in the time allowed for carrying out the work, or which contain any other conditions of any sort, including conditional rebates will be summarily rejected. No single tender shall include more than one work, but contractors who wish to tender for two or more works shall submit separate tender for each. Tender shall have the name and number of the works to which they refer, written on the envelopes.(Applicable for Item Rate Tender only)

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

In case the lowest tendered amount (worked out on the basis of quoted rate of Individual items) of two or more contractors is same, the such lowest contractors may be asked to submit sealed revised offer quoting rate of each item of the schedule of quantity for all sub sections/sub heads as the case may be, but the revised quoted rate of each item of schedule of quantity for all sub sections/sub heads should not be higher than their respective origin original rate quoted already at the time of submission of tender. The lowest tender shall be decided on the basis of revised offer.

If the revised tendered amount (worked out on the basis of quote rate of individual items) of two or more contractors received in revised offer is again found to be equal, then the lowest tenderer, among such contractors, shall be decided by draw of lots in the

presence of Registrar IISER Pune, Engineer in charge lowest contractors those have quoted equal amount of their tenders.

In case of any such lowest contractor in his revised offer quotes rate of any item more than their respective original rate quoted already at the time of submission of tender, then such revised offer shall be treated invalid. Such case of revised offer of the lowest contractor or case of refusal to submit revised offer by the lowest contractor shall be treated as withdrawal of his tender before acceptance and 50% of his earnest money shall be forfeited.

In case all the lowest contractors those have same tendered amount (as a result of their quoted rate of individual items), refuse to submit revised offers, then tenders are to be recalled after forfeiting 50% of EMD of each lowest contractors.

Contractor, whose earnest money is forfeited because of non-submission of revised offer, or quoting higher revised rate(s) of any item(s) than their respective original rate quoted already at the time of submission of his bid shall not be allowed to participate in the re-tendering process of the work.

4 A. Applicable for Percentage Rate Tender only

In case of Percentage Rate Tenders, contractor shall fill up the usual printed form, stating at what percentage below/above (in figures as well as in words) the total estimated cost given in Schedule of Quantities at Schedule-A, he will be willing to execute the work. The tender submitted shall be treated as invalid if :

- 1 The contractor does not quote percentage above/below on the total amount of tender or any section/sub head of the tender.
- 2 The percentage above/below is not quoted in figures & words both on the total amount of tender or any section/sub head of the tender.
- 3 The percentage quoted above/below is different in figures & words on the total amount of tender or any section/sub head of the tender.

Tenders, which propose any alteration in the work specified in the said form of invitation to tender, or in the time allowed for carrying out the work, or which contain any other conditions of any sort including conditional rebates, will be summarily rejected. No single tender shall include more than one work, but contractors who wish to tender for two or more works shall submit separate tender for each. Tender shall have the name and number of the works to which they refer, written on the envelopes.

- 4B. In case the lowest tendered amount (estimated cost + amount worked on the basis of percentage above/below) of two or more contractors is same, such lowest contractors will be asked to submit sealed revised offer in the form of letter mentioning percentage above/below on estimated cost of tender including all sub sections/sub heads as the case may be, but the revised percentage quoted above/below on tendered cost or on each sub section/sub head should not be higher than the percentage quoted at the time of submission of tender. The lowest tender shall be decided on the basis of revised offers.

In case any of such contractor refuses to submit revised offer, then it shall be treated as withdrawal of his tender before acceptance and 50% of earnest money shall be forfeited.

If the revised tendered amount of two more contractors received in revised offer is again found to be equal, the lowest tender, among such contractors, shall be decided by draw of lots in the presence of Registrar, IISER, Pune, Superintending Engineer, Dy. Registrar (F&A) & the lowest contractors those have quoted equal amount of their tenders.

In case all the lowest contractors those have quoted same tendered amount, refuse to submit revised offers, then tenders are to be recalled after forfeiting 50% of EMD of each contractor.

Contractor(s), whose earnest money is forfeited because of non-submission of revised offer, shall not be allowed to participate in the re-tendering process of the work.

5. The officer inviting tender or his duly authorized representative will open tenders in the presence of any intending contractors who may be present at the time, and will enter the amounts of the several tenders in a comparative statement in a suitable form. In the event of a tender being accepted, a receipt for the earnest money shall thereupon be given to the contractor who shall thereupon for the purpose of identification sign copies of the specifications and other documents mentioned in Rule-I. The earnest money of all unsuccessful bidders shall thereupon be returned to the contractor remitting the same, without any interest.
6. The officer inviting tenders shall have the right of rejecting all or any of the tenders and will not be bound to accept the lowest or any other tender.
7. The receipt of an accountant or clerk for any money paid by the contractor will not be considered as any acknowledgement of payment to the officer inviting tender and the contractors shall be responsible for ensuring that he procures a receipt signed by the officer inviting tender or a duly authorized cashier/accounts officer.
8. The memorandum of work tendered for and the schedule of materials to be supplied by the department and their issue-rates, shall be filled and completed in the office of the officer inviting tender before the tender form is issued. If a form is issued to an intending tenderer without having been so filled in and incomplete, he shall request the officer to have this done before he completes and delivers his tender.
9. The tenderers shall sign a declaration under the officials Secret Act 1923, for maintaining secrecy of the tender documents drawings or other records connected with the work given to them. The unsuccessful tenderers shall return all the drawings given to them.
- 9A. Use of correcting fluid, anywhere in tender documents is not generally permitted. Such Tender is liable for rejection.
10. In the case of Item Rate Tenders, only rates quoted shall be considered. Any tender containing percentage below / above the rates quoted is liable to be rejected. Rates quoted by the contractor in item rate tender in figures and words shall be accurately filled in so that there is no discrepancy in the rates written in figures and words. However, if a discrepancy is found, the rates which correspond with the amount worked out by the contractor shall unless otherwise proved be taken as correct. If the amount of an item is not worked out by the contractor or it does not correspond with the rates written either in figures or in words, then the rates quoted by the contractor in words shall be taken as correct. Where the rates quoted by the contractor in figures and in words tally, but the amount is not worked out

correctly, the rates quoted by the contractor will unless otherwise proved be taken as correct and not the amount.

In event no rate has been quoted for any item(s), leaving space both in figure(s), word(s), and amount blank, it will be presumed that the contractor has included the cost of this/these item(s) in other items and rate for such item(s) will be considered as zero and work will be required to be executed accordingly.

- 10A In case of Percentage Rate Tenders only percentage quoted shall be considered. Any tender for Item containing item rates is liable to be rejected. Percentage quoted by the contractor in Rate percentage rate tender shall be accurately filled in figures and words, so that there is no Tender only discrepancy.
11. In the case of any tender where unit rate of any item/items appear unrealistic, such tender will be considered as unbalanced and in case the tenderer is unable to provide satisfactory explanation, such a tender is liable to disqualified and rejected.
12. All rates shall be quoted on the tender form. The amount for each item should be worked out and requisite totals given. Special care should be taken to write the rates in figures as well as in words and the amount in figures only, in such a way that interpolation is not possible. The total amount should be written both in figures and in words. In case of figures, the word 'Rs' should be written before the figure of rupees and word 'P' after the decimal figures, e.g. Rs. 2.15 P and in case of words, the word 'Rupees' should precede and the word 'Paise' should be written at the end. Unless the rate is in whole rupees and followed by the word 'only' it should invariably be up to two decimal places. While quoting the rate in schedule of quantities, the word 'only' should be written closely following the amount and it should not be written in the next line.
- 12A In Percentage Rate Tender, the tenderer shall quote percentage below /above (in figure as well as in words) at which he will be willing to execute the work. He shall also work out the total amount of his offer and same should be written in the figures as well as in Words in such a way that no interpolation is possible. In case of figures, the word 'Rs' should be written before the figure of rupees and word 'P' after the decimal figures e.g. 'Rs 2.15P' and in case of words, the word 'Rupees' should be precede and the word 'Paise' should be written at the end.
13. (i) The Contractor, whose tender is accepted, will be required to furnish performance guarantee of 5% (Five Percent) of the tendered amount within the period specified in scheduled C. This guarantee shall be in the form of Deposit at call receipt of any scheduled bank/ banker's cheque of any scheduled bank/Demand draft of any scheduled bank /Pay order of any scheduled bank or Government Securities or Fixed Deposit Receipt or Guarantee Bonds of any Scheduled Bank or the State Bank of India in accordance with the prescribed form.

(ii) The Contractor, whose tender is accepted, will also be required to furnish by way of Security Deposit for the fulfillment of his contract, an amount equal to 2.50 % of the tendered value of the work. The Security Deposit will be collected by deductions from the running bills of the contractor at the rates mentioned above and the earnest money deposited at the time of tenders, will be treated as a part of the Security Deposit. The security amount will also be accepted in the shape of Government Securities. Fixed Deposit

Receipt and Guarantee Bonds of a Scheduled Bank or State Bank of India will also be accepted for this purpose provided confirmatory advice is enclosed.

14. On acceptance of the tender, the name of the accredited representative(s) of the contractor who would be responsible for taking instructions from the Engineer-in-Charge shall be communicated in writing to the Engineer-in-Charge.
15. Sales-tax/Vat, (except service tax) purchase tax, turnover tax or any other tax on material in respect of this contract shall be payable by the contractor and IISER Pune will not entertain any claim whatsoever in respect of the same. However, in respect of service tax, same shall be paid by the contractor to the concerned department on demand and it will be reimbursed to him by the Engineer-in-Charge after satisfying that it has been actually and genuinely paid by the contractor.
16. The contractor shall give a list of IISER employees, if any, related to him.
17. The tender for the work shall not be witnessed by a contractor or Contractors who himself/ themselves has/ have tendered or who may and has/ have tendered for the same work. Failure to observe this condition would render, tenders of the contractors tendering, as well as witnessing the tender, liable to summary rejection.
18. The tender for composite works includes, in addition to building work, all other works such as sanitary and water supply installations ,drainage installation, External Façade, Electrical works, Heating ventilation and air conditioning system, Integrated Building Management system, Lifts, roads and path etc. The tenderer apart from being a registered contractor (B&R) of appropriate class, must associate himself with agencies of appropriate class which are eligible to tender for sanitary and water supply drainage, electrical Heating ventilation and Air conditioning system, Integrated Building Management system, Solar Water Heating system works in the composite tender.

19. The contractor shall submit list of works which are in hand (progress) in the following form:

Name of work	Name of client & particulars of works being executed	Value of work In Rs.	Position of works in progress	Remarks

20. The contractor shall comply with the provisions of the Apprentices Act 1961, and the rules and orders issued there under from time to time. If he fails to do so, his failure will be a breach of the contract and the Engineer in charge may at his discretion without prejudice to any other right or remedy available in law cancel the contract. The contractor shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions of the said Act.

(ii) CONDITIONS OF CONTRACT

Definitions:

- 1 The **contract** means the documents forming the tender and acceptance thereof and the formal agreement executed between the competent authority on behalf of the Director, Indian Institute Of Science Education and Research Pune and the Contractor, together with the documents referred to therein including these conditions, the specifications, designs, drawings and instructions issued from time to time by the Engineer-in-Charge and all these documents taken together, shall be deemed to form one contract and shall be complementary to one another.
- 2 In the contract, the following expressions shall, unless the context otherwise requires, have the meanings, hereby respectively assigned to them :-
 - i). The expression **works** or **work** shall, unless there be something either in the subject or context repugnant to such construction, be construed and taken to mean the works by or by virtue of the contract contracted to be executed whether temporary or permanent, and whether original, altered, substituted or additional.
 - ii). The **Site** shall mean the land/ or other places on, into or through which work is to be executed under the contract or any adjacent land, path or street through which work is to be executed under the contract or any adjacent land, path or street which may be allotted or used for the purpose of carrying out the contract.
 - iii). The **Contractor** shall mean the individual, firm or company, whether incorporated or not, undertaking the works shall include the legal personal representative of such individual or the persons composing such firm or company, or the successors of such firm or company and the permitted assignees of such individual, firm or company.
 - iv). The **Director**, Indian Institute of Science Education and Research Pune means his successors also.
 - v). The **Engineer-in-Charge** means Engineer/Officer either from IISER, Pune or consultant notified by The Director (IISER, Pune) who shall supervise and be in-charge of work and who shall act on behalf of the Director, IISER for execution of contract.
 - vi) **IISER** means Indian Institute of Science Education and Research Pune, or his authorized representative.
 - vii) **Accepting Authority** shall mean the authority mentioned in Schedule 'C'.
 - viii) **Excepted Risk** are risks due to riots (other than those on account of contractor's employees), war (whether declared or not) invasion, act of foreign enemies, hostilities, civil war, rebellion revolution, insurrection, military or usurped power, any acts of Government, damages from aircraft, acts of God, such as earthquake, lightening and unprecedented floods, and other causes over which the contractor has no control and accepted as such by the Accepting Authority or causes solely due to use or occupation by IISER Pune of the part of the works in respect of which

a certificate of completion has been issued or a cause solely due to IISER-Pune's faulty design of works.

- ix). **Market Rate** shall be the rate as decided by the Engineer-in-Charge on the basis of the cost of materials and labour at the site where the work is to be executed plus the percentage mentioned in Schedule 'C' to cover, all overheads and profits.
 - x). **Schedule(s)** referred to in these conditions shall mean the relevant schedule(s) annexed to the tender papers or the standard Schedule of Rates of the CPWD Delhi schedule of rates mentioned in Schedule 'C' hereunder, with the amendments thereto issued up to the date of receipt of the tender.
 - xi). **Department** means Indian Institute of Science Education and Research Pune. (IISER Pune)
 - xii). **Specifications** means the specifications contained in tender documents, CPWD specifications 2009 Vol I & II with up to date correction slips, CPWD specifications for internal Electrical works – 2013, external electrical services- 2007, DG set & Wet riser, sprinkler specification-2006, Substation works Part IV 2013, Indian standard specification, technical specifications as applicable.
 - xiii). **Tendered Value** means the value of the entire work as stipulated in the letter of award.
 - xiv). **Consultant** means Consultant appointed by the Indian Institute of Science Education and Research Pune.
 - xv). **Date of commencement of work: The date** of commencement of work shall be the date of start as specified in schedule "C" or the first date of handling over the site, whichever is later, in accordance with the phasing if any, as indicated in the tender documents.
- 3 Where the context so requires, words imparting the singular only also include the plural and vice versa. Any reference to masculine gender shall whenever required include feminine gender and vice versa.
 - 4 Headings and Marginal notes to these General Conditions of Contract shall not be deemed to form part thereof or be taken into consideration in the interpretation or construction thereof or of the contract.
 - 5 The contractor shall be furnished, free of cost one certified copy of the contract documents except standard specifications. Schedule of Rates and such other printed and published documents, together with all drawings as may be forming part of the tender papers. None of these documents shall be used for any purpose other than that of this contract
 - 6 The work to be carried out under the Contract shall, except as otherwise provided in these conditions, include all labour, materials, tools, plants, equipment and transport which may be required in preparation of and for and in the full and entire execution and completion of the works. The descriptions given in the Schedule of quantities shall, unless otherwise stated, be held to include wastage on materials, carriage and cartage, carrying and return of empties, hoisting, setting, fitting and fixing in position and all other labours necessary in and

for the full and entire execution and completion of the work as aforesaid in accordance with good practice and recognized principles.

7. The contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the works and the rates and prices quoted in the Schedule of Quantities, which rates and prices shall, except as otherwise provided, cover all his obligations under the Contract and all matters and things necessary for the proper completion and maintenance of the works.
8. The several documents forming the contract are to be taken as mutually explanatory of one another, detailed drawings being followed in preference to small scale drawing and figured dimensions in preference to scale and special conditions in preference to General conditions.
- 8.1. In the case of discrepancy between the schedules of quantities, the specifications and or the drawings, the following order of preference shall be observed.
 - (i) Description of schedule of Quantities
 - (ii) Technical specification and Special Condition, if any.
 - (iii) C.P.W.D. Specification
 - (iv) Drawings
 - (v) Indian Standard Specifications of B.I.S.
- 8.2 If there are varying or conflicting provision made in any one document forming part of the contract, the Accepting Authority shall be deciding authority with regard to the intention of the documents and his decision shall be final and binding on the contractor.
- 8.3 Any error in the description, quantity or rate in Schedule of Quantities or any omission there from shall not vitiate the contract or release the contractor from the execution of the whole or any part of the works comprised therein according to drawings and specifications or from any of his obligations under the contract.
9. The successful tenderer/contractor, on acceptance of his tender by the Accepting Authority, shall within one month from the stipulated date of start of the work, sign the contract consisting of:-
 - (i) The notice inviting tender, all the documents including drawings if any, forms the tender as issued at the time of invitation of tender and acceptance thereof together with any correspondence leading thereto.
 - (ii) Standard Form Consisting of followings
 - (a) NIT, Work order
 - (b) Item rate tender form & Contract for worker.
 - (c) General Rules and Directions
 - (d) Condition of contracts
 - (e) Clauses of contracts
 - (f) Safety code

- (g) Model rules for the protection of health, sanitary arrangements for workers employed by IISER or its Contractors.
 - (h) Contractors labour regulations
 - (i) Proforma of agreement
 - (j) Proforma of Schedule A to C
 - (k) Special Condition of contracts
 - (l) Technical specifications
 - (m) Tender drawings
 - (n) Priced Schedule of quantities.
 - (o) All correspondence between the parties till award of contract
- (iii) Till such time contract agreement is signed between the parties, all the documents mentioned Sr. 9 (i), 9 (ii)- (a to o) above shall be binding on the contractor.
- (iv) No payment for the work done will be made unless contract is signed by the contractor.

(iii) CLAUSES OF CONTRACT

CLAUSE – I

Performance Guarantee

- (i) The contractor shall submit an irrevocable Performance Guarantee of 5% (Five percent) of the tendered amount in addition to other deposits mentioned elsewhere in the contract for his proper performance of the contract agreement, (not withstanding and/or without prejudice to any other provisions in the contract) within period specified in Schedule 'C' from the date of issue of letter of acceptance. This period can be further extended by the Engineer-in-Charge up to a maximum period as specified in schedule 'C' on written request of the contractor stating the reason for delays in procuring the Performance Guarantee, to the satisfaction of the Engineer-in-Charge. This guarantee shall be in the form of Deposit at call receipt of any Schedule Bank/Banker's Cheque of any Schedule Bank/Demand Draft of any Scheduled Bank/Pay Order of any Scheduled Bank or Government Securities or Fixed Deposit Receipts or Guarantee Bonds of any Scheduled Bank or the State Bank of India in accordance with the form annexed hereto. In case a fixed deposit receipt of any Bank is furnished by the contractor to the IISER Pune as part of the performance guarantee and the Bank is unable to make payment against the said fixed deposit receipt, the loss caused thereby shall fall on the contractor and the contractor shall forthwith on demand furnish additional security to the IISER Pune to make good the deficit.
- (ii) The Performance Guarantee shall be initially valid up to the stipulated date of completion plus 60 days beyond that. In case the time for completion of work gets extended, the contractor shall get the validity of Performance Guarantee extended to cover such extended time for completion of work. After recording of the completion certificate for the work by the competent authority, the Performance Guarantee shall be returned to the contractor, without any interest. However, in case of contracts involving maintenance of building and services/any other work after construction of same building and services/other work, then 50% of Performance Guarantee shall be retained as Security Deposit. The same shall be returned year wise proportionately.
- (iii) The Engineer-in-Charge shall not make a claim under the Performance Guarantee except for amounts to which the Director IISER Pune is entitled under the contract (not withstanding and / or without prejudice to any other provisions in the contract agreement) in the event of:-
 - (a) Failure by the contractor to extend the validity of the Performance Guarantee as described herein above, in which event the Engineer-in-Charge may claim the full amount of the Performance Guarantee.
 - (b) Failure by the contractor to pay Director IISER Pune any amount due, either as agreed by the contractor or determined under any of the Clauses/Conditions of the agreement, within 30 days of the serving of notice to this effect by Engineer-in-Charge.
- (iv) In the event of the contract being determined or rescinded under provision of any of the Clause / Condition of the agreement, the Performance Guarantee shall stand forfeited in full and shall be absolutely at the disposal of the Director IISER Pune.

CLAUSE – I A

Recovery of Security Deposit :-

The person/persons whose tender(s) may be accepted (hereinafter called the contractor) shall permit Government at the time of making any payment to him for work done under the contract to deduct a sum at the rate of 2.5% of the gross amount of each running and final bill till the sum deducted will amount to security deposit of 2.5% of the tendered value of the work. Such deductions will be made and held by Government by way of Security Deposit unless he/they has/have deposited the amount of Security at the rate mentioned above in cash or in the form of Government Securities or fixed deposit receipts. In case a fixed deposit receipt of any Bank is furnished by the contractor to the Government as part of the security deposit and the Bank is unable to make payment against the said fixed deposit receipt, the loss caused thereby shall fall on the contractor and the contractor shall forthwith on demand furnish additional security to the Government to make good the deficit

All compensations or the other sums of money payable by the contractor under the terms of this contract may be deducted from, or paid by the sale of a sufficient part of his security deposit or from the interest arising there from, or from any sums which may be due to or may become due to the contractor by IISER Pune on any account whatsoever and in the event of his Security Deposit being reduced by reason of any such deductions or sale as aforesaid, the contractor shall within 10 days make good in cash or fixed deposit receipt tendered by the State Bank of India or by Scheduled Banks or Government Securities (if deposited for more than 12 months) endorsed in favour of the Director IISER Pune, any sum or sums which may have been deducted from, or raised by sale of his security deposit or any part thereof.

The security deposit as deducted above can be released against bank guarantee issued by a Scheduled Bank, on its accumulations to a minimum of Rs.5 lakh subject to the condition that amount of such bank guarantee, except last one, shall not be less than Rs.5 lakh. Provided further that the validity of bank guarantee shall be in conformity with provisions contained in clause 17 which shall be extended from time to time depending upon extension of contract granted under provisions of clause 2 and clause 5.

In case of contracts involving maintenance of building and services/any other work after construction of same building and services/other work, then 50% of Performance Guarantee shall be retained as Security Deposit. The same shall be returned year wise proportionately.

Note – 1: Government papers tendered as security will be taken at 5% (five percent) below its market price or at its face value, whichever is less. The market price of Government paper would be ascertained by the Director IISER Pune at the time of collection of interest and the amount of interest to the extent of deficiency in value of the Government paper will be withheld if necessary.

Note – 2: Government Securities will include all forms of Securities mentioned in Rule No. 274 of the G.F Rules except fidelity bond. This will be subject to the observance of the condition mentioned under the rule against each form of security.

Note – 3: Note 1 & 2 above shall be applicable for both clause 1 and 1A.

CLAUSE -2 - Compensation for Delay :-

If the contractor fails to maintain the required progress in terms of clause 5 or to complete the work and clear the site on or before the contract or extended date of completion, he shall, without prejudice to any other right or remedy available under the law to the IISER Pune on account of such breach, pay as agreed compensation the amount calculated at the rates stipulated below as the authority specified in schedule 'C' (whose decision in writing shall be final and binding) may decide on the amount of tendered value of the work for every completed day/month (as applicable) that the progress remains below that specified in Clause 5 or that the work remains incomplete.

This will also apply to items or group of items for which a separate period of completion has been specified.

- | | | |
|-----|-----------------------------------|--|
| (i) | Compensation for
Delay of work | @1.5% per month of delay
computed on per day basis. |
|-----|-----------------------------------|--|

Provided always that the total amount of compensation for delay to be paid under this Condition shall not exceed 10% of the Tendered Value of work or of the Tendered Value of the item or group of items of work for which a separate period of completion is originally given.

The amount of compensation may be adjusted or set-off against any sum payable to the Contractor under this or any other contract with the IISER Pune. In case, the contractor does not achieve a particular milestone mentioned in schedule C, or the re-scheduled milestone(s) in terms of Clause 5.4, the amount shown against that milestone shall be withheld, to be adjusted against the compensation levied at the final grant of Extension of Time. With-holding of this amount on failure to achieve a milestone, shall be automatic without any notice to the contractor. However, if the contractor catches up with the progress of work on the subsequent milestone(s), the withheld amount shall be released. In case the contractor fails to make up for the delay in subsequent milestone(s), amount mentioned against each milestone missed subsequently also shall be withheld. However, no interest, whatsoever, shall be payable on such withheld amount.

CLAUSE– 2A - Incentive for Early Completion:-

In case, the contractor completes the work ahead of updated stipulated date of completion considering the effect of extra work (to be calculated on pro-rata basis as cost of extra work X stipulated period/tendered cost), a bonus @ 1% (one per cent) of the tendered value per month computed on per day basis, shall be payable to the contractor, subject to a maximum limit of 5% (five per cent) of the tendered value. The amount of bonus, if payable, shall be paid along with final bill after completion of work. Provided always that provision of the Clause 2A shall be applicable only when so provided in 'Schedule C'.

CLAUSE– 3 - When Contract can be Determined:-

Subject to other provisions contained in this clause, the Engineer-in-Charge may, without prejudice to his any other rights or remedy against the contractor in respect of any delay, inferior workmanship, any claims for damages and/ or any other 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 Engineer-in-Charge a notice in writing to rectify, reconstruct or replace any defective work or that the work is being performed in an inefficient or otherwise improper or unworkman like manner shall omit to comply with the requirement of such notice for a period of seven days thereafter.
- ii). If the contractor has, without reasonable cause, suspended the progress of the work or has failed to proceed with the work with due diligence so that in the opinion of the Engineer-in-Charge (which shall be final and binding) he will be unable to secure completion of the work by the date for completion and continues to do so after a notice in writing of seven days from the Engineer-in-Charge.
- iii). If the Contractor fails to complete the work within the stipulated date or items of work with individual date of completion, if any stipulated, on or before such date(s) of completion and does not complete them within the period specified in a notice given in writing in that behalf by the Engineer-in-Charge.
- iv). If the contractor persistently neglects to carry out his obligations under the contract and / or commits default in complying with any of the terms and conditions of the contract and does not remedy it or take effective steps to remedy it within 7 days after a notice in writing is given to him in that behalf by the Engineer-in-Charge.
- v). If the contractor shall offer or give or agree to give to any person in IISER Pune service or to any other person on his behalf any gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of this or any other contract for IISER Pune.
- vi). If the contractor shall enter into a contract with IISER Pune in connection with which commission has been paid or agreed to be paid by him or to his knowledge, unless the particulars of any such commission and the terms of payment thereof have been previously disclosed in writing to the Engineer-in-Charge.
- vii) If the contractor had secured the contract with IISER Pune as a result of wrong tendering or other non-bonafide methods of competitive tendering or commits breach of Integrity Agreement.
- viii) If the contractor being an individual or if a firm, any partner thereof shall at any time be adjudged insolvent or have a receiving order or order for administration of his estate made against him or shall take any proceeding for liquidation or composition (other than a voluntary liquidation for the purpose of amalgamation or reconstruction) under any Insolvency Act for the time being in force or make any conveyance or assignment of his effects or compositions or arrangement for the benefit of his creditors or purport so to do, or if any application be made under any Insolvency Act for the time being in force for the sequestration of his estate or if a trust deed be executed by him for benefit of his creditors.
- ix) If the contractor being a company shall pass a resolution or the court shall make an order that the company shall be wound up or if a receiver or a manager on behalf of a creditor shall be appointed or if circumstances shall arise which entitle the court or the creditor to appoint a receiver or a manager or which entitle to make the court to make winding up order.

- x) If the contractor shall suffer an execution being levied on his goods and allow it to be continued for a period of 21 days.
- xi) If the contractor assigns, transfers, sublets (engagement of labour on a piece-work basis or of labour with materials not to be incorporated in the work, shall not be deemed to be subletting) or otherwise parts with or attempts to assign, transfer, sublet or otherwise parts with the entire works or any portion thereof without the prior written approval of the Engineer-in-Charge.

When the contractor has made himself liable for action under any of the cases aforesaid, the Engineer-in-Charge on behalf of the Director IISER Pune shall have powers:

- a). To determine the contract as aforesaid (of which termination notice in writing to the contractor under the hand of the Engineer-in-Charge shall be conclusive evidence). Upon such determination, the Earnest Money Deposit, Security Deposit already recovered and Performance Guarantee under the contract shall be liable to be forfeited and shall be absolutely at the disposal of the IISER Pune.
- b). After giving notice to the contractor to measure up the work of the contractor and to take such whole, or the balance or part thereof, as shall be un-executed out of his hands and to give it to another contractor to complete the work at the risk and cost of the original contractor. The contractor, whose contract is determined as above, shall not be allowed to participate in the tendering process for the balance work.

In the event of above courses being adopted by the Engineer-in-Charge, the contractor shall have no claim to compensation for any loss sustained by him by reasons of his having purchased or procured any materials or entered into any engagements or made any advances on account or with a view to the execution of the work or the performance of the contract. And in case action is taken under any of the provision aforesaid, the contractor shall not be entitled to recover or be paid any sum for any work thereof or actually performed under this contract unless and until the Engineer-in-Charge has certified in writing the performance of such work and the value payable in respect thereof and he shall only be entitled to be paid the value so certified.

CLAUSE-3A

In case, the work cannot be started due to reasons not within the control of the contractor within 1/8th of the stipulated time for completion of work or one month whichever is higher, either party may close the contract. In case contractor wants to close the contract, he shall give notice to the department stating the failure on the part of department. In such eventuality, the Performance Guarantee of the contractor shall be refunded within following time limits :

- (i) If the Tendered value of work is up to Rs. 45 lac : 15 days.
- (ii) If the Tendered value of work is more than Rs 45 Lac and up to Rs. 2.5 Crore : 21 days.
- (iii) If the Tendered value of work exceeds Rs. 2.5 Crore : 30 days.

If PG is not released within prescribed time limit, then a simple interest @ 0.25% per month shall be payable on PG amount to the contractor from the date of expiry of prescribed time limit.

A compensation for such eventuality, on account of damages etc. shall be payable @ 0.25% of tendered amount subject to maximum limit of Rs. 10 lacs.

CLAUSE– 4

Contractor liable to pay compensation even if action not taken under clause 3:-

In any case in which any of the powers conferred upon the Engineer-in-Charge by Clause–3 thereof, shall have become exercisable and the same are not exercised, the non-exercise thereof shall not constitute a waiver of any of the conditions hereof and such powers shall notwithstanding be exercisable in the event of any future case of default by the contractor and the liability of the contractor for compensation shall remain unaffected. In the event of the Engineer-in-Charge putting in force all or any of the powers vested in him under the preceding clause he may, if he so desires after giving a notice in writing to the contractor, take possession of (or at the sole discretion of the Engineer-in-Charge which shall be final and binding on the contractor) use as on hire (the amount of the hire money being also in the final determination of the Engineer-in-Charge) all or any tools, plant, materials and stores, in or upon the works, or the site thereof belonging to the contractor, or procured by the contractor and intended to be used for the execution of the work/or any part thereof, paying or allowing for the same in account at the contract rates or, in the case of these not being applicable, at current market rates to be certified by the Engineer-in-Charge, whose certificate thereof shall be final, and binding on the contractor, clerk of the works, foreman or other authorized agent to remove such tools, plant, materials or stores from the premises (within a time to be specified in such notice) in the event of the contractor failing to comply with any such requisition, the Engineer-in-Charge may remove them at the contractor's expense or sell them by auction or private sale on account of the contractor and his risk in all respects and the certificate of the Engineer-in-Charge as to the expenses 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

Time and Extension for Delay :-

The time allowed for execution of the Works as specified in the Schedule 'C' or the extended time in accordance with these conditions shall be the essence of the Contract. The execution of the works shall commence from such time period as mentioned in Schedule 'C' or from the date of handing over of the site whichever is later. If the contractor commits default in commencing the execution of the work as aforesaid, IISER Pune shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the Earnest Money & Performance Guarantee absolutely.

- 5.1 As soon as possible after the contract is concluded, the contractor shall submit a Time and Progress Chart for each mile stone and get it approved by the IISER Pune. The chart shall be prepared in direct relation to the time stated in the Contract documents for completion of items of works. It shall indicate the forecast of the dates of commencement and completion of various trades of sections of the work and may be amended as necessary by agreement between the Engineer-in-Charge and the contractor within the limitations of time imposed in the contract documents, and further to ensure good progress during the execution of the work, the contractor shall in all cases in which the time allowed for any work, exceeds one month (except for special jobs for which a separate programme has been agreed upon) complete the work as per mile stones given in Schedule 'C'.

- a) Project Management shall be done by using project management software for works costing up to Rs. 5 Crore.
- b) The project management shall be done using M.S. Project software for works costing more than Rs. 5 Crore and up to Rs. 20 Crore.
- c) For works costing more than Rs. 20 Crore, project management shall be done using Primavera Software.

PROGRAMME CHART

(i) The Contractor shall prepare an integrated programme chart in MS Project/Primavera software for the execution of work, showing clearly all activities from the start of work to completion, with details of manpower, equipment and machinery required for the fulfillment of the programme within the stipulated period or earlier and submit the same for approval to the Engineer-in-Charge within ten days of award of the contract. A recovery of Rs. 2500/- (for works costing up to Rs. 20 Crores) / Rs. 5000/- (for works costing more than Rs. 20 Crores) shall be made on per day basis in case of delay in submission of the above programme.

(ii) The programme chart should include the following: a) Descriptive note explaining sequence of the various activities. b) Network (PERT / CPM / BAR CHART). c) Programme for procurement of materials by the contractor. Programme of procurement of machinery / equipments having adequate capacity, commensurate with the quantum of work to be done within the stipulated period, by the contractor. In addition to above to achieve the progress of Work as per programme, the contractor must bring at site adequate shuttering material required for cement concrete and R.C.C. works etc. for three floors within one month from the date of start of work till the completion of RCC work as per requirement of work. The contractor shall submit shuttering schedule adequate to complete structure work within laid down physical milestone.

(iii) If at any time, it appears to the Engineer-in-Charge that the actual progress of work does not conform to the approved programme referred above or after rescheduling of milestones, the contractor shall produce a revised programme within 7 (seven) days, showing the modifications to the approved programme to ensure timely completion of the work. The modified schedule of programme shall be approved by the Engineer in Charge. A recovery of Rs. 2500/- (for works costing up to Rs. 20 Crores) / Rs. 5000/- (for works costing more than Rs. 20 Crores) shall be made on per day basis in case of delay in submission of the modified programme.

(iv) The submission for approval by the Engineer-in-Charge of such programme or 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 Engineer-in-Charge to take action against the contractor as per terms and conditions of the agreement.

(v) The contractor shall submit the progress report using MS Project/Primavira software with base line programme referred above for the work done during previous month to the Engineer-in-charge on or before 5th day of each month failing which a recovery Rs. 2500/- (for works costing up to Rs. 20 Crores) / Rs. 5000/- (for works costing more than Rs. 20 Crores) shall be made on per day basis in case of delay in submission of the monthly progress report.

5.2 If the work(s) be delayed by :-

- i). force majeure, or
- ii). abnormally bad weather, or
- iii). serious loss or damage by fire, or abnormal floods
- iv). civil commotion, local commotion of workmen, strike or lockout, affecting any of the trades employed on the work, or.
- v). delay on the part of other contractors or tradesmen engaged by Engineer-in-Charge in executing work not forming part of the Contract, or
- vi). non-availability of stores, which are the responsibility of IISER Pune to supply, or
- vii). non-availability or break down of tools and Plant to be supplied or supplied by IISER Pune, or
- viii). Any other cause which, in the absolute discretion of Engineer-in-Charge is beyond the Contractor's control.

then upon the happening of any such event causing delay, the Contractor shall immediately give notice thereof in writing to the Engineer-in-Charge but shall nevertheless use constantly his best endeavors to prevent or make good the delay and shall do all that may be reasonably required to the satisfaction of the Engineer-in-Charge to proceed with the works.

5.3 Request for rescheduling of Mile stones and extension of time, to be eligible for consideration, shall be made by the Contractor in writing within fourteen days of the happening of the event causing delay on the prescribed form. The contractor may also, if practicable, indicate in such a request the period for which extension is desired.

5.4 In any such case the authority as indicated in Schedule 'C' may give a fair and reasonable extension of time and reschedule the mile stones for completion of work. Such extension or rescheduling of the milestones shall be communicated to the Contractor by the authority as indicated in Schedule 'C' in writing, within 3 months or 4 weeks of the date of receipt of such request respectively. Non application by the contractor for extension of time/ rescheduling of the milestones shall not be a bar for giving a fair and reasonable extension/ rescheduling of the milestones by the authority as indicated in Schedule 'C' and this shall be binding on the contractor.

CLAUSE– 6

Measurements of Work Done :-

Engineer-in-Charge shall, except as otherwise provided, ascertain and determine by measurement, the value in accordance with the contract of work done.

All measurement of all items having financial value shall be entered in Measurement Book and/ or level field book so that a complete record is obtained of all works performed under the contract.

All measurements and levels shall be taken jointly by the Engineer-in-Charge or his authorized representative and by the contractor or his authorized representative from time to time during the progress of the work and such measurements shall be signed and dated by the Engineer-in-Charge

and the contractor or their representatives in token of their acceptance. If the contractor objects to any of the measurements recorded, a note shall be made to that effect with reason and signed by both the parties.

If for any reason the contractor or his authorized representative is not available and the work of recording measurements is suspended by the Engineer-in-Charge or his representative, the Engineer-in-Charge and the IISER Pune shall not entertain any claim from contractor for any loss or damages on this account. If the contractor or his authorized representative does not remain present at the time of such measurements after the contractor or his authorized representative has been given a notice in writing three (3) days in advance or fails to countersign or to record objection within a week from the date of the measurement, then such measurements recorded in his absence by the Engineer-in-Charge or his representative shall be deemed to be accepted by the Contractor.

The contractor shall, without extra charge, provide all assistance with every appliance, labour and other things necessary for measurements and recording levels.

Except where any general or detailed description of the work expressly shows to the contrary, measurements shall be taken in accordance with the procedure set forth in the specifications notwithstanding any provision in the relevant Standard Method of measurement or any general or local custom. In the case of items which are not covered by specifications, measurements shall be taken in accordance with the relevant standard method of measurement issued by the Bureau of Indian Standards and if for any item no such standard is available, then a mutually agreed method shall be followed.

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

Engineer-in-Charge or his authorized representative may cause either themselves or through another officer of the IISER Pune to check the measurements recorded jointly or otherwise as aforesaid and all provisions stipulated herein above shall be applicable to such checking of measurements or levels.

It is also a term of this contract that recording of measurements of any item of work in the measurement book and/ or its payment in the interim, on account of final bill shall not be considered as conclusive evidence as to the sufficiency of any work or material to which it relates nor shall it relieve the contractor from liabilities from any over measurement or defects noticed till completion of the defects liability period.

CLAUSE– 6A

Computerized Measurement Book :-

Engineer-in-Charge shall, except as otherwise provided, ascertain and determine by measurement the value of work done in accordance with the contract.

All measurements of all items having financial value shall be entered by the contractor and compiled in the shape of the Computerized Measurement Book having pages of A-4 size as per format of the IISER Pune so that a complete record is obtained of all the items of works performed under the contract.

All such measurements and levels recorded by the contractor or his authorized representative from time to time, during the progress of the work, shall be got checked by the contractor from the Engineer-in-Charge or his authorized representative as per interval or program fixed in consultation with Engineer-in-Charge or his representative. After the necessary corrections made by the Engineer-in-Charge, the measurement sheets shall be returned to the contractor for incorporating the corrections and for resubmission to the Engineer-in-Charge for the dated signatures by the Engineer-in-Charge and the contractor or their representatives in token of their acceptance.

Whenever bill is due for payment, the contractor would initially submit draft computerized measurement sheets and these measurements would be got checked / test checked from the Engineer-in-Charge and / or his authorized representative. The contractor will, thereafter, incorporate such changes as may be done during these checks / test checks in his draft computerized measurements, and submit to the IISER Pune a computerized measurement book, duly bound, and with its pages machine numbered. The Engineer-in-Charge and / or his authorized representative would thereafter checks this MB, and record the necessary certificates for their checks / test checks.

The final, fair, computerized measurement book given by the contractor, duly bound, with its pages machine numbered, should be 100% correct, and no cutting or over-writing in the measurements would thereafter be allowed. If at all any error is noticed, the contractor shall have to submit a fresh computerized MB with its pages duly machine numbered and bound, after getting the earlier MB cancelled by the IISER Pune. Thereafter, the MB shall be taken in the IISER Pune Office records, and allotted a number as per the Register of Computerized MB's. This should be done before the corresponding bill is submitted to the IISER Pune Office for payment. The contractor shall submit two spare copies of such computerized MB's for the purpose of reference and record by the various officers of the IISER Pune.

The contractor shall also submit to the IISER Pune separately his computerized Abstract of Cost and the bill based on these measurements, duly bound, and its pages machine numbered along with two spare copies of the "bill. Thereafter, this bill will be processed by the IISER Pune Office and allotted a number as per the computerized record in the same way as done for the measurement book meant for measurements.

The contractor shall, without extra charge, provide all assistance with every appliance, labour and other things necessary for checking of measurements / levels by the Engineer-in-Charge or his representative.

Except where any general or detailed description of the work expressly shows to the contrary, measurements shall be taken in accordance with the procedure set forth in the specifications notwithstanding any provision in the relevant Standard Method of measurement or any general or local custom. In the case of items which are not covered by specifications, measurements shall be taken in accordance with the relevant standard method of measurement issued by the Bureau of Indian Standards and if for any item no such standard is available then a mutually agreed method shall be followed.

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

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

CLAUSE– 7 - Payment on Intermediate Certificate to be Regarded as Advances: -

No payment shall be made for work, estimated to cost Rs. fifty thousand or less till after the whole of the work shall have been completed and certificate of completion given. For works estimated to cost over Rs. fifty thousand, the interim or running account bills shall be submitted by the contractor for the work executed on the basis of such recorded measurements on the format of the IISER Pune in triplicate on or before the date of every month fixed for the same by the Engineer-in-Charge. The contractor shall not be entitled to be paid any such interim payment if the gross work done together with net payment / adjustment of advances for material collected, if any, since the last such payment is less than the amount specified in Schedule 'C', in which case the interim bill shall be prepared on the appointed date of the month after the requisite progress is achieved. Engineer-in-Charge shall arrange to have the bill verified by taking or causing to be taken, where necessary, the requisite measurements of the work. In the event of the failure of the contractor to submit the bills, Engineer-in-Charge shall prepare or cause to be prepared such bills in which event no claims whatsoever due to delays on payment including that of interest shall be payable to the contractor. Payment on account of amount admissible shall be made by the Engineer-in-Charge certifying the sum to which the contractor is considered entitled by way of interim payment at such rates as decided by the Engineer-in-Charge. The amount admissible shall be paid by 10th working day after the day of presentation of the bill by the Contractor to the Engineer-in-Charge or his Assistant Engineer together with the account of the material issued by the IISER Pune, or dismantled materials, if any. In the case of works outside the headquarters of the Engineer-in-Charge, the period of ten working days will be extended to fifteen working days. In case of delay in payment of intermediate bills after 45 days of submission of bill by the contractor provided the bill submitted by the contractor found to be in order, a simple interest @ 7.5% per annum shall be paid to the contractor from the date of expiry of prescribed time limit which will be compounded on yearly basis.

All such interim payments shall be regarded as payment by way of advances against final payment only and shall not preclude the requiring of bad, unsound and imperfect or unskilled work to be rejected, removed, taken away and reconstructed or re-erected. Any certificate given by the Engineer-in-Charge relating to the work done or materials delivered forming part of such payment, may be modified or corrected by any subsequent such certificate (s) or by the final certificate and shall not by itself be conclusive evidence that any work or materials to which it relates is/ are in accordance with the contract and specifications. Any such interim payment, or any part thereof shall not in any respect conclude, determine or affect in any way powers of the Engineer-in-Charge under the contract or any of such payments be treated as final settlement and adjustment of accounts or in any way vary or affect the contract.

Pending consideration of extension of date of completion, interim payments shall continue to be made as herein provided, without prejudice to the right of the IISER Pune to take action under the terms of this contract for delay in the completion of work, if the extension of date of completion is not granted by the competent authority.

The Engineer-in-Charge in his sole discretion on the basis of a certificate from his Assistant Engineer/Representative to the effect that the work has been completed up to the level in question make interim advance payments without detailed measurements for work done (other than foundations, items to be covered under finishing items) up to lintel level (including sunshade etc.) and slab level, each floor working out at 75% of the assessed value. The advance payments so allowed shall be adjusted in the subsequent interim bill by taking detailed measurements thereof.

In case of composite contract if main contractor fails to make the payment to the contractor associated by him within 15 days of receipt of each running account payment, then on the written complaint of contractor associated for such work, Engineer in charge of work shall serve the show cause to the main contractor and if reply of main contractor either not received or found unsatisfactory, Engineer in charge may make the payment directly to the contractor associated for such work as per term & condition of the agreement drawn between main contractor & associate contractor fixed by main contractor. Such payment made to associated contractor shall be recovered by Engineer-in-charge of work from the next R/A bill due to main contractor as the case may be.

CLAUSE– 8 - Completion Certificate and Completion Plans :-

Within ten days of the completion of the work, the contractor shall give notice of such completion to the Engineer-in-Charge and within thirty days of the receipt of such notice, the Engineer-in-Charge shall inspect the work and if there is no defect in the work, shall furnish the contractor with a final certificate of completion, otherwise a provisional certificate of physical completion indicating defects (a) to be rectified by the contractor and/or(b) for which payment will be made at reduced rates, shall be issued. But no final certificate of completion shall be issued, nor shall the work be considered to be complete until the contractor shall have removed from the premises on which the work shall be executed all scaffolding, surplus materials, rubbish and all huts and sanitary arrangements required for his/ their work people on the site in connection with the execution of the works as shall have been erected or constructed by the contractor(s) and cleaned off the dirt from all wood work, doors, windows, walls, floor or other parts of the building, in, upon, or about which the work is to be executed or of which he may have had possession for the purpose of the execution; thereof, and not until the work shall have been measured by the Engineer-in-Charge. If the contractor shall fail to comply with the requirements of this Clause as to removal of scaffolding,

surplus materials and rubbish and all huts and sanitary arrangements as aforesaid and cleaning of dirt on or before the date fixed for the completion of work, the Engineer-in-Charge may at the expense of the contractor remove such scaffolding surplus materials and rubbish etc. and dispose of the same as he thinks fit and clean off such dirt as aforesaid, and the contractor shall have no claim in respect of scaffolding or surplus materials as aforesaid except for any sum actually realized by the sale thereof.

CLAUSE- 8A

Contractor to Keep Site Clean :-

When the annual repairs and maintenance of works are carried out, the splashes and droppings from white washing, colour washing, painting etc., on walls, floor, windows etc shall be removed and the surface cleaned simultaneously with the completion of these items of work in the individual rooms, quarters or premises etc. where the work is done without waiting for the actual completion of all the other items of work in the contract. In case the contractor fails to comply with the requirements of this clause, the Engineer-in-Charge shall have the right to get this work done at the cost of the contractor either departmentally or through any other agency. Before taking such action, the Engineer-in-Charge shall give ten days notice in writing to the contractor.

CLAUSE- 8B - Completion Plans (as built drawing) to be Submitted by the Contractor :-

The contractor shall submit completion plan as required vide General Specifications for Electrical works (Part-I Internal) 2005 and (Part-II External)1994 as applicable within thirty days of the completion of the work.

In case, the contractor fails to submit the completion plan as aforesaid, he shall be liable to pay a sum equivalent to 2.5% of the value of the work subject to a ceiling of Rs.15,000 (Rs. Fifteen Thousand Only) as may be fixed by the Engineer-in-Charge concerned and in this respect the decision of the Engineer-in-Charge shall be final and binding on the contractor.

The contractor shall submit completion plan for water, sewerage and drainage line plan within thirty days of the completion of the work.

In case, the contractor fails to submit the completion plan as aforesaid, , the department will get it done through other agency at his cost and actual expenses incurred plus Rs. 15,000/for the same shall be recovered from the contractor.

CLAUSE- 9

Payment of Final Bill :-

The final bill shall be submitted by the contractor in the same manner as specified in interim bills within three months of physical completion of the work or within one month of the date of the final certificate of completion furnished by the Engineer-in-Charge whichever is earlier. No further claims shall be made by the contractor after submission of the final bill and these shall be deemed to have been waived and extinguished. Payments of those items of the bill in respect of which there is no dispute and of items in dispute, for quantities and rates as approved by Engineer-in-Charge, will, as far as possible be made within the period specified herein under, the period being reckoned from the date of receipt of the bill by the Engineer-in-Charge or his authorized Asstt.

Engineer/Representative, complete with account of materials issued by the IISER Pune and dismantled materials.

(i) If the Tendered value of work is up to Rs. 45 lac : 2 months

(ii) If the Tendered value of work is more than 45 Lac and up to Rs. 2.5 Crore : 3 months

(iii) If the Tendered value of work exceeds Rs. 2.5 Crore : 6 months

In case of delay in payment of final bills after prescribed time limit, a simple interest @ 7.5% per annum shall be paid to the contractor from the date of expiry of prescribed time limit which will be compounded on yearly basis, provided the final bill submitted by the contractor found to be in order.

CLAUSE- 9A - Payment of Contractor's Bills to Banks :-

Payments due to the contractor may, if so desired by him, be made to his bank, registered financial, co-operative or thrift societies or recognized financial institutions instead of direct to him provided that the contractor furnishes to the Engineer-in-Charge (1) an authorization in the form of a legally valid document such as a power of attorney conferring authority on the bank, registered financial, co-operative or thrift societies or recognized financial institutions to receive payments and (2) his own acceptance of the correctness of the amount made out as being due to him by IISER Pune or his signatures on the bill or other claim preferred against IISER Pune before settlement by the Engineer-in-Charge of the account or claim by payment to the bank, registered financial, co-operative or thrift societies or recognized financial institutions. While the receipt is given by such banks; registered financial, co-operative or thrift societies or recognized financial institutions shall constitute a full and sufficient discharge for the payment, the contractor shall wherever possible present his bills duly receipted and discharged through his bank, registered financial, co-operative or thrift societies or recognized financial institutions.

Nothing herein contained shall operate to create in favour of the bank; registered financial, co-operative or thrift societies or recognized financial institutions any rights or equities vis-à-vis the Director IISER Pune.

CLAUSE- 10 - Materials to be Provided by the Contractor :-

The contractor shall, at his own expense, provide all materials, required for the works other than those which are stipulated to be supplied by the IISER Pune.

The contractor shall, at his own expense and without delay; supply to the Engineer-in-Charge samples of materials to be used on the work and shall get these approved in advance. All such materials to be provided by the contractor shall be in conformity with the specifications laid down or referred to in the contract. The contractor shall, if requested by the Engineer-in-Charge furnish proof, to the satisfaction of the Engineer-in-Charge that the materials so comply. The Engineer-in-Charge shall within thirty days of supply of samples or within such further period as he may require intimate to the contractor in writing whether samples are approved by him or not. If samples are not approved, the contractor shall forthwith arrange to supply to the Engineer-in-Charge for his approval, fresh samples complying with the specifications laid down in the contract. When materials

are required to be tested in accordance with specification, approval of the Engineer-in-Charge shall be issued after the test results are received.

The contractor shall at his risk and cost submit the samples of materials to be tested or analyzed and shall not make use of or incorporate in the work any materials represented by the samples until the required tests or analysis have been made and materials finally accepted by the Engineer-in-Charge. The contractor shall not be eligible for any claim or compensation either arising out of any delay in the work or due to any corrective measures required to be taken on account of and as a result of testing of materials.

The contractor shall, at his risk and cost, make all arrangements and shall provide all facilities as the Engineer-in-Charge may require for collecting, and preparing the required number of samples for such tests at such time and to such place or places as may be directed by the Engineer-in-Charge and bear all charges and cost of testing unless specifically provided for otherwise elsewhere in the contract or specifications. The Engineer-in-Charge or his authorized representative shall at all times have access to the works and to all workshops and places where work is being prepared or from where materials, manufactured articles, or machinery are being obtained for the works and the contractor shall afford every facility and every assistance in obtaining the right to such access.

The Engineer-in-Charge shall have full powers to require the removal from the premises of all materials which in his opinion are not in accordance with the specifications and in case of default, the Engineer-in-Charge shall be at liberty to employ at the expense of the contractor, other persons to remove the same without being answerable or accountable for any loss or damage that may happen or arise to such materials. The Engineer-in-Charge shall also have full powers to require other proper materials to be substitute thereof and in case of default, the Engineer-in-Charge may cause the same to be supplied and all costs which may attend such removal and substitution shall be borne by the contractor.

The contractor shall at his own expense, provide a material testing lab at the site for conducting routine field tests. The lab shall be equipped with the all necessary testing equipments as specified in schedule "C".

CLAUSE- 10 A - Secured Advance on Non-Perishable Materials: -

The contractor, on signing an indenture in the form to be specified by the Engineer-in-Charge, shall be entitled to be paid during the progress of the execution of the work up to 90% of the assessed value of any materials which are in the opinion of the Engineer-in-Charge non-perishable, non-fragile and non-combustible and are in accordance with the contract and which have been brought on the site in connection therewith and are adequately stored and/ or protected against damage by weather or other causes but which have not at the time of advance been incorporated in the works. When materials on account of which an advance has been made under this sub-clause are incorporated in the work, the amount of such advance shall be recovered/ deducted from the next payment made under any of the clause or clauses of this contract.

Such secured advance shall also be payable on other items of perishable nature, fragile and combustible with the approval of the Engineer-in-Charge provided the contractor provides a comprehensive insurance cover for the full cost of such materials. The decision of the Engineer-in-

Charge shall be final and binding on the contractor in this matter. No secured advance, shall however, be paid on high-risk materials such as ordinary glass, sand, petrol, diesel etc.

CLAUSE-10B - Mobilization Advances :-

- (i) Mobilization Advance not exceeding 10% of the tendered value may be given, if requested by the contractor in writing within one month of the order to commence the work. Such advance shall be paid in two or more installments to be determined by the Engineer-in-Charge at his sole discretion. The first installment of such advance shall be released by the Engineer-in-Charge to the contractor on a request made by the contractor to the Engineer-in-Charge in this behalf. The second and subsequent installments shall be released by the Engineer-in-Charge only after the contractor furnishes a proof of the satisfactory utilization of the earlier installment to the entire satisfaction of the Engineer-in-Charge.

Before any installment of advance is released, the contractor shall execute a Bank Guarantee Bond from Scheduled Bank for the amount equal to 110% of the amount of advance and valid for the contract period. This (Bank Guarantee from Scheduled Bank for the amount equal to 110% of the balance amount of advance) shall be kept renewed from time to time to cover the balance amount and likely period of complete recovery.

Provided always that provision of Clause 10 B shall be applicable only when so provided in 'Schedule C'.

Plant Machinery & Shuttering Material Advance:-

- (ii) An advance for plant, machinery & shuttering material required for the work and brought to site by the Contractor may be given if requested by the contractor in writing within one month of bringing such plant and machinery to site. Such advance shall be given on such plant and machinery, which in the opinion of the Engineer-in-Charge will add to the expeditious execution of work and improve the quality of work. In the case of new plant and equipment to be purchased for the work, the advance shall be restricted to 90% of the price of such new plant and equipment paid by the contractor for which the contractor shall produce evidence, satisfactory to the Engineer-in-Charge. In the case of second hand and used plants and equipment, the amount of such advance shall be limited to 50% of the depreciated value of plant and equipment as may be decided by the Engineer-in-Charge. The contractor shall, if so required by the Engineer-in-Charge, submit the statement of value of such old plant and equipment duly approved by a Registered Valuer recognized by the Central Board of Direct Taxes under the Income-Tax Act, 1961. No such advance shall be paid on any plant and equipment of perishable nature and on any plant and equipment of a value less than Rs. 50,000/- Seventy five per cent of such amounts of advance shall be paid after the plant and equipment is brought to site and balance twenty five per cent on successfully commissioning the same. However, total amount of advance for plant machinery and shuttering material shall be limited to 5% of the tendered value for the work.

Leasing of equipment shall be considered at par with purchase of equipment and shall be covered by tripartite agreement with the following:-

1. Leasing company which gives certificate of agreeing to lease equipment to the contractor.

2. Engineer-in-Charge, and
3. The contractor

This advance shall further be subject to the condition that such plant and equipment (a) are considered by the Engineer-in-Charge to be necessary for the works; (b) and are in working order and are maintained in working order; (c) hypothecated to the IISER Pune as specified by the Engineer-in-Charge before the payment of advance is released. The contractor shall not be permitted to remove from the site such hypothecated plant and equipment without the prior written permission of the Engineer-in-Charge. The contractor shall be responsible for maintaining such plant and equipment in good working order during the entire period of hypothecation failing which such advance shall be entirely recovered in lump sum. For this purpose, steel scaffolding and form work shall be treated as plant and equipment.

The contractor shall insure the plant and machinery for which mobilization advance is sought and given, for a sum sufficient to provide for their replacement at site. Any amounts not recovered from the insurer will be borne by the contractor.

Interest and Recovery:-

(iii) The mobilization advance and plant and machinery advance in (i) & (ii) above bear simple interest at the rate of 10 per cent per annum and shall be calculated from the date of payment to the date of recovery, both days inclusive, on the outstanding amount of advance. Recovery of such sums advanced shall be made by the deduction from the contractors bills commencing after first ten per cent of the gross value of the work is executed and paid, on pro-rata percentage basis to the gross value of the work billed beyond 10% in such a way that the entire advance is recovered by the time eighty per cent of the gross value of the contract is executed and paid, together with interest due on the entire outstanding amount up to the date of recovery of the installment.

(iv) If the circumstances are considered reasonable by the Engineer-in-charge, the period Mentioned in (ii) and (iii) for request by the contractor in writing for grant of mobilization advance and plant and equipment advance may be extended in the discretion of Engineer-in-charge.

CLAUSE 10-C - Payment on Account of Increase in Prices / Wages due to Statutory Order(s) :-

If after submission of the tender, the price of any material incorporated in the works (excluding the materials covered under Clause 10CA and not being a material supplied from the Engineer-in-Charge's stores in accordance with Clause 10 thereof) and/or wages of labour increases as a direct result of the coming into force of any fresh law, or statutory rule or order (but not due to any changes of rate in sales tax/VAT, Central/State Excise/Custom Duty) beyond the prices/wages prevailing at the time of the last stipulated date of receipt of tenders including extensions, if any, for the work during contract period including the justified period extended under the provisions of clause 5 of the contract without any action under clause 2, then the amount of the contract shall accordingly be varied and provided further that any such increase shall be limited to the price/wages prevailing at the time of stipulated date of completion or as prevailing for the period under consideration, whichever is less.

If after submission of the tender, the price of any material incorporated in the works (excluding the materials covered under Clause 10CA and not being a material supplied from the Engineer-in-Charge's stores in accordance with Clause 10 thereof) and/or wages of labour as prevailing at the time of last stipulated date of receipt of tender including extensions, if any, is decreased as a direct

result of the coming into force of any fresh law or statutory rules or order (but not due to any changes of rate in sales tax/VAT, Central/State Excise/Custom Duty), Government shall in respect of materials incorporated in the works (excluding the materials covered under Clause 10CA and not being material supplied from the Engineer-in-Charge's stores in accordance with Clause 10 hereof) and/or labour engaged on the execution of the work after the date of coming into force of such law statutory rule or order be entitled to deduct from the dues of the contractor, such amount as shall be equivalent to the difference between the prices of the materials and/or wages as prevailed at the time of the last stipulated date for receipt of tenders including extensions if any for the work and the prices of materials and/or wages of labour on the coming into force of such law, statutory rule or order. This will be applicable for the contract period including the justified period extended under the provisions of clause 5 of the contract without any action under clause 2.

Engineer-in-Charge may call books of account and other relevant documents from the contractor to satisfy himself about reasonability of increase in prices of materials and wages.

The contractor shall, within a reasonable time of his becoming aware of any alteration in the price of any such materials and/or wages of labour, give notice thereof to the Engineer-in-Charge stating that the same is given pursuant to this condition together with all information relating thereto which he may be in position to supply.

For this purpose, the labour component of the work executed during period under consideration shall be the percentage as specified in Schedule C, of the value of work done during that period and the increase/decrease in labour shall be considered on the minimum daily wages in rupees of any unskilled adult male mazdoor, fixed under any law, statutory rule or order.

CLAUSE– 10-CA

Payment due to Variation in Prices of Materials after receipt of tender :-

If after submission of the tender, the price of materials specified in Schedule C increases/decreases beyond the base price(s) as indicated in Schedule C for the work, then the amount of the contract shall accordingly be varied and provided further that any such variations shall be effected for stipulated period of Contract including the justified period extended under the provisions of Clause 5 of the Contract without any action under Clause 2.

However for work done/during the justified period extended as above, it will be limited to indices prevailing at the time of updated stipulated date of completion considering the effect of extra work (to be calculated on pro-rata basis as cost of extra work x stipulated period/tendered cost).

The increase/decrease in prices of cement, steel reinforcement and structural steel shall be determined by the Price indices issued by the Director General, CPWD. For other items provided in the Schedule 'C', this shall be determined by the All India Wholesale Price Indices of materials as published by Economic Advisor to Government of India, Ministry of Commerce and Industry. Base price for cement, steel reinforcement and structural steel shall be as issued under the authority of Director General CPWD applicable for Delhi including Noida, Gurgaon, Faridabad & Ghaziabad and for other places as issued under the authority of Zonal Chief Engineer, CPWD and base price of other materials issued by concerned Zonal chief Engineer and as indicated in Schedule 'C'. In case, price index of a particular material is not issued by Ministry of Commerce and Industry, then the price index of nearest similar material as indicated in Schedule 'C' shall be followed.

The amount of the contract shall accordingly be varied for all such materials and will be worked out as per the formula given below for individual material:

Adjustment for component of individual material

$$V = P \times Q \times \frac{CI - Clo}{Clo}$$

where

V = Variation in material cost i.e. increase or decrease in the amount of rupees to be paid

P = Base Price of material as issued under authority of DG, CPWD or concerned Zonal Chief Engineer and as indicated in Schedule "F".

For Projects and Original Works

Q = Quantity of material brought at site for bonafide use in the works since previous bill excluding any such quantity consumed in the deviated quantity of items beyond deviation limit and extra /substituted item, paid/to be paid at rates derived on the basis of market rate under clause 12.2.

For Maintenance Works

Q = Quantity of material brought at site for bonafide use in the works since previous bill including any such quantity consumed in the deviated quantity of items beyond deviation limit paid at agreement rate and extra /substituted item being scheduled items, but excluding non schedule extra /substituted item paid/to be paid at market rate under clause 12.2.

Note:

(i) The date wise record of ready mix concrete shall be kept in a register and the cement consumption for the same shall be calculated accordingly.

(ii) If built-up steel items are brought at site from workshop, then the variation shall be paid for the structural steel up to the period when the built up item/finished product is brought at site.

Clo = Price index for cement, steel reinforcement bars and structural steel as issued by the

DG, CPWD and corresponding to the time of base price of respective material indicated in Schedule 'C'. For other items, if any, provided in Schedule 'C', All India Wholesale Price Index for the material as published by the Economic Advisor to Government of India, Ministry of Industry and Commerce and corresponding to the time of base price of respective material indicated in Schedule 'C'.

CI = Price index for cement, steel reinforcement bars and structural steel as issued under the authority of DG, CPWD for period under consideration. For other items, if any, provided in Schedule 'C', All India Wholesale Price Index for the material for period under consideration as published by Economic Advisor to Government of India, Ministry of Industry and Commerce.

Note: (i) In respect of the justified period extended under the provisions of clause 5 of the contract without any action under clause 2, the index prevailing at the time of stipulated date of completion or the prevailing index of the period under consideration, whichever is less, shall be considered.

Provided always that provisions of the preceding Clause 10 C shall not be applicable in respect of Materials covered in this Clause

(ii) If during progress of work or at the time of completion of work, it is noticed that any material brought at site is in excess of requirement, then amount of escalation if paid earlier on such excess quantity of material shall be recovered on the basis of cost indices as applied at the time of payment

of escalation or as prevailing at the time of effecting recovery, whichever is higher.

(iii) Cement mentioned wherever in this clause includes Cement component used in RMC brought at site from outside approved RMC plants, if any

CLAUSE– 10 CC

Payment due to Increase / Decrease in Prices / Wages after Receipt of Tender for Works

If the prices of materials (not being materials supplied or services rendered at fixed prices by the department in accordance with clause 10 & 34 thereof) and/or wages of labour required for execution of the work increase, the contractor shall be compensated for such increase as per provisions detailed below and the amount of the contract shall accordingly be varied, subject to the condition that that such compensation for escalation in prices and wages shall be available only for the work done during the stipulated period of the contract including the justified period extended under the provisions of clause 5 of the contract without any action under clause 2. However, for the work done during the justified period extended as above, the compensation as detailed below will be limited to prices/wages prevailing at the time of updated stipulated date of completion considering the effect of extra work (to be calculated on pro-rata basis as cost of extra work x stipulated period/tendered cost). No such compensation shall be payable for a work for which the stipulated period of completion is equal to or less than the time as specified in Schedule C. Such compensation for escalation in the prices of materials and labour, when due, shall be worked out based on the following provisions:

(i) **The base date for working out such escalation shall be the last stipulated date of receipt of tenders including extensions, if any.**

The cost of work on which escalation will be payable shall be reckoned as below :-

(a)	Gross value of work done up to this quarter	:	(A)
(b)	Gross value of work done up to the last quarter	:	(B)
(c)	Gross value of work done since previous quarter(A-B)	:	(C)
(d)	Full assessed value of Secured Advance (excluding materials Covered under Clause 10 CA) fresh paid in this quarter :		(D)
(e)	Full assessed value of Secured Advance (excluding materials Covered under Clause 10 CA) recovered in this quarter :		(E)
(f)	Full assessed value of Secured Advance for which escalation is payable In this quarter (D-E)	:	(F)
(g)	Advance payment made during this quarter	:	(G)
(h)	Advance payment recovered during this quarter	:	(H)
(i)	Advance payment for which escalation is payable in this quarter (G-H)		(I)
(j)	Extra items/deviated quantities of items paid as per Clause 12 based of Prevailing market rates during this quarter	:	(J)

Then, $M = C + F + I - J$

$W = 0.85 M$

(iii) Components for materials (except cement, reinforcement bars, structural steel or other materials covered under clause 10 CA) labour, P.O.L., etc. shall be pre-determined for every work and incorporated in the conditions of contract attached to the tender papers included in Schedule 'C'. The decision of the Engineer-in-Charge in working out such percentage shall be binding on the contractors.

(iv) The compensation for escalation for other materials (excluding cement, reinforcement bars,

structural steel or other materials covered under clause 10 CA) and P.O.L. shall be worked as per the formula given below:

(a) Adjustment for civil component (except cement, structural steel, reinforcement bars and other materials covered under clause 10CA) / electrical component of construction ‘

$$V_m = W \times \frac{X_m}{100} \times \frac{MI - M_{lo}}{M_{lo}}$$

V_m = Variation in material cost i.e. increase or decrease in the amount in rupees to be paid or recovered.

W = Cost of work done worked out as indicated in sub-para (ii) of Clause 10CC.

X_m = Component of ‘materials’ (except cement, structural steel, reinforcement bars and other materials covered under clause 10CA) expressed as percent of the total value of work.

MI = All India Wholesale Price Index for civil component/electrical component* of construction material as worked out on the basis of All India Wholesale Price Index for Individual Commodities/Group Items for the period under consideration as published by Economic Advisor to Govt. of India, Ministry of Industry & Commerce and applying weightages to the Individual Commodities/Group Items. (In respect of the justified period extended under the provisions of clause 5 of the contract without any action under clause 2, the index prevailing at the time of stipulated date of completion or the prevailing index of the period under consideration, whichever is less, shall be considered.)

M_{lo} = All India Wholesale Price Index for civil component/electrical component* of construction material as worked out on the basis of All India Wholesale Price Index for Individual Commodities/Group Items valid on the last stipulated date of receipt of tender including extension, if any, as published by the Economic Advisor to Govt. of India, Ministry of Industry & Commerce and applying weightages to the Individual Commodities/Group items.

*Note: relevant component only will be applicable.

(b) Adjustment for component of ‘POL’

$$V_f = W \times \frac{Z}{100} \times \frac{FI - F_{lo}}{F_{lo}}$$

V_f = Variation in cost of Fuel, Oil & Lubricant i.e. increase or decrease in the amount in rupees to be paid or recovered.

W = Cost of Work done worked out as indicated in sub-para (ii) of Clause 10CC.

Z = Component of Fuel, Oil & Lubricant expressed as percent of the total value of work.

FI = All India Wholesale Price Index for Fuel, Oil & Lubricant for the period under consideration as published by Economic Advisor to Govt. of India, Ministry of Industry & Commerce, New Delhi. (In respect of the justified period extended under the provisions of clause 5 of the contract without any action under clause 2, the index prevailing at the time of stipulated date of completion or the prevailing index of the period under consideration, whichever is less, shall be considered.)

Flo = All India Wholesale Price Index for Fuel, Oil & Lubricant valid on the last stipulated date of receipt of tender including extension, if any.

(v) The following principles shall be followed while working out the indices mentioned in para (iv) above.

(a) The compensation for escalation shall be worked out at quarterly intervals and shall be with respect to the cost of work done as per bills paid during the three calendar months of the said quarter. The dates of preparation of bills as finally entered in the Measurement Book by the Assistant Engineer/ date of submission of bill finally by the contractor to the department in case of computerised measurement books shall be the guiding factor to decide the bills relevant to the quarterly interval. The first such payment shall be made at the end of three months after the month (excluding the month in which tender was accepted) and thereafter at three months' interval. At the time of completion of the work, the last period for payment might become less than 3 months, depending on the actual date of completion.

(b) The index (MI/FI etc.) relevant to any quarter/period for which such compensation is paid shall be the arithmetical average of the indices relevant to the three calendar months. If the period up to date of completion after the quarter covered by the last such installment of payment, is less than three months, the index MI and FI shall be the average of the indices for the months falling within that period.

(vi) The compensation for escalation for labour shall be worked out as per the formula given below:

$$VL = W \times \frac{Y}{100} \times \frac{LI - Llo}{Llo}$$

VL= Variation in labour cost i.e. amount of increase or decrease in rupees to be paid or recovered.

W= Value of work done, worked out as indicated in sub-para (ii) above.

Y= Component of labour expressed as a percentage of the total value of the work.

LI= Minimum wage in rupees of an unskilled adult male mazdoor, fixed under any law, statutory rule or order as applicable on the last date of the quarter previous to the one under consideration. (In respect of the justified period extended under the provisions of Clause 5 of the contract without any action under Clause 2, the minimum wage prevailing on the last date of quarter previous to the quarter pertaining to stipulated date of completion of the minimum wage prevailing on the last date of the quarter previous to the one under consideration, whichever is less, shall be considered.)

Llo= Minimum daily wage in rupees of an unskilled adult male mazdoor, fixed under any law, statutory rule or order as on the last stipulated date of receipt of tender including extension, if any.

(vii) The following principles will be followed while working out the compensation as per Sub-para (vi) above.

- (a) The minimum wage of an unskilled male mazdoor mentioned in sub-para (vi) above shall be the higher of the wage notified by Government of India, Ministry of Labour and that notified by the local administration both relevant to the place of work and the period of reckoning.
- (b) The escalation for labour also shall be paid at the same quarterly intervals when escalation due to increase in cost of materials and/or P.O.L. is paid under this clause. If such revision of minimum wages takes place during any such quarterly intervals, the escalation compensation shall be payable at revised rates only for work done in subsequent quarters.
- (c) Irrespective of variations in minimum wages of any category of labour, for the purpose of this clause, the variation in the rate for an unskilled adult male mazdoor alone shall form the basis for working out the escalation compensation payable on the labour component.

(viii) In the event the price of materials and/or wages of labour required for execution of the work decrease/s, there shall be a downward adjustment of the cost of work so that such price of materials and/or wages of labour shall be deductible from the cost of work under this contract and in this regard the formula herein before stated under this Clause 10CC shall mutatis mutandis apply, provided that :

(a) no such adjustment for the decrease in the price of materials and/or wages of labour aforementioned would be made in case of contract in which the stipulated period of completion of the work is equal to or less than the time as specified in Schedule 'C'.

(b) the Engineer-in-Charge shall otherwise be entitled to lay down the procedure by which the provision of this sub-clause shall be implemented from time to time and the decision of the Engineer-in-Charge in this behalf shall be final & binding on the contractor.

(ix) Provided always that:-

(a) Where provisions of clause 10CC are applicable, provisions of clause 10C will not be applicable but provisions of clause 10CA will be applicable.

(b) Where provisions of clause 10CC are not applicable, provisions of clause 10C and 10CA will become applicable.

CLAUSE- 10D

Dismantled material IISER-Pune Property :-

The contractor shall treat all materials obtained during dismantling of a structure, excavation of the site for a work, etc as IISER PUNE's property and such materials shall be disposed off to the best advantage of IISER Pune according to the instructions in writing issued by the Engineer-in-Charge.

CLAUSE- 11

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 substantial and workmanlike manner both as regards materials and otherwise in every respect in strict accordance with the specifications. The contractor shall also conform exactly, fully and faithfully to the design, drawings and instructions in writing in respect of the work signed by the Engineer-in-Charge and the contractor shall be furnished free of charge one copy of the contract documents together with specifications, designs, drawings and instructions as are not included in the standard specifications of Central Public Works Department specified in Schedule 'C' or in any Bureau of Indian Standard or any other, published Standard or Code or, Schedule of Rates or any other printed publication referred to elsewhere in the contract.

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

CLAUSE- 12 :

Deviations/Variations Extent and Pricing :-

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

The completion cost of any agreement for Maintenance works including works of up gradation, aesthetic, special repair, addition/ alteration shall not exceed 1.25 times of Tendered amount.

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

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

Deviation, Extra Item and pricing

12.2

A. For Project and original works:

In the case of extra item(s) (items that are completely new, and are in addition to the Pricing items contained in the contract), the contractor may within fifteen days of receipt of order or occurrence of the item(s) claim rates, supported by proper analysis, for the work and the engineer-in-charge shall within prescribed time limit of the receipt of the claims supported by analysis, after giving consideration to the analysis of the rates submitted by the contractor,

determine the rates on the basis of the market rates and the contractor shall be paid in accordance with the rates so determined.

B. For Maintenance works including works of up gradation, aesthetic, special repair, addition/alteration:

In the case of Extra Item(s) being the schedule items (Delhi Schedule of Rates items), these shall be paid as per the schedule rate plus cost index (at the time of tender) plus/minus percentage above/ below quoted contract amount.

Payment of Extra items in case of non-schedule items (Non-DSR items) shall be made as per the prevailing market rate.

12.3

Deviation, Substituted items, pricing

A. For Project and original works:

Substituted In the case of substituted items (items that are taken up with partial substitution or in lieu of Items, items of work in the contract), the rate for the agreement item (to be substituted) and Pricing substituted item shall also be determined in the manner as mentioned in the following para

a) If the market rate for the substituted item so determined is more than the market rate of the agreement item (to be substituted), the rate payable to the contractor for the substituted item shall be the rate for the agreement item (to be substituted) so increased to the extent of the difference between the market rates of substituted item and the agreement item (to be substituted).

(b) If the market rate for the substituted item so determined is less than the market rate of the agreement item (to be substituted), the rate payable to the contractor for the substituted item shall be the rate for the agreement item (to be substituted) so decreased to the extent of the difference between the market rates of substituted item and the agreement item (to be substituted).

B. For Maintenance works including works of up gradation, aesthetic, special repair, addition/alteration:

- In the case of Substitute Item(s) being the schedule items (Delhi Schedule of Rates items), these shall be paid as per the schedule rate plus cost index (at the time of tender) plus/minus percentage above/ below quoted contract amount. Payment of Substitute in case of non-schedule items (Non-DSR items) shall be made as per the prevailing market rate.

Deviation, Deviated quantities, pricing:

A. For Project and original works:

In the case of contract items, substituted items, contract cum substituted items, which Quantities, exceed the limits laid down in schedule C, the contractor may within fifteen days of receipt of Pricing order or occurrence of the excess, claim revision of the rates, supported by proper analysis for the work in excess of the above mentioned limits, provided that if the rates so claimed are in excess of the rates specified in the schedule of quantities, the Engineer-in-Charge shall within prescribed time limit of receipt of the claims supported by analysis, after giving consideration to the analysis of the rates submitted by the contractor, determine the rates on the basis of the market rates and the contractor shall be paid in accordance with the rates so determined.

B. For Maintenance works including works of up gradation, aesthetic, special repair, addition/ alteration:

In the case of contract items, which exceed the limits laid down in schedule C, the contractor shall be paid rates specified in the schedule of quantities.

The prescribed time limits for finalising rates for Extra Item(s), Substitute Item(s) and Deviated Quantities of contract items are as under:

- (i) If the Tendered value of work is up to Rs. 45 lac : 30 days.
- (ii) If the Tendered value of work is more than Rs. 45 Lac and up to Rs. 2.5 Crore : 45 days
- (iii) If the Tendered value of work exceeds Rs. 2.5 Crore : 60 days.

12.3 A. For Project and original works:

The provisions of the preceding paragraph shall also apply to the decrease in the rates of items for the work in excess of the limits laid down in Schedule C, and the Engineer-in-Charge shall after giving notice to the contractor within one month of occurrence of the excess and after taking into consideration any reply received from him within fifteen days of the receipt of the notice, revise the rates for the work in question within one month of the expiry of the said period of fifteen days having regard to the market rates.

B. For Maintenance works including works of up gradation, aesthetic, special repair, addition/ alteration:

In case of decrease in the rates prevailing in the market of items for the work in excess of the limits laid down in Schedule C, the Engineer-in-Charge shall after giving notice to the contractor within one month of occurrence of the excess and after taking into consideration any reply received from him within fifteen days of the receipt of the notice, revise the rates for the work in question within one month of the expiry of the said period of fifteen days having regard to the market rates.

12.4 The contractor shall send to the Engineer-in-Charge once every three months, an up to date account giving complete details of all claims for additional payments to which the contractor may consider himself entitled and of all additional work ordered by the Engineer-in-Charge which he has executed during the preceding quarter failing which the contractor shall be deemed to have waived his right. However, the Director IISER Pune may authorize consideration of such claims on merits.

12.5 For the purpose of operation of Schedule C, the following works shall be treated as works relating to foundation :

- (i) For buildings, compound walls, plinth level or 1.2 metres (4 feet) above ground level, whichever is lower excluding items of flooring and D.P.C. but including base concrete, below the floors.
- (ii) For abutments, piers, retaining walls of culverts and bridges, walls of water reservoirs, the bed of floor level.
- (iii) For retaining walls where floor level is not determinate, 1.2 metres above the average ground level or bed level.

- (i) For the reservoirs/tank (other than overhead reservoir/tanks): All works up to 1.2 metres above the ground level.
 - (v) For Basement: All works up to 1.2m above ground level or up to floor 1 level whichever is lower.
 - (vi) For Roads, all items of excavation & filling treatment of sub – base.
- 12.6 Any operation incidental to or necessarily has to be in contemplation of tenderer while Filing, tender or necessary for proper execution of the item included in the Schedule of Quantities or in the Schedule of Rates mentioned above, whether or not, specifically indicated in the description of the item and the relevant specifications, shall be deemed to be included in the rates quoted by the tenderer or the rate given in the said Schedule of Rates, as the case may be. Nothing extra shall be admissible for such operations.

CLAUSE- 13

Foreclosure of Contract due to Abandonment or Reduction in Scope of Work :-

If at any time after acceptance of the tender, Engineer in charge shall decide to abandon or reduce the scope of the works for any reason whatsoever and hence not require the whole or any part of the works to be carried out, the Engineer-in-Charge shall give notice in writing to that effect to the contractor and the contractor shall act accordingly in the matter. The contractor shall have no claim to any payment or compensation or otherwise whatsoever, on account of any profit or advantage which he might have derived from the execution of the works in full but which he did not derive in consequence of the foreclosure of the whole or part of the works.

The contractor shall be paid at contract rates. full amount for works executed at site and in addition, a reasonable amount as certified by the Engineer-in-Charge for the items hereunder mentioned which could not be utilised on the work to the full extent in view of the foreclosure:-

- i). Any expenditure incurred on preliminary site work, e.g. temporary access roads, temporary labour huts, staff quarters and site office; storage accommodation and water storage tanks.
- ii). IISER Pune shall have the option to take over contractor's materials or any part thereof either brought to site or of which the contractor is legally bound to accept delivery from suppliers (for incorporation in or incidental to the work) provided, however IISER Pune shall be bound to take over the materials or such portions thereof as the contractor does not desire to retain. For materials taken over or to be taken over by IISER Pune, cost of such materials as detailed by Engineer-in-Charge shall be paid. The cost shall, however, take into account purchase price, cost of transportation and deterioration or damage which may have been caused to materials whilst in the custody of the contractor.
- iii). If any materials supplied by IISER Pune are rendered surplus, the same except normal wastage shall be returned by the contractor to IISER Pune at rates not exceeding those at which these were originally issued, less allowance for any deterioration or damage which may have been caused whilst the materials were in the custody of the contractor. In addition, cost of transporting such materials from site to IISER Pune stores, if so required by IISER Pune, shall be paid.

- iv). Reasonable compensation for transfer of Tools & Plants from site to contractor's permanent stores or to his other works, whichever is less. If Tools & Plants are not transported to either of the said places, no cost of transportation shall be payable.
- (v). Reasonable compensation for repatriation of contractor's site staff and imported labour to the extent necessary.

The contractor shall, if required by the Engineer-in-Charge, furnish to him books of account, wage books, time sheets and other relevant documents and evidence as may be necessary to enable him to certify the reasonable amount payable under this conditions.

The reasonable amount of items on (i), (iv) and (v) above shall not be in excess of 2% of the cost of the work remaining incomplete on the date of closure, i.e. total stipulated cost of the work as per accepted tender less the cost of work actually executed under the contract and less the cost of contractor's materials at site taken over by the IISER Pune as per item (ii) above. Provided always that against any payments due to the contractor on this account or otherwise, the Engineer-in-Charge shall be entitled to recover or be credited with any outstanding balance due from the contractor for advance paid in respect of any tool, plants and materials and any other sums which at the date of termination were recoverable by the IISER Pune from the contractor under the terms of the contract.

A compensation for such eventuality, on account of damages etc. shall be payable @ 0.5% of cost of work remaining incomplete on date of closure i.e. total stipulated cost of the work less the cost of work actually executed under the contract shall be payable.

CLAUSE- 14

Carrying out part work at risk & cost of contractor

If contractor:

- (i) At any time makes default during currency of work or does not execute any part of the work with due diligence and continues to do so even after a notice in writing of 7 days in this respect from the Engineer-in-Charge; or
- (ii) Commits default in complying with any of the terms and conditions of the contract and does not remedy it or takes effective steps to remedy it within 7 days even after a notice in writing is given in that behalf by the Engineer-in-Charge; or

Fails to complete the work(s) or items of work with individual dates of completion, on or before the date(s) so determined, and does not complete them within the period specified in the notice given in writing in that behalf by the Engineer-in-Charge.

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

- (a) Take possession of the site and any materials, constructional plant, implements, stores, etc., thereon; and/or

(b) Carry out the part work / part incomplete work of any item(s) by any means at the risk and cost of the contractor.

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

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

Any excess expenditure incurred or to be incurred by IISER Pune in completing the part work/ part incomplete work of any item(s) or the excess loss of damages suffered or may be suffered by Government as aforesaid after allowing such credit shall without prejudice to any other right or remedy available to IISER Pune in law or per as agreement be recovered from any money due to the contractor on any account, and if such money is insufficient, the contractor shall be called upon in writing and shall be liable to pay the same within 30 days.

If the contractor fails to pay the required sum within the aforesaid period of 30 days, the Engineer-in-Charge shall have the right to sell any or all of the contractors' unused materials, constructional plant, implements, temporary building at site etc. and adjust the proceeds of sale thereof towards the dues recoverable from the contractor under the contract and if thereafter there remains any balance outstanding, it shall be recovered in accordance with the provisions of the contract.

In the event of above course being adopted by the Engineer-in-Charge, the contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any engagements or made any advance on any account or with a view to the execution of the work or the performance of the contract.

CLAUSE- 15

Suspension of work

- i). The contractor shall, on receipt of the order in writing of the Engineer-in-Charge, (whose decision shall be final and binding on the contractor) suspend the progress of the works or any part thereof for such time and in such manner as the Engineer-in-Charge may consider necessary so as not to cause any damage or injury to the work already done or endanger the safety thereof for any of the following reasons :-
 - a). On account of any default on the part of the contractor or
 - b). for proper execution of the works or part thereof for reasons other than the default of the contractor, or

- c). for safety of the works or part thereof

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

- ii). If the suspension is ordered for reasons (b) and (c) in sub-para (i) above :-
- a). The contractor shall be entitled to an extension of time equal to the period of every such suspension PLUS 25%, for completion of the item or group of items of work for which a separate period of completion is specified in the contract and of which the suspended work forms a part and :
- b). If the total period of all such suspensions in respect of an item or group of items or work for which a separate period of completion is specified in the contract exceeds thirty days, the contractor shall, in addition, be entitled to such compensation as the Engineer-in-Charge may consider reasonable in respect of salaries and/ or wages paid by the contractor to his employees and labour at site, remaining idle during the period of suspension, adding thereto 2% to cover indirect expenses of the contractor provided the contractor submits his claim supported by details to the Engineer-in-Charge within fifteen days of the expiry of the period of 30 days.
- iii). If the works or part thereof is suspended on the orders of the Engineer-in-Charge for more than three months at a time, except when suspension is ordered for reason (a) in sub-para (i) above, the contractor may after receipt of such order serve a written notice on the Engineer-in-Charge requiring permission within fifteen days from receipt by the Engineer-in-Charge of the said notice, to proceed with the work or part thereof in regard to which progress has been suspended and if such permission is not granted within that time, the contractor, if he intends to treat the suspension, where it affects only a part of the works as an omission of such part by IISER Pune or where it affects whole of the works, as an abandonment of the works by IISER Pune, shall within ten days of expiry of such period of 15 days give notice in writing of his intention to the Engineer-in-Charge. In the event of the contractor treating the suspension as an abandonment of the contract by IISER Pune, he shall have no claim to payment of any compensation on account of any profit or advantage which he might have derived from the execution of the work in full but which he could not derive in consequence of the abandonment. He shall, however, be entitled to such compensation, as the Engineer-in-Charge may consider reasonable, in respect of salaries and/ or wages paid by him to his employees and labour at site, remaining idle in consequence adding to the total thereof 2% to cover indirect expenses of the contractor provide the contractor submits his claim supported by details to the Engineer-in-Charge within 30 days of the expiry of the period of 3 months.

CLAUSE 15 A

The contractor shall not be entitled to claim any compensation from Government for the loss suffered by him on account of delay by Government in the supply of materials in schedule 'B' where such delay is covered by the difficulties relating to the supply of wagons, force majeure or any reasonable cause beyond the control of the Government.

This clause 15 A will not be applicable for works where no material is stipulated

CLAUSE- 16

Action in case Work not Done as per Specifications :-

All works under or in course of execution or executed in pursuance of the contract, shall at all times be open and accessible to the inspection and supervision of the Engineer-in-Charge, his authorized subordinates In charge of the work and all the superior officers, officer of the Quality Assurance Unit of the IISER Pune or any organization engaged by the IISER Pune for Quality Assurance and Chief Technical Examiner's Office of The Central Vigilance Commission of India, and the contractor shall, at all times, during the usual working hours and at all other times at which reasonable notice of the visit of such officers has been given to the contractor, either himself be present to receive orders and instructions or have a responsible agent duly accredited in writing, present for that purpose. Orders given to the contractor's agent shall be considered to have the same force as if they had been given to the contractor himself.

If it shall appear to the Engineer-in-Charge or his authorised subordinates In charge of the work or to the in charge of Quality Assurance or his subordinate officers or the officers of the organization engaged by the IISER Pune for Quality Assurance or to the Chief Technical Examiner or his subordinate officers, that any work has been executed with unsound, imperfect, or unskillful workmanship, or with materials or articles provided by him for the execution of the work which are unsound or of a quality inferior to that contracted or otherwise not in accordance with the contract, the contractor shall, on demand in writing which shall be made within twelve months (six months in case of the work costing Rs.10 Lac and below except road work) of the completion of the work from the Engineer-in-Charge specifying the work, materials or articles complained of notwithstanding that the same may have been passed, certified and paid for forthwith rectify, or remove and reconstruct the work so specified in whole or in part, as the case may require or as the case may be, remove the materials or articles so specified and provide other proper and suitable materials or articles at his own charge and cost. In the event of the failing to do so within a period specified by the Engineer-in-Charge in his demand aforesaid, then the contractor shall be liable to pay compensation at the same rate as under Clause 2 of the contract (for non-completion of the work in time) for this default.

In such case the Engineer-in-Charge may not accept the item of work at the rates applicable under the contract but may accept such items at reduced rates as the authority **specified in Schedule 'C'** may consider reasonable during the preparation of on account bills or final bill if the item is so acceptable without detriment to the safety and utility of the item and the structure or he may reject the work outright without any payment and/ or get it and other connected and incidental items rectified, or removed and re-executed at the risk and cost of the contractor. Decision of the Engineer-in-Charge to be conveyed in writing in respect of the same will be final and binding on the contractor.

CLAUSE- 17

Contractor Liable for Damages, Defects during Maintenance Period:-

If the contractor or his working people or servants shall break, deface, injure or destroy any part of building in which they may be working, or any building, road, road kerb, fence, enclosure, water pipe, cables, drains, electric or telephone post or wires, trees, grass or grassland, or cultivated

ground contiguous to the premises on which the work or any part is being executed, or if any damage shall happen to the work while in progress, from any cause whatever of if any defect, shrinkage or other faults appear in the work within twelve months (6 months in the case of any work costing Rs. 10,00,000/- and below except road work) after a certificate final or otherwise of its completion shall have been given by the Engineer-in-Charge as aforesaid arising out of defect or improper materials or workmanship the contractor shall upon receipt of a notice in writing on that behalf make the same good at his own expense or in default the Engineer-in-Charge cause the same to be made good by other workman and deduct the expense from any sums that may be due or at any time thereafter may become due to the contractor, or from his security deposit or the proceeds of sale thereof or of a sufficient portion thereof. The security deposit of the contractor shall not be refunded before the expiry of twelve months (six months in the case of work costing Rs. Ten lacs and below except road work) after the issue of the certificate final or otherwise, of completion of work, or till the final bill has been prepared and passed whichever is later. Provided that in the case of road work if in the opinion of the Engineer-in-Charge, half of the security deposit is sufficient, to meet all liabilities of the contractor under this contract, half of the security deposit will be refundable after six months and the remaining half after twelve months of the issue of the said certificate of completion or till the final bill has been prepared and passed whichever is later.

In case of Maintenance and operation works of Electrical & Mechanical services, the security deposit deducted from contractors shall be refunded within one month from the date of final payment or within one month from the date of completion of the maintenance contract whichever is earlier.

CLAUSE- 18

Contractor to Supply Tools & Plants etc. :-

The contractor shall provide at his own cost all materials (except such special materials, if any, as may in accordance with the contract be supplied from the Engineer-in-Charge's stores), machinery, tools & plants as specified in Schedule 'C' In addition to this, appliances, implements, other plants, ladders, cordage, tackle, scaffolding and temporary works required for the proper execution of the work, whether original, altered or substituted and whether included in the specification or other documents forming part of the contract or referred to in these conditions or not, or which may be necessary for the purpose of satisfying or complying with the requirements of the Engineer-in-Charge 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 the measurement for examination at any time and from time to time of the work or materials. Failing his so doing the same may be provided by the Engineer-in-Charge at the expense of the contractor and the expenses may be deducted, from any money due to the contractor, under this contract or otherwise and/or from his security deposit or the proceeds of sale thereof, or of a sufficient portions thereof.

CLAUSE- 18 A

Recovery of Compensation paid to Workmen :-

In every case in which by virtue of the provisions sub-section (1) of section 12, of the Workmen's Compensation Act, 1923, IISER Pune is obliged to pay compensation to a workman employed by the contractor, in execution of the works, IISER Pune will recover from the contractor, for the amount of the compensation so paid ; and, without prejudice to the rights of the IISER Pune under sub-section

(2) of Section 12, of the said Act, IISER Pune shall be at liberty to recover such amount or any part thereof by deducting it from the security deposit or from any sum due by IISER Pune to the contractor whether under this contract or otherwise. IISER Pune shall not be bound to contest any claim made against it under Sub-Section (1) Section 12, of the said Act, except on the written request of the contractor and upon his giving to IISER Pune full security for all costs for which IISER Pune might become liable in consequence of contesting such claim.

CLAUSE- 18 B

Ensuring Payment and Amenities to Workers if Contractor fails :-

In every case in which by virtue of the provisions of the Contract Labour (Regulation and Abolition) Act, 1970, and of the Contract Labour (Regulation and Abolition) Central Rules, 1971, IISER Pune is obliged to pay any amounts of wages to a workman employed by the contractor in execution of the works, or to incur any expenditure in providing welfare and health amenities required to be provided under the above said Act and the rules under Clause 19H or under the C.P.W.D. Contractor's Labour Regulations, or under the Rules framed by Government from time to time for the protection of health and sanitary arrangements for workers employed by IISER Contractors, IISER Pune will recover from the contractor, the amount of wages so paid or the amount of expenditure so incurred, and without prejudice to the rights of the IISER Pune under sub-Section (2) of Section 20, and sub-Section (4) of Section 21, of the Contract Labour (Regulation and Abolition) Act, 1970, IISER Pune shall be at liberty to recover such amount or any part thereof by deducting it from the security deposit or from any sum due by IISER Pune to the contractor whether under this contract or otherwise IISER Pune shall not be bound to contest any claim made against it under sub-Section (1) of Section 20, sub-Section (4) of Section 21, of the said Act, except on the written request of the contractor and upon his giving to the IISER Pune full security for all costs for which IISER Pune might become liable in contesting such claim.

CLAUSE- 19

Labour Laws to be Complied by the Contractor :-

The contractor shall obtain a valid license under the Contract Labour (Regulation & Abolition) Act, 1970, and the Contract Labour (Regulation and Abolition) Central Rules 1971, before the commencement of the work, and continue to have a valid license until the completion of the work. The contractor shall also abide by the provisions of the Child Labour (Prohibition & Regulation) Act, 1986.

The contractor shall also comply with the provisions of the building & other Construction Workers (Regulation and Conditions of Services) Act, 1996 and the building and other Construction Workers Welfare Cess Act, 1996.

Any failure to fulfill these requirements shall attract the penal provisions of this contract arising out of the resultant non-execution of the work.

CLAUSE- 19A

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

CLAUSE-19B

Payment of Wages :-

- i). The contractor shall pay to labour employed by him either directly or through sub-contractors, wages not less than fair wages as defined in the C.P.W.D. Contractor's Labour Regulations or as per the provisions of the Contract Labour (Regulation and Abolition) Act, 1970 and the contract Labour (Regulation and Abolition) Central Rules, 1971, wherever applicable.
- ii). The contractor shall, notwithstanding the provisions of any contract to the contrary, cause to be paid fair wage to labour indirectly engaged on the work, including any labour engaged by his sub-contractors in connection with the said work, as if the labour had been immediately employed by him.
- iii). In respect of all labour directly or indirectly employed in the works for performance of the contractor's part of this contract, the contractor shall comply with or cause to be complied with the Central Public Works Department contractor's Labour Regulations made by Government from time to time in regard to payment of wages, wage period, deductions from wages recovery of wages not paid and deductions unauthorisedly made, maintenance of wage books or wage slips, publication of scale of wages and other terms of employment, inspection and submission of periodical returns and all other matters of the like nature or as per the provisions of the Contract Labour (Regulation and Abolition) Act 1970, and the Contract Labour (Regulation and Abolition) Central Rules, 1971 wherever applicable.
- iv).
 - a). The Engineer-in-Charge concerned shall have the right to deduct from the moneys due to the contractor any sum required or estimated to be required for making good the loss suffered by a worker or workers by reason of non-fulfillment of the conditions of the contract for the benefit of the workers, non-payment of wages or of deductions made from his or their wages which are not justified by their terms of the contract or non-observance of the Regulations.
 - b). Under the provision of Minimum Wages (Central) Rules, 1950, the contractor is bound to allow to the labours directly or indirectly employed in the works one day rest for 6 days continuous work and pay wages at the same rate as for duty. In the event of default, the Engineer-in-Charge shall have the right to deduct the sum or sums not paid on account of wages for weekly holidays to any labours and pay the same to the persons entitled thereto from any money due to the contractor by the Engineer-in-Charge concerned.

In the case of Union Territory of Delhi, however, as the all inclusive minimum daily wages fixed under Notification of the Delhi Administration No.F.12 (162) MWO / DAB / 43884-91, dated 31-12-1979 as amended from time to time are inclusive of wages for the weekly day of rest, the question of extra payment for weekly holiday would not arise.
- v). The contractor shall comply with the provisions of the Payment of Wages Act, 1936, Minimum Wages Act, 1948, Employees Liability Act, 1938, Workmen's Compensation Act, 1923, Industrial Disputes Act, 1947, Maternity Benefits Act, 1961, and the Contractor's Labour (Regulation and Abolition) Act 1970, or the modifications thereof or any other laws relating thereto and the rules made there under from time to time.

- vi). The contractor shall indemnify and keep indemnified Government against payments to be made under and for the observance of the laws aforesaid and the C.P.W.D. Contractor's Labour Regulations without prejudice to his right to claim indemnity from his sub-contractors.
- vii). The laws aforesaid shall be deemed to be a part of this contract and any breach thereof shall be deemed to be a breach of this contract.
- viii). Whatever is the minimum wage for the time being, or if the wage payable is higher than such wage, such wage shall be paid by the contractor to the workmen directly without the intervention of Jamadar and that Jamadar shall not be entitled to deduct or recover any amount from the minimum wage payable to the workmen as and by way of commissions or otherwise.
- ix) The contractor shall ensure that no amount by way of commission or otherwise is deducted or recovered by the Jamadar from the wage of workmen.

CLAUSE 19C

In respect of all labour directly or indirectly employed in the work for the performance of the Contractor's part of this contract, the contractor shall at his own expense arrange for the safety provisions as per C.P.W.D. Safety Code framed from time to time and shall at his own expense provide for all facilities in connection therewith. In case the contractor fails to make arrangement and provide necessary facilities as aforesaid, he shall be liable to pay a penalty of Rs.200/- for each default and in addition, the Engineer-in-Charge shall be at liberty to make arrangement and provide facilities as aforesaid and recover the costs incurred in that behalf from the contractor.

CLAUSE 19D

The contractor shall submit by the 4th and 19th of every month, to the Engineer-in-Charge, a true statement showing in respect of the second half of the preceding month and the first half of the current month respectively.

(1) the number 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 by 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 to IISER Pune, a sum not exceeding Rs.200/- for each default or materially incorrect statement. The decision of the Engineer-in-Charge shall be final in deducting from any bill due to the contractor the amount levied as fine and be binding on the contractor.

CLAUSE 19 E

In respect of all labour directly or indirectly employed in the works for the performances of the contractor's part of this contract, the contractor shall comply with or cause to be complied with all the rules framed by Government from time to time for the protection of health and sanitary arrangements for worker employed by Central Public Works Department and its contractors.

CLAUSE 19F

Leave and pay during leave shall be regulated as follows:

1. Leave:

- (i) In the case of delivery- maternity leave not exceeding 8 weeks, 4 weeks up to and including the day of delivery and 4 weeks following that day.
- (ii) In the case of miscarriage - up to 3 weeks from the date of miscarriage.

2. Pay:

(i) In the case of delivery - leave pay during maternity leave will be at the rate of the women's average daily earnings, calculated on total wages earned on the days when full time work was done during a period of three months immediately preceding the date on which she gives notice that she expects to be confined or at the rate of Rupee one only a day whichever is greater.

(ii) In the case of miscarriage- leave pay at the rate of average daily earnings calculated on the total wages earned on the days when full time wages was done during a period of three months immediately preceding the date of such miscarriage.

3. 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 six months immediately preceding the date on which she proceeds on leave.

4. The contractor shall maintain a register of Maternity (Benefit) in the Prescribed Form as shown in appendix – I and II, and the same shall be kept at the place of work.

CLAUSE 19 G

In the event of the contractor(s) committing a default or breach of any of the provisions of the Central Public Works Department, Contractor's Labour Regulations and Model Rules for the protection of health and sanitary arrangements for the workers as amended from time to time or furnishing any information or submitting or filling any statement under the provisions of the above Regulations and Rules which is materially incorrect, he/ they shall, without prejudice to any other liability, pay to the IISER Pune a sum not exceeding Rs.200/- for every default, breach or furnishing, making, submitting, filling such materially incorrect statements and in the event of the contractor(s) defaulting continuously in this respect, the penalty may be enhanced to Rs.200/- per day for each day of default subject to a maximum of 5 percent of the estimated cost of the work put to tender. The decision of the Engineer-in-Charge shall be final and binding on the parties.

Should it appear to the Engineer-in-Charge that the contractor(s) is/are not properly observing and complying with the provisions of the C.P.W.D. Contractor's Labour Regulations and Model Rules and the provisions of the Contract Labour (Regulation and Abolition) Act 1970, and the Contract Labour (R&A) Central Rules 1971, for the protection of health and sanitary arrangements for work-people employed by the contractor(s) (hereinafter referred as "the said Rules") the Engineer-in-Charge shall have power to give notice in writing to the contractor(s) requiring that the said Rules be complied with and the amenities prescribed therein be provided to the work-people within a reasonable time to be specified in the notice. If the contractor(s) shall fail within the period specified in the notice to comply with and/ observe the said Rules and to provide the amenities to the work-people as aforesaid, the Engineer-in-Charge shall have the power to provide the amenities herein before mentioned at the cost of the contractor(s). The contractor(s) shall erect, make and maintain at his/ their own expense and to approved standards all necessary huts and sanitary arrangements required for his/ their work-people on the site in connection with the execution of the works, and if the same shall not have been erected or constructed, according to approved standards, the Engineer-in-Charge shall have power to give notice in writing to the contractor(s) requiring that the said huts and sanitary arrangements be remodeled and/ or reconstructed according to approved standards, and if the contractor(s) shall fail to remodel or reconstruct such huts and sanitary arrangements according to approved standards within the period specified in the notice, the Engineer-in-Charge shall have the power to remodel or reconstruct such huts and sanitary arrangements according to approved standards at the cost of the contractor(s).

CLAUSE 19H

The contractor(s) shall at his/ their own cost provide his/ their labour with a sufficient number of huts (hereinafter referred to as the camp) of the following specifications on a suitable plot of land to be approved by the Engineer-in-Charge.

- l) a) The minimum height of each hut at the eaves level shall be 2.10m (7ft.) and the floor area to be provided will be at the rate of 2.7 sq. m. (30 sq. ft.) for each member of the worker's family staying with the labourer.
- b) The contractor(s) shall in addition construct suitable cooking places having a minimum area of 1.80m x 1.50m (6' x 5') adjacent to the hut for each family.
- c) The contractor(s) shall also construct temporary latrines and urinals for the use of the labourers each on the scale of not less than four per each one hundred of the total strength, separate latrines and urinals being provided for women.

- d) The contractor(s) shall construct sufficient number of bathing and washing places, one unit for every 25 persons residing in the camp. These bathing and washing places shall be suitably screened.

- II) a) All the huts shall have walls of sun-dried or burnt-bricks laid in mud mortar or other suitable local materials as may be approved by the Engineer-in-Charge. In case of sun-dried bricks, the walls should be plastered with mud gobri on both sides. The floor may be kutcha but plastered with mud gobri and shall be at least 15cm (6") above the surrounding ground. The roofs shall be laid with thatch or any other materials as may be approved by the Engineer-in-Charge and the contractor shall ensure that throughout the period of their occupation, the roofs remain water-tight.

- b) The contractor(s) shall provide each hut with proper ventilation.

- c) All doors, windows, and ventilators shall be provided with suitable leaves for security purposes.

- d) There shall be kept an open space of at least 7.2m (8 yards) between the rows of huts which may be reduced to 6m (20 ft.) according to the availability of site with the approval of the Engineer-in-Charge. Back to back construction will be allowed.

- III) **Water Supply** – The contractor(s) shall provide adequate supply of water for the use of labourers. The provisions shall not be less than two gallons of pure and wholesome water per head per day for drinking purpose and three gallons of clean water per head per day for bathing and washing purpose. Where piped water supply is available, supply shall be at stand posts and where the supply is from wells or river, tanks which may be of metal or masonry, shall be provided. The contractor(s) shall also at his/their own cost make arrangements for laying pipe lines for water supply to his/their labour camp from the existing mains wherever available, and shall pay all fees and charges therefore.

- IV) The site selected for the camp shall be high ground, removed from jungle.

- V) **Disposal of Excreta** – The contractor(s) shall make necessary arrangements for the disposal of excreta from the latrines by trenching or incineration which shall be according to the

requirements laid down by the Local Health Authorities. If trenching or incineration is not allowed, the contractor(s) shall make arrangements for the removal of the excreta through the Municipal Committee/authority and inform it about the number of labourers employed so that arrangements may be made by such Committee/authority for the removal of the excreta. All charges on this account shall be borne by the contractor and paid direct by him to the Municipality/authority. The contractor shall provide one sweeper for every eight seats in case of dry system.

- Vi) **Drainage** – The contractor(s) shall provide efficient arrangements for draining away Sullage water so as to keep the camp neat and tidy.
- VII) The contractor(s) shall make necessary arrangements for keeping the camp area sufficiently lighted to avoid accidents to the workers.
- VIII) **Sanitation** – The contractor(s) shall make arrangements for conservancy and sanitation in the labour camps according to the rules of the Local Public Health and Medical Authorities.

CLAUSE 19 I

The Engineer-in-Charge may require the contractor to dismiss or remove from the site of the work any person or persons in the contractor's employ upon the work who may be incompetent or misconduct himself and the contractor shall forthwith comply with such requirements.

CLAUSE 19 J

It shall be the responsibility of the contractor to see that the building under construction is not occupied by anybody unauthorizedly during construction, and is handed over to the Engineer-in-Charge with vacant possession of complete building. If such building though completed is occupied illegally then the Engineer-in-Charge shall have the option to refuse to accept the said building / buildings in that position. Any delay in acceptance on this account will be treated as the delay in completion and for such delay, a levy up to 5% of tendered value of work may be imposed by the Engineer-in-Charge whose decision shall be final both with regard to the justification and quantum and be binding on the contractor.

However, the Engineer-in-Charge, through a notice, may require the contractor to remove the illegal occupation any time on or before construction and delivery.

CLAUSE 19 K

Employment of Skilled / Semi Skilled Workers –

The contractor shall, at all stages of work, deploy skilled/semi skilled tradesmen who are qualified and possess certificate in particular trade from CPWD Training Institute / Industrial Training Institute/National Institute of construction Management and Research (NICMAR) / National Academy of Construction, CIDC or any similar reputed and recognized Institute managed/certified by State/Central Government. The number of such qualified tradesmen shall not be less than 20% of total skilled/semi skilled workers required in such trade at any stage of work. The contractor shall submit number of man days required in respect of each trade, its scheduling and the list of qualified tradesmen along with requisite certified from recognized Institute to Engineer-in-Charge for approval. Notwithstanding such approval, if the tradesmen are found to have inadequate skill to execute the work of respective trade, the contractor shall substitute such tradesmen within two days of written notice from Engineer-in-Charge. Failure on the part of contractor to obtain approval of Engineer-in-Charge or failure to deploy qualified tradesmen will attract a compensation to be paid by contractor at the rate of Rs.100 per such tradesmen per day. Decision of Engineer-in-Charge as to whether particular tradesmen possess requisite skill and amount of compensation in case of default shall be final and binding.

Provided always, that the provisions of this Clause shall not be applicable for works with estimated cost put to tender being less than Rs. 5 crores.

CLAUSE 19L

Registration with EPFO and ESIC

The ESI and EPF contributions on the part of employer in respect of this contract shall be paid by the contractor. These contributions on the part of the employer paid by the contractor shall be reimbursed by the Engineer-in-charge to the contractor on actual basis.

CLAUSE 20:

Minimum Wages Act to be complied with:

The Contractor shall comply with all the provisions of the Minimum Wages Act, 1948, and Contract Labour (Regulation & Abolition) Act, 1970, amended from time to time and rules framed there under and other labour laws affecting contract labour that may be brought into force from time to time.

CLAUSE 21 :

Work not to be sublet. Action in case of insolvency -

The Contract shall not be assigned or sublet without the written approval of the Engineer-in-Charge. And if the contractor shall assign or sublet his contract, or attempt to do so, or become insolvent or commence any insolvency proceedings or make any composition with his creditors or attempt to do so, or if any bribe, gratuity, gift, loan, perquisite, reward or advantage pecuniary or otherwise, shall either directly or indirectly, be given, promised or offered by the contractor, or any of his servants or agent to any public officer or persons in the employ of IISER Pune in any way relating to his office or employment, or if any such officer or person shall become in any way directly or indirectly interested in the contract, the Engineer-in-Charge on behalf of the Director IISER Pune shall have power to adopt the courses specified in Clause 3 hereof in the interest of IISER Pune and in the event of such course being adopted, the consequences specified in the said Clause 3 shall ensue.

CLAUSE 22 :

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

CLAUSE 23 :

Changes in Firm's Constitution to be Intimated -

Where the Contractor is a partnership firm, the previous approval in writing of the Engineer-in-Charge shall be obtained before any change is made in the constitution of the firm. Where the contractor is an individual or a Hindu undivided family business concern, such approval as aforesaid shall likewise be obtained before the Contractor enters into any partnership agreement where under the partnership firm would have the right to carry out the works hereby undertaken by the contractor. If previous approval as aforesaid is not obtained, the contract shall be deemed to have been assigned in contravention of Clause 21 hereof and the same action may be taken, and the same consequences shall ensue as provided in the said Clause 21.

CLAUSE 24 :

All works to be executed under the contract shall be executed under the direction and subject to the approval in all respects of the Engineer-in-Charge who shall be entitled to direct at what point or points and in what manner they are to be commenced, and from time to time carried on.

CLAUSE 25 :

Settlement of Disputes & Arbitration -

Except where otherwise provided in the contract, all questions and disputes relating to the meaning of the specifications, design, drawings and instructions here-in before mentioned and as to the quality of workmanship or materials used on the work or as to any other question, claim, right, matter or thing whatsoever in any way arising out of or relating to the contract, designs, drawings, specifications, estimates, instructions, orders or these conditions or otherwise concerning the works or the execution or failure to execute the same whether arising during the progress of the work or after the cancellation, termination, completion or abandonment thereof shall be dealt with as mentioned hereinafter :-

i) If the contractor considers any work demanded of him to be outside the requirements of the contract, or disputes any drawings, record or decision given in writing by the Engineer-in-Charge on any matter in connection with or arising out of the contract or carrying out of the work, to be unacceptable, he shall promptly within 15 days request the Director, IISER, Pune in writing for written instruction or decision. Thereupon, the Director, IISER, Pune shall give his written instructions or decision within a period of one month from the receipt of the contractor's letter.

If the Director, IISER, Pune fails to give his instructions or decision in writing within the aforesaid period or if the contractor is dissatisfied with the instruction or decision of the Director, IISER, Pune, the contractor may, within 15 days of the receipt of Director, IISER, Pune decision, appeal to the Chairman Building & works Committee (BWC), IISER Pune who shall afford an opportunity to the contractor to be heard, if the latter so desires, and to offer evidence in support of his appeal. The Chairman BWC, IISER Pune shall give his decision within 30 days of receipt of contractor's appeal. If the contractor is dissatisfied with the decision Chairman BWC, IISER Pune, the contractor shall within a period of 30 days from receipt of the Chairman BWC, IISER Pune decision, appeal before the Dispute Redressal Committee (DRC) along with a list of disputes with amounts claimed in respect of each such dispute and giving reference to the rejection of his disputes by the Chairman BWC, IISER Pune. The Dispute Redressal Committee (DRC) shall give his decision within a period of 90 days from the receipt of Contractor's appeal. The constitution of Dispute Redressal Committee (DRC) shall be as indicated in Schedule 'C'. If the Dispute Redressal Committee (DRC) fails to give his decision within the aforesaid period or any party is dissatisfied with the decision of Dispute Redressal Committee (DRC), then either party may within a period of 30 days from the receipt of the decision of Dispute Redressal Committee (DRC), give notice to the Chairman, Building and Works Committee, IISER, Pune for appointment of arbitrator on prescribed proforma as per Appendix XV, failing which the said decision shall be final binding and conclusive and not referable to adjudication by the arbitrator.

It is a term of contract that each party invoking arbitration must exhaust the aforesaid mechanism of settlement of claims/disputes prior to invoking arbitration.

ii) Except where the decision has become final, binding and conclusive in terms of Sub Para (i) above, disputes or difference shall be referred for adjudication through arbitration by a sole arbitrator appointed by the Chairman, Building and Works Committee, IISER Pune, If the arbitrator so appointed is unable or unwilling to act or resigns his appointment or vacates his office due to any reason whatsoever, another sole arbitrator shall be appointed in the manner aforesaid. Such person shall be entitled to proceed with the reference from the stage at which it was left by his predecessor.

It is a term of this contract that the party invoking arbitration shall give a list of disputes with amounts claimed in respect of each such dispute along with the notice for appointment of arbitrator and giving reference to the rejection by the Chairman, Building and Works Committee, IISER Pune of the appeal.

It is also a term of this contract that no person, other than a person appointed by such The Chairman, Building and Works Committee, IISER Pune or, as aforesaid, should act as arbitrator and if for any reason that is not possible, the matter shall not be referred to arbitration at all.

It is also a term of this contract that if the contractor does not make any demand for appointment of arbitrator in respect of any claims in writing as aforesaid within 120 days of receiving the intimation from the Engineer-in-Charge that the final bill is ready for payment, the claim of the contractor shall be deemed to have been waived and absolutely barred and the IISER Pune shall be discharged and released of all liabilities under the contract in respect of these claims.

The arbitration shall be conducted in accordance with the provisions of the Arbitration and Conciliation Act, 1996 (26 of 1996) or any statutory modifications or re-enactment thereof and the rules made there under and for the time being in force shall apply to the arbitration proceeding under this clause.

It is also a term of this contract that the arbitrator shall adjudicate on only such disputes as are referred to him by the appointing authority and give separate award against each dispute and claim referred to him and in all cases where the total amount of the claims by any party exceeds Rs.1,00,000/- the arbitrator shall give reasons for the award.

It is also a term of the contract that if any fees are payable to the arbitrator, these shall be paid equally by both the parties.

It is also a term of the contract that the arbitrator shall be deemed to have entered on the reference on the date he issues notice to both the parties calling them to submit their statement of claims and

counter statement of claims. The venue of the arbitration shall be such place as may be fixed by the arbitrator in his sole discretion. The fees, if any, of the arbitrator shall, if required to be paid before the award is made and published, be paid half and half by each of the parties. The cost of the reference and of the award (including the fees, if any, of the arbitrator) shall be in the discretion of the arbitrator who may direct to any by whom and in what manner, such costs or any part thereof shall be paid and fix or settle the amount of costs to be so paid.

CLAUSE 26

Contractor to Indemnify IISER Pune against Patent Rights -

The Contractor shall fully indemnify and keep indemnified the Director IISER Pune against any action, claim or proceeding relating to infringement or use of any patent or design or any alleged patent or design rights and shall pay any royalties which may be payable in respect of any article or part thereof included in the contract. In the event of any claims made under or action brought against IISER Pune in respect of any such matters as aforesaid, the contractor shall be immediately notified thereof and the contractor shall be at liberty, at his own expense, to settle any dispute or to conduct any litigation that may arise there from, provided that the contractor shall not be liable to indemnify the Director IISER Pune if the infringement of the patent or design or any alleged patent or design right is the direct result of an order passed by the Engineer-in-Charge in this behalf.

CLAUSE 27 :

Lump sum Provisions in Tender -

When the estimate on which a tender is made includes lump sum in respect of parts of the work, the contractor shall be entitled to payment in respect of the items of work involved or the part of the work in question at the same rates as are payable under this contract for such items, or if the part of the work in question is not, in the opinion of the Engineer-in-Charge payable of measurement, the Engineer-in-Charge may at his discretion pay the lump sum amount entered in the estimate, and the certificate in writing of the Engineer-in-Charge shall be final and conclusive against the contractor with regard to any sum or sums payable to him under the provisions of the clause.

CLAUSE 28 :

Action Where no Specifications are Specified -

In case of any class of work for which there is no such specifications as referred to in Clause 11, such work shall be carried out in accordance with the Bureau of Indian Standard Specifications. In case

there are no such specifications in Bureau of Indian Standards, the work shall be carried out as per Manufacturer's Specifications, In case there are no such specifications as required above, the work shall be carried out in all respects in accordance with the instructions and requirements of the Engineer-in-Charge.

CLAUSE 29 : With-Holding and Lien in Respect of Sums Due from Contractor:

- (i) Whenever any claim or claims for payment of a sum of money arises out of or under the contract or against the contractor, the Engineer-in-Charge or the IISER Pune shall be entitled to withhold and also have a lien to retain such sum or sums in whole or in part from the security, if any deposited by the contractor and for the purpose aforesaid, the Engineer-in-Charge or the IISER Pune shall be entitled to withhold the security deposit, if any, furnished as the case may be and also have a lien over the same pending finalisation or adjudication of any such claim. In the event of the security being insufficient to cover the claimed amount or amounts or if no security has been taken from the contractor, the Engineer-in-Charge or the IISER Pune shall be entitled to withhold and have a lien to retain to the extent of such claimed amount or amounts referred to above, from any sum or sums found payable or which may at any time thereafter become payable to the contractor under the same contract or any other contract with the Engineer-in-Charge of the IISER Pune or any contracting person through the Engineer-in-Charge pending finalisation of adjudication of any such claim.

It is an agreed term of the contract that the sum of money or moneys so withheld or retained under the lien referred to above by the Engineer-in-Charge or IISER Pune will be kept withheld or retained as such by the Engineer-in-Charge or IISER Pune till the claim arising out of or under the contract is determined by the arbitrator (if the contract is governed by the arbitration clause) by the competent court, as the case may be and that the contractor will have no claim for interest or damages whatsoever on any account in respect of such withholding or retention under the lien referred to above and duly notified as such to the contractor. For the purpose of this clause, where the contractor is a partnership firm or a limited company, the Engineer-in-Charge or the IISER Pune shall be entitled to withhold and also have a lien to retain towards such claimed amount or amounts in whole or in part from any sum found payable to any partner/ limited company as the case may be, whether in his individual capacity or otherwise.

- (ii) IISER Pune shall have the right to cause an audit and technical examination of the works and the final bills of the contractor including all supporting vouchers, abstract etc. to be made after payment of the final bill and if as a result of such audit and technical examination any sum is found to have been overpaid in respect of any work done by the contractor under the contract or any work claimed to have been done by him under the contract and found not to have been executed, the contractor shall be liable to refund the amount of over-payment and it shall be lawful for IISER Pune to recover the same from him in the manner prescribed in sub-Clause (i) of this Clause or in any other manner legally permissible; and if it is found that the contractor was paid less than what was due to him under the contract in respect of any work executed by him under it, the amount of such under payment shall be duly paid by IISER Pune to the contractor, without any interest thereon whatsoever.

Provided that the IISER Pune shall not be entitled to recover any sum overpaid, nor the contractor shall be entitled to payment of any sum paid short where such payment has been agreed upon between the Engineer-in-Charge or the Director IISER Pune on the one hand and the contractor on the other under any term of the contract permitting payment for work after assessment by the Engineer-in-Charge or the Director IISER Pune.

CLAUSE 29A :

Lien in Respect of Claims in other Contracts

Any sum of money due and payable to the contractor (including security deposit returnable to him) under the contract may be withheld or retained by way of lien by the Engineer-in-Charge or the IISER Pune or any other contracting person or persons through Engineer-in-Charge against any claim of the Engineer-in-Charge or IISER Pune or such other person or persons in respect of payment of a sum of money arising out of or under any other contract made by the contractor with the Engineer-in-Charge or the IISER Pune or with such other person or persons.

It is an agreed term of the contract that the sum of money so withheld or retained under this Clause by the Engineer-in-Charge or the IISER Pune will be kept withheld or retained as such by the Engineer-in-Charge or IISER Pune or till his claim arising out of the same contract or any other contract is either mutually settled or determined by the Arbitration Clause or by the competent court, as the case may be and that the contractor shall have no claim for interest or damages whatsoever on this account or on any other ground in respect of any sum of money withheld or retained under this Clause and duly notified as such to the contractor.

CLAUSE 30 :

Unfiltered Water Supply

The Contractor(s) shall make his/ their own arrangements for water required for the work and nothing extra will be paid for the same. This will be subject to the following conditions.

- i) That the water used by the contractor(s) shall be fit for construction purposes to the satisfaction of the Engineer-in-Charge.
- ii) The Engineer-in-Charge shall make alternative arrangements for supply of water at the risk and cost of contractor(s) if the arrangements made by the contractor(s) for procurement of water are in the opinion of the Engineer-in-Charge, unsatisfactory.

CLAUSE 31

Departmental Water Supply, if Available

Water if available may be supplied to the contractor by the department subject to the following conditions:-

- (i) The water charges @ 1% shall be recovered on gross amount of the work done.
- (ii) The contractor(s) shall make his/their own arrangement of water connection and laying of pipelines from existing main of source of supply.
- (iii) The Department do not guarantee to maintain uninterrupted supply of water and it will be incumbent on the contractor(s) to make alternative arrangements for water at his/ their own cost in the event of any temporary break down in the IISER Pune water main so that the progress of his/their work is not held up for want of water. No claim of damage or refund of water charges will be entertained on account of such break down.

CLAUSE 32:

Alternate Water Arrangements

- i) Where there is no piped water supply arrangement and the water is taken by the contractor from the wells or hand pump constructed by the IISER Pune, no charge shall be recovered from the contractor on that account. The contractor shall, however, draw water at such hours of the day that it does not interfere with the normal use for which the hand pumps and wells are intended. He will also be responsible for all damage and abnormal repairs arising out of his use, the cost of which shall be recoverable from him. The Engineer-in-Charge shall be the final authority to determine the cost recoverable from the contractor on this account and his decision shall be binding on the contractor.
- ii) The contractor shall be allowed to construct temporary wells in IISER Pune land for taking water for construction purposes only after he has got permission of the Engineer-in-Charge in writing. No charges shall be recovered from the contractor on this account, but the contractor shall be required to provide necessary safety arrangements to avoid any accidents or damage to adjacent buildings, roads and service lines. He shall be responsible for any accidents or damage caused due to construction and subsequent maintenance of the wells and shall restore the ground to its original condition after the wells are dismantled on completion of the work.

CLAUSE 33 :

Return of Surplus Materials

Notwithstanding anything contained to the contrary in this contract, where any materials for the execution of the contract are procured with the assistance of IISER Pune either by issue from IISER Pune stocks or purchase made under orders or permits or licenses issued by IISER Pune, the contractor shall hold the said materials economically and solely for the purpose of the contract and not dispose of them without the written permission of the IISER Pune and return, if required by the Engineer-in-Charge, all surplus or unserviceable materials that may be left with him after the completion of the contract or at its termination for any reason whatsoever on being paid or credited such price as the Engineer-in-Charge shall determine having due regard to the condition of the materials. The price allowed to the contractor however shall not exceed the amount charged to him excluding the element of storage charges. The decision of the Engineer-in-Charge shall be final and conclusive. In the event of breach of the aforesaid condition, the contractor shall in addition to throwing himself open to action for contravention of the terms of the license or permit and/or for criminal breach of trust, be liable to IISER Pune for all moneys, advantages or profits resulting or which in the usual course would have resulted to him by reason of such breach.

CLAUSE 34 :

Employment of Technical Staff and Employees

Contractors Superintendence, Supervision, Technical Staff & Employees

(i) The contractor shall provide all necessary superintendence during execution of the work and all along thereafter as may be necessary for proper fulfilling of the obligations under the contract.

The contractor shall immediately after receiving letter of acceptance of the tender and before commencement of the work, intimate in writing to the Engineer-in-Charge, the name(s), qualifications, experience, age, address(s) and other particulars along with certificates, of the principal technical representative to be in charge of the work and other technical representative(s) who will be supervising the work. Minimum requirement of such technical representative(s) and their qualifications and experience shall not be lower than specified in Special Condition of contract. The Engineer-in-Charge shall within 3 days of receipt of such communication intimate in writing his approval or otherwise of such a representative(s) to the contractor. Any such approval may at any time be withdrawn and in case of such withdrawal, the contractor shall appoint another such representative(s) according to the provisions of this clause. Decision of the tender accepting authority shall be final and binding on the contractor in this respect. Such a principal technical representative and other technical representative(s) shall be appointed by the contractor soon after receipt of the approval from Engineer-in-Charge and shall be available at site before start of work.

All the provisions applicable to the principal technical representative under the Clause will also be applicable to other technical representative(s). The principal technical representative and other technical representative(s) shall be present at the site of work for supervision at all times when any construction activity is in progress and also present himself/themselves, as required, to the Engineer-in-Charge and/or his designated representative to take instructions. Instructions given to the principal technical representative or other technical representative(s) shall be deemed to have the same force as if these have been given to the contractor. The principal technical representative and other technical representative(s) shall be actually available at site fully during all stages of execution of work, during recording/checking/test checking of measurements of works and whenever so required by the Engineer-in-Charge and shall also note down instructions conveyed by the Engineer-in-Charge or his designated representative(s) in the site order book and shall affix his/their signature in token of noting down the instructions and in token of acceptance of measurements, checked measurements/test checked measurements. The representative(s) shall not look after any other work. Substitutes, duly approved by Engineer-in-Charge of the work in similar manner as aforesaid shall be provided in event of absence of any of the representative(s) by more than two days.

If the Engineer-in-Charge, whose decision in this respect is final and binding on the contractor, is convinced that no such technical representative(s) is/are effectively appointed or is/are effectively attending or fulfilling the provision of this Clause, a recovery (non-refundable) shall be effected from the contractor as specified in Schedule 'C' and the decision of the Engineer-in-Charge as recorded in the site order book shall be final and binding on the contractor. Further if the contractor fails to appoint suitable technical Principal technical representatives and/or other technical representative(s) and if such appointed persons are not effectively present or are absent by more than two days without duly approved substitute or do not discharge their responsibilities satisfactorily, the Engineer-in-Charge shall have full powers to suspend the execution of the work until such date as suitable other technical representative(s) is/are appointed and the contractor shall be held responsible for the delay so caused to the work. The contractor shall submit a certificate of employment of the technical representative(s) (in the form of copy of Form-16 or CPF deduction issued to the Engineers employed by him) along with every on account bill/ final bill and shall produce evidence if at any time so required by the Engineer-in-Charge.

ii) The contractor shall provide and employ on the site only such technical assistants as are skilled and experienced in their respective fields and such foremen and supervisory staff as are competent to give proper supervision to the work.

The contractor shall provide and employ skilled, semiskilled and unskilled labour as is necessary for proper and timely execution of the work.

The Engineer-in-Charge shall be at liberty to object to and require the contractor to remove from the works any person who in his opinion misconduct himself, or is incompetent or negligent in the performance of his duties or whose employment is otherwise considered by the Engineer-in-Charge to be undesirable. Such person shall not be employed again at works site without the written permission of the Engineer-in-Charge and the persons so removed shall be replaced as soon as possible by competent substitutes.

CLAUSE 35 : Levy/Taxes Payable by Contractor

- i) Sales Tax/VAT (except service tax), building and other construction worker welfare cess or any other cess/ tax in respect of this contract shall be payable by the contractor and Government shall not entertain any claim whatsoever in this respect. However, in respect of service tax on Contract, same shall be paid by the contractor to the concerned department on demand and it will be reimbursed to him by the Engineer-in Charge after satisfying that it has been actually and genuinely paid by the contractor.
- ii) The contractor shall deposit royalty and obtain necessary permit for supply of the red bajri, stone, kankar, etc. from local authorities.
- iii) If pursuant to or under any law, notification or order any royalty, cess or the like becomes payable by the IISER Pune and does not any time become payable by the contractor to the State Government. Local authorities in respect of any material used by the contractor in the works then in such a case, it shall be lawful to the IISER Pune and it will have the right and be entitled to recover the amount paid in the circumstances as aforesaid from dues of the contractor.

CLAUSE 36:

Conditions for Reimbursement of Levy/ Taxes if levied after receipt of Tenders

- i) All tendered rates shall be inclusive of all taxes and levies (except service tax) payable under respective statutes. However, pursuant to the Constitution (46th Amendment Act, 1982), if any further tax or levy is imposed by Statute, after the last stipulated date for the receipt of tender including extensions if any and the contractor thereupon necessarily and properly pays such taxes/ levies, the contractor shall be reimbursed the amount so paid, provided such payments, if any, is not, in the opinion of the Director IISER Pune (whose decision shall be final and binding on the contractor) attributable to delay in execution of work within the control of the contractor.
- ii) The contractor shall keep necessary books of accounts and other documents for the purpose of this condition as may be necessary and shall allow inspection of the same by a duly authorized representative of the IISER Pune and/or the Engineer-in-Charge and further shall furnish such other information/ document as the Engineer-in-Charge may require from time to time.
- iii) The contractor shall, within a period of 30 days of the imposition of any such further tax or levy, pursuant to the Constitution (Forty Sixth Amendment) Act 1982, give a written notice

thereof to the Engineer-in-Charge that the same is given pursuant to this condition, together with all necessary information relating thereto.

CLAUSE 37 :

Termination of Contract on Death of Contractor

Without prejudice to any of the rights or remedies under this contract, if the contractor dies, the Engineer-in-charge on behalf of the Director IISER Pune shall have the option of terminating the contract without compensation to the contractor.

CLAUSE 38 :

If Relative Working in IISER PUNE then the Contractor not Allowed to Tender

The contractor shall not be permitted to tender for works in the IISER Pune responsible for award and execution of contracts in which his near relative is posted as Accountant or as an Officer in any capacity between the grades of the Engineer-in-Charge and Junior Engineer (both inclusive). He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any Officer in IISER or in the Ministry of HRD. Any breach of this condition by the contractor would render him liable to be removed from the approved list of contractors of this IISER Pune. **If however the contractor is registered in any other department, he shall be debarred from tendering in IISER PUNE of this condition.**

NOTE: By the term “near relatives” is meant wife, husband, parents and grandparents, children and grand children, brothers and sisters, uncles, aunts and cousins and their corresponding in-laws.

CLAUSE 39:

No Gazetted Engineer to Work as Contractor within One Year of Retirement.

No Engineer of gazetted rank or other gazetted officer employed in engineering or administrative duties in an engineering department of the Government of India shall work as a contractor or employee of a contractor for a period of; one years after his retirement from government service without the previous permission of Government of India in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found at any time to be such a person who had not obtained the permission of Government of India as aforesaid, before submission of the tender or engagement in the contractor’s service, as the case may be.

CLAUSE 40:

Compensation During Warlike Situations

The work (whether fully constructed or not) and all materials, machines, tools and plants, scaffolding, temporary buildings and other things connected therewith shall be at the risk of the contractor until the work has been delivered to the Engineer-in-Charge and a certificate from him to that effect obtained. In the event of the work or any materials properly brought to the site for incorporation in the work being damaged or destroyed in consequence of hostilities or warlike operation, the contractor shall when ordered (in writing) by the Engineer-in-Charge to remove any debris from the site, collect and properly stack or remove in store all serviceable materials salvaged from the damaged work and shall be paid at the contract rates in accordance with the provision of this agreement for the work of clearing the site of debris, stacking or removal of serviceable material and for reconstruction of all works ordered by the Engineer-in-Charge, such payments being in addition to compensation up to the value of the work originally executed before being damaged or destroyed and not paid for. In case of works damaged or destroyed but not already measured and paid for, the compensation shall be assessed by Engineer-in-Charge up to Rs.5000/- and by the Director IISER Pune concerned for a higher amount. The contractor shall be paid for the damages/ destruction suffered and for the restoring the material at the rate based on analysis of rates tendered for in accordance with the provision of the contract. The certificate of the Engineer-in-Charge regarding the quality and quantity of materials and the purpose for which they were collected shall be final and binding on all parties to this contract.

Provided always that no compensation shall be payable for any loss in consequence of hostilities or warlike operations(a) unless the contractor had taken all such precautions against air raid as are deemed necessary by the A.R.P. Officers or the Engineer-in-Charge. (b) for any material etc. not on the site of the work or for any tools, plant, machinery scaffolding, temporary building and other things not intended for the work.

In the event of the contractor having to carry out reconstruction as aforesaid, he shall be allowed such extension of time for its completion as is considered reasonable by the Engineer-in-Charge.

CLAUSE 41:

Apprentices Act Provisions to be Complied with

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

CLAUSE 42:

Release of Security Deposit after Labour Clearance.

Security Deposit of the work shall not be refunded till the contractor produces a clearance certificate from the Labour Officer. As soon as the work is virtually complete the contractor shall apply for the clearance certificate to the Labour Officer under intimation to the Engineer-in-Charge. The Engineer-in-Charge, on receipt of the said communication, shall write to the Labour Officer to intimate if any complaint is pending against the contractor in respect of the work. If no complaint is pending, or record till after 3 months after completion of the work and/ or no communication is received from the Labour Officer to this effect till six months after the date of completion, it will be deemed to have received the clearance certificate and the Security Deposit will be released if otherwise due.

(iv) SAFETY CODE

1. Suitable scaffolds should be provided for workmen for all works that cannot safely be done from the ground, or from solid construction except such short period work as can be done safely from ladders. When a ladder is used an extra mazdoor shall be engaged for holding the ladder and if the ladder is used for carrying materials as well as suitable footholds and hand-hold shall be provided on the ladder and the ladder shall be given an inclination not steeper than $\frac{1}{4}$ to 1 (1/4 horizontal and 1 vertical)
2. Scaffolding of staging more than 3.6m (12 ft) above the ground or floor, swung or suspended from an overhead support or erected with stationery support shall have a guard rail properly attached or bolted, braced and otherwise secured at least 90 cm (3ft) high above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends there of with only such opening as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent if from swaying from the building or structure.
3. Working platform, gangways and stairways should be so constructed that they should not sag unduly or unequally, and if the height of the platform or the gangway or the stairway is more than 3.6 (12ft) above ground level or floor level, they should be closely boarded, should have adequate width and should be suitably fastened as described in (2) above.
4. Every opening in the floor of a building or in a working platform shall be provided with suitable means to prevent the fall of person or materials by providing suitable fencing or railing whose minimum height shall be 90cm (3ft).
5. Safe means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9m (30ft) in length while the width between side rails in rung ladder shall in no case be less than 29 cm. (11 $\frac{1}{2}$ ") for ladder up to and including 3m (10ft) in length. For longer ladders this width should be increased at least $\frac{1}{4}$ " for each additional 30cm (1foot) of length. Uniform step spacing of not more than 30cm shall be kept. Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sites or work shall be so stacked or placed as to cause danger or inconvenience to any person or the public. The contractor shall provide all necessary fencing and lights to protect the public from accident and shall be bound to bear the expenses of defense of every suit, action or other proceedings at 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 person or which may, with the consent of the contractor, be paid to compensate any claim by any such person.
6. Excavation and Trenching - All trenches 1.2m (4ft) or more in depth, shall at all times be supplied with the least one ladder for each 30m (100ft) in length or fraction thereof Ladder shall extend from bottom of the trench to at least 90 cm (3ft) above the surface of the ground. The side of the trenches which are 1.5m (5ft) or more in depth shall be stepped

back to give suitable slope or securely held by timber bracing, so as to avoid the danger of sides collapsing. The excavated materials shall not be placed within 1.5m (5ft) of the edges of the trench or half of the depth of the trench whichever is more. Cutting shall be done from top to bottom. Under no circumstances undermining or undercutting shall be done.

7. Demolition – Before any demolition work is commenced and also during the progress of the work,
 - i) All roads and open areas adjacent to the work site shall either be closed or suitably protected.
 - ii) No electric cable or apparatus which is liable to be a source of danger or a cable or apparatus used by the operator shall remain electrically charged.
 - iii) All practical steps shall be taken to prevent danger to persons employed from risk of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris or materials as to render it unsafe.
 - iv) Wire mesh netting to be provided for dismantling areas.
8. All necessary personal safety equipment as considered adequate by the Engineer-in-Charge should be kept available for the use of the person employed on the site and maintained in a condition suitable for immediate use, and the contractor should take adequate steps to ensure proper use of equipment by those concerned. The following safety equipments shall invariably be provided :
 - i) Workers employed on mixing asphaltic materials, cement and lime mortars shall be provided with protective footwear and protective goggles.
 - ii) Those engaged in white washing and mixing or stacking of cement bags or any material which is injurious to the eyes shall be provided with protective goggles.
 - iii) Those engaged in welding works shall be provided with welder's protective eye-shields and helmets.
 - iv). Stone breaker shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.

- v). When workers are employed in sewers and manholes, which are in active use, the contractor shall ensure that the manholes are opened and ventilated at least for an hour before the workers are allowed to get into the manholes, and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals or boards to prevent accident to the public. In addition, the contractor shall ensure that the following safety measure is adhered to:
- a). Entry for workers into the line shall not be allowed except under supervision of the Engineer-in-Charge or any other Higher officer.
 - b). At least 5 to 6 manholes upstream and downstream should be kept open for at least 2 to 3 hours before any man is allowed to enter into the manhole for working inside.
 - c). Before entry presence of Toxic gases should be tested by inserting wet lead acetate paper which changes colour in the presence of such gases and gives indication of their presence.
 - d). Presence of Oxygen should be verified by lowering a detector lamp into the manhole. In case, no Oxygen is found inside the sewer line, workers should be sent only with Oxygen kit.
 - e). Safety belt with rope should be provided to the workers. While working inside the manholes such rope should be handled by two men standing outside to enable him to be pulled out during emergency.
 - f). The area should be barricaded or cordoned off by suitable means to avoid mishaps of any kind. Proper warning signs should be displayed for the safety of the public whenever cleaning works are undertaken during night or day.
 - g). No smoking or open flames shall be allowed near the blocked manhole being cleaned.

- h). The malba obtained on account of cleaning of blocked manholes and sewer lines should be immediately removed to avoid accidents on account of slippery nature of the malba.
- i). Workers should not be allowed to work inside the manhole continuously. He should be given rest intermittently. The Engineer-in-Charge may decide the time up to which a worker may be allowed to work continuously inside the manhole.
- j). Gas masks with Oxygen Cylinder should be kept at site for use in emergency.
- k). Air-blowers should be used for flow of fresh air through the manholes. Whenever called for portable air blowers are recommended for ventilating the manholes. The Motors for these shall be vapour proof and of totally enclosed type. Non sparking gas engines also could be used but they should be placed at least 2 metres away for the opening and on the leeward side protected from wind so that they will not be a source of friction on any inflammable gas that might be present.
- l). The workers engaged for cleaning the manholes/ sewers should be properly trained before allowing to work in the manhole.
- m). The workers shall be provided with Gumboots or non sparking shoes bump helmets and gloves non sparking tools safety lights and gas masks and portable air blowers (when necessary). They must be supplied with barrier cream for anointing the limbs before working inside the sewer lines.
- n). Workmen descending a manhole shall try each ladder stop or rung carefully before putting his full weight on it to guard against insecure fastening due to corrosion of the rung fixed to manhole well.
- o). If a man received a physical injury, he should be brought out of the sewer immediately and adequate medical aid should be provided to him.

- p). The extent to which these precautions are to be taken depend on individual situation but the decision of the Engineer-in-Charge regarding the steps to be taken in this regard in an individual case will be final.
- vi). The Contractor shall not employ men and women below the age of 18 years on the work of painting with products containing lead in any form. Wherever men above the age of 18 are employed on the work of lead painting, the following precaution should be taken:-
 - a). No paint containing lead or lead products shall be used except in the form of paste or readymade paint.
 - b). Suitable face masks should be supplied for use by the workers when paint is applied in the form of spray or a surface having lead paint is dry rubbed and scraped.
 - c). Overalls shall be supplied by the contractors to the workmen and adequate facilities shall be provided to enable the working painters to wash during and on the cessation of work.
- 9. An additional Clause (viii) (i) of Safety Code (iv) the Contractor shall not employ women and man below the age of 18 on the work of painting with product containing lead in any form. Wherever men above the age of 18 are employed on the work of lead painting, the following principles must be observed for such use :
 - i). While lead, sulphate of lead or product containing these pigment, shall not be used in painting operation except in the form of pastes or paint ready for use.
 - ii). Measures shall be taken, wherever required in order to prevent danger arising from the application of a paint in the form of spray.
 - iii). Measures shall be taken, wherever practicable, to prevent danger arising out of from dust caused by dry rubbing down and scraping.

- iv). Adequate facilities shall be provided to enable working painters to wash during and on cessation of work.
 - v). Overall shall be worn by working painters during the whole of working period.
 - vi). Suitable arrangement shall be made to prevent clothing put off during working hours being spoiled by painting materials.
 - vii). Cases of lead poisoning and suspected lead poisoning shall be notified and shall be subsequently verified by medical man appointed by competent authority of Institute.
 - viii). Institute may require, when necessary medical examination of workers.
 - ix). Instruction with regard to special hygienic precautions to be taken in the painting trade shall be distributed to working painters.
10. When the work is done near any place where there is risk of drowning, all necessary equipments should be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provision, should be made for prompt first aid treatment of all injuries likely to be obtained during the course of the work.
11. Use of hoisting machines and tackle including their attachment, anchorage and supports shall conform to the following standards or conditions :-
- i).
 - a). These shall be of good mechanical construction, sound materials and adequate strength and free from patent defects and shall be kept repaired and in good working order.
 - b). Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength, and free from patent defects.
 - ii). Every crane driver or hoisting appliance operator, shall be properly qualified and no person under the age of 21 years should be in charge of any hoisting machine including any scaffolding winch or give signals to operator.
 - iii). In case of every hoisting machine and of every chain ring hook, shackle swivel and pulley block used in hoisting or as means of suspension the safe working load shall

be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with the safe working load. In case of a hoisting machine having a variable safe working load each safe working load and the condition under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing.

- iv). In case of IISER Pune machines, the safe working load shall be notified by the Electrical Engineer-in-charge. As regards contractor's machines the contractors shall notify the safe working load of the machine to the Engineer-in-Charge whenever he brings any machinery to site of work and get it verified by the Electrical Engineer-in-Charge concerned.
- 12. Motors, gearing, transmission, electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safeguards. Hoisting appliances should be provided with such means as will reduce to the minimum the risk of accidental descent of the load. Adequate precautions should be taken to reduce to the minimum the risk of any part of a suspended load becoming accidentally displaced. When workers are employed on electrical installations, which are already energized, insulating mats, wearing apparel, such as gloves, sleeves and boots and may be necessary should be provided. The worker should not wear any rings, watches and carry keys or other materials which are good conductors of electricity.
- 13. All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in safe condition and no scaffold, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities should be provided at or near places of work.
- 14. These safety provisions should be brought to the notice of all concerned by display on a notice board at a prominent place of work spot. The person responsible for compliance of the safety code shall be named therein by the contractor.
- 15. To ensure effective enforcement of the rules and regulations relating to safety precautions the arrangements made by the contractor shall be open to inspection by the Labour Officer or Engineer-in-Charge or their representatives.
- 16. Notwithstanding the above clauses from (1) to (15) there is nothing in these to exempt the contractor from the operations of any other Act or Rules in force in the Republic of India.

(v) MODEL RULES FOR THE PROTECTION OF HEALTH AND SANITARY ARRANGMENTS FOR WORKERS EMPLOYED BY CONTRACTORS FOR THIS WORK.

1. APPLICATION

The rules shall apply to all buildings and construction works in which twenty or more workers are ordinarily employed or are proposed to be employed in any day during the period which the contract work is in progress.

2. DEFINITION

Work place means a place where twenty or more workers are ordinarily employed in connection with construction work on any day during the period during which the contract work is in progress.

3. FIRST-AID FACILITIES

(i) At every work place there shall be provided and maintained, so as to be easily accessible during working hours, First –aid boxes at the rate of not less than one box for 150 contract labour or part thereof ordinarily employed.

(ii) The First-aid box shall be distinctly marked with a red cross on white background and shall contain the following equipment:-

(a) For work places in which the number of contract labour employed does not exceed 50.

Each first-aid box shall contain the following equipments:

1. 6 small sterilized dressings.
2. 3 medium size sterilized dressings
3. 3 large size sterilized dressings
4. 3 large burn dressings
5. 1(30ml) bottle containing a two percent alcoholic solution of iodine

6. 1(30ml) bottle containing salvolatile having dose and mode of administration indicated on the label.
 7. 1 Snakebite lancet.
 8. 1(30ml) bottle of potassium permanganate crystals.
 9. 1 Pair scissors.
 10. 1 copy of first aid leaflet issued by the Director General, Factory Advice Service and Labour Institutes, Government of India.
 11. 1 Bottle containing 100 Tablets (Each of 5 gms)of asprin.
 12. Ointment for burns.
 13. A Bottle of suitable surgical antiseptic solution.
- a. For work places in which the number of contract labour exceed 50.

Each first-aid box shall contain the following equipments:

1. 12 small sterilized dressings
 2. 6 medium size sterilized dressings
 3. 6 large size sterilised dressings
 4. 6 large size sterilized burn dressings
 5. 6(15 gms) packets sterilized cotton wool.
 6. 1(60 ml.) bottle containing a two percent alcoholic solution iodine
 7. 1 (60ml.) bottle containing salvolatile having the dose and mode of administration indicated on the label.
 8. 1 roll of adhesive plaster
 9. snake bite lancet
 10. 1 (30gms.) bottle of potassium permanganate crystals.
 11. 1 pair scissors.
 12. 1 copy of the first-aid leaflet issued by the Director General Factory Advice Service and Labour Institutes/ Government of India.
 13. A bottle containing 100 tables (each of 5 gms.) of aspirin
 14. Ointment for burns
 15. A bottle of suitable surgical antiseptic solution.
- (iii) Adequate arrangements shall be made for immediate recoupment of the Equipment when necessary.

- (iv) Nothing except the prescribed contents shall be kept in the First-aid box.
- (v) The First-aid box shall be kept in charge of a responsible person who shall always be readily available during the working hours of the work place.
- (vi) A person in charge of the First-aid box shall be a person trained in First-aid treatment, in the work places where the number of contract labour employed is 150 or more.
- (vii) In work places where the number of contract labour employee is 500 or more and hospital facilities are not available within easy distance from the works. First-aid posts shall be established and run by a trained compounder. The compounder shall be on duty and shall be available at all hours when the workers are at work.
- (viii) Where work places are situated in places which are not towns or cities, a suitable motor transport shall be kept readily available to carry injured person or person suddenly taken ill to the nearest hospital.

4. DRINKING WATER

In every work place, there shall be provided and maintained at suitable places, easily accessible to labour, a sufficient supply of cold water fit for drinking.

Where drinking water is obtained from an intermittent public water supply, each work place shall be provided with storage where such drinking water shall be stored.

Every water supply or storage shall be at a distance of not less than 50 feet from any latrine drain or other source of pollution. Where water has to be drawn from an existing well which is within such proximity of latrine, drain or any other source of pollution, the well shall be properly chlorinated before water is drawn from it for drinking. All such wells shall be entirely closed in and be provided with a trap door, which shall be dust and waterproof.

A reliable pump shall be fitted to each covered well, the trap door shall be kept locked and opened only for cleaning or inspection which shall be done at least once a month.

5. WASHING FACILITIES

- (i) In every work place adequate and suitable facilities for the washing shall be provided and maintained for the use of contract labour employed therein .
- (ii) Separate and adequate cleaning facilities shall be provided for the use of male and female workers.
- (iii) Such facilities shall be conveniently accessible and shall be kept in clean and hygienic condition.

6 LATRINES AND URINALS

- (i) Latrine shall be provided in every work place on the following scale namely:
 - (a) Where female are employed, there shall be at least one latrine for every 25 females.
 - (b) Where male are employed, there shall be at least one latrine for every 25 males.

Provided that, where the number of males or females exceed 100,it shall be sufficient if there is one latrine for 25 males or females as the case may be up to first 100 ,one for every 50 thereafter.

- (ii) Every latrine shall be under cover and so partitioned off as to secure privacy, and shall have proper door and fastening.
- (iii) Construction of latrines: The inside walls shall be constructed of masonry or some suitable heat-resisting nonabsorbent materials shall be cement washed inside and outside at least once a year, latrines shall not be of a standard lower than borehole system.
- (iv) (a) Where workers of both sexes are employed , there shall be displayed outside each block of latrine and urinal, a notice in the language understood by the majority of the workers "For Men only" or "For Women only" as case may be.

(b)The notice shall also bear the figure of a man or of a woman, as the case may be.

- (v) There shall be at least one urinal for male workers up to 50 & one for female workers up to 50 employed at time, provided that where the number of male or female workmen, as the case may be exceeds 500, it shall be sufficient if there is one urinal for every 50 males or females up to the first 500 & one for every one 100 or part thereafter.
- (vi) (a) The latrines & urinals shall be adequately lighted & shall be maintained in a clean & sanitary condition at all times.

(b) Latrines & urinals other than those connected with flush sewage system shall comply with the requirements of the Public Health Authorities.
- (vii) Water shall be provided by means of tap or otherwise so as to be conveniently accessible in or near the latrines & urinals.
- (viii) Disposal of excreta: -unless otherwise arranged for by the local sanitary authority, arrangements for proper disposal of excreta by incineration at the workplace shall be made by means of a suitable incinerator. Alternately excreta may be disposed of by putting a layer of night soil at the bottom of a pucca tank prepared for the purpose & covering it with a 15 cm. Layer of waste or refuse & then covering it with layer earth for a fortnight (when it will turn to manure)
- (ix.) The Contractor shall at his own expense, carry out all the instructions issued to him by the Engineer-in- Charge to effect proper disposal of night soil and other conservancy work in respect of contractor's workmen or the employees on the site. The contractor shall be levied by Municipal or Cantonment Authority for execution of such on his behalf.

7 PROVISION OF SHELTER DURING REST

At every place there shall be provided, free of cost, four suitable sheds, two for meals and the other two for rest separately for the use of men and women labour. The height of each shelter shall not be less than 3 meters (10 ft.) from the floor level to the lowest part of the roof. These shall be kept clean and the space provided shall be on the basis of 0.6 sq.m. (6 sft.) per head.

Provided that the Engineer-in-Charge may permit subject to his satisfaction, a portion of the building under construction or other alternative accommodation to be used for the purpose.

8 CRECHES

- (i) At every work place, at which 20 or more women worker are ordinarily employed, there shall be provided two rooms of reasonable dimensions for the use of their children under at the age of six years. One room shall be used as a play room for the children and the other as their bedroom. The rooms shall be constructed with specifications as per clause 19H (ii) a, b & c.
- ii) The rooms shall be provided with suitable and sufficient openings in for light and ventilation. There shall be adequate provision of sweepers to keep the places clean.
- iii) The contractor shall supply adequate number of toys and games in the playroom and sufficient number of cots and bedding in the bedroom.
- iv) The contractor shall provide one Ayaa to look after the children in the crèche when, the number of women workers does not exceed 50 and two when the number of women workers exceed 50.
- v) The use of the rooms earmarked as crèches shall be restricted to children, their attendants and mothers of the children.

9 CANTEEN

- (i) In every work place where the work regarding the employment of contract labour is likely to continue for six months and where in contract labour numbering one hundred or more are ordinarily employed an adequate canteen shall be provided by the contractor for the use of such contract labour.
- (ii) The canteen shall be maintained by the contractor in an efficient manner.
- (iii) The canteen shall consist of at least a dining hall, kitchen, store room, pantry and washing places separately for workers and utensils.
- (iv) The canteen shall be sufficiently lighted at all times when any person has access to it.

The floor shall be made of smooth and impervious materials and inside walls shall be lime-washed or colure washed at least once in each year.

Provided that the inside walls of the kitchen shall be lime-washed every four

months.

- (vi) The premises of the canteen shall be maintained in a clean and sanitary condition.
 - (vii) Waste water shall be carried away in suitable covered drains and shall not be allowed to accumulate so as to cause a nuisance.
 - (viii) Suitable arrangements shall be made for the collection and disposal of garbage.
 - (ix) The dining hall shall accommodate at a time 30% of the contract labour working at a time.
 - (x) The floor area of dining hall excluding the area occupied by the service counter any furniture except tables and chairs shall not be less than one square meter (10sft) per diner to be accommodated as per prescribed as prescribed in sub-Rule 9.
 - (xi).
 - (a) A portion of dining hall and service counter shall be partitioned off and reserved for women worker in proportion to their number.
 - (b) Washing place for women shall be separate and screened to secured privacy
 - (xii) Sufficient tables stools, chair or benches shall be available for the number of diners to be accommodated as prescribed in sub-Rule 9.
 - (xiii) (a) 1. They shall be provided and maintained sufficient utensils crockery, furniture and any other equipments necessary for the efficient running of the canteen
 - 2. The furniture utensils and other equipment shall be maintained in a clean &hygienic condition.
 - (b) 1. Suitable clean clothes for the employees serving in the canteen shall be provided and maintained.
 - 2. A service counter, if provided, shall have top of smooth and impervious material.
 - 3. Suitable facilities including an adequate supply of hot water shall be provided for the cleaning of utensils and equipments.
- (xiv) The food stuffs and other items to be served in the canteen shall be in conformity with the normal habits of the contract labour.

- (xv) The charges for food stuffs, beverages and any other items served in the canteen shall be based on 'No profit, No loss' and shall be conspicuously displayed in the canteen.
- (xvi) In arriving at the price of foodstuffs, and other article served in the canteen, the following items shall not be taken in to consideration as expenditure namely.
 - (a) The rent of land and building.
 - (b) The depreciation and maintenance charges for the building and equipments provided for the canteen.
 - (c) The cost of purchase, repairs and replacement of equipments including furniture, crockery, cutlery and utensils.
 - (d) The water charges and other charges incurred for lighting and ventilation.
 - (e) The interest and amounts spent on the provision and maintenance equipments provided for the canteen.
- (xvii) The accounts pertaining to the canteen shall be audited once every 12 months by registered accountants and auditors

10. ANTI MALARIAL PRECAUTIONS:-

The contractor shall at his own expense, conform to all anti- material instructions given to him by Engineer –in-Charge including the filling up of any borrow pits which may have been dug by him.

- 11** The above rules shall be incorporated in the contracts and in notices inviting tenders and shall form an integral part of the contracts .

12 AMENDMENTS.

Government may, from time to time, add to or amend these rules and issue directions-it may consider necessary for purpose of removing any difficulty which may arise in the administration thereof

(vi) Contractor's Labour Regulations

1. DEFINITIONS

- i. Workman means any person employed by IISER Pune or its contractor directly or indirectly through a subcontractor with or without the knowledge of the IISER Pune to do any skilled, semiskilled or unskilled manual, supervisory, technical or clerical work for hire or reward, whether the terms of employment are expressed or implied but does not include any person:-
 - a) Who is employed mainly in a managerial or administrative capacity : or
 - b) Who, being employed in a supervisory capacity draws wages exceeding five hundred rupees per mensem or exercises either by the nature of the duties attached to the office or by reason of powers vested in him, function mainly of managerial nature: or
 - c) Who is an out worker, that is to say, person to whom any articles or materials are given out by or on behalf of the principal employers to be made up cleaned, washed, altered, ornamental finished, repaired adopted or otherwise processed for sale for the purpose of the trade or business of principal employers and the process is to be carried out either in the home of the out worker or in some other premises, not being premises under the control and management of principal employer.

No person below age of 14 years shall be employed to act as a workman.

- ii) **Fair Wages** means wages whether for time or piece work fixed and notified under the provisions of the Minimum Wages Act from time to time.
 - iii) **Contractors** shall include every person who undertakes to produce a given result other than a mere supply of goods or articles of manufacture through contract labour or who supplies contract labour for any work and includes a subcontractor.
 - iv) **Wages** shall have the same meaning as defined in the Payment of Wages Act.
2. i) Normally working hours of an adult employee should not exceed 9 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.
- ii) When an adult worker is made to work for more than 9 hours on any day or for more than 48 hours in any week, he shall be paid over time for the extra hours put in by him at double the ordinary rate of wages.
 - iii) a) Every worker shall be given a weekly holiday normally on a Sunday, in accordance with the provisions of the Minimum Wages (Central) Rules 1960 as amended from time to time irrespective of whether such worker is governed by the Minimum Wages Act or not.

- b) Where the minimum wages prescribed by the Government under the Minimum Wages Act are not inclusive of the wages for the weekly day of rest, the worker shall be entitled to rest day wages at the rate applicable to the next preceding day, provided he has worked under the same contractor for a continuous period of not less than 6 days.
- c) Where a contractor is permitted by the Engineer-in-Charge to allow a worker to work on a normal weekly holiday, he shall grant a substituted holiday to him for the whole day on one of the five days immediately before or after the normal weekly holiday and pay wages to such worker for the work performed on the normal weekly holiday at overtime rate.

3. DISPLAY OF NOTICE REGARDING WAGES ETC.

Contractor shall before he commences his work on contract , display and correctly maintain and continue to display and correctly maintain in a clear and legible condition in conspicuous places on the work , notices in English and in local Indian languages spoken by the majority of the workers giving the minimum rates of wages fixed under minimum wages acts, the actual wages being paid, the hours of work for which such wages are earned, wages periods, dates of payments of wages and other relevant information as per appendix 'III' .

4. PAYMENT OF WAGES.

- i. The contractor shall fix wage periods in respect of which wages shall be payable
- ii. No wage period shall exceed one month.
- iii. The wages of every person employed as contract labour in an establishment or by contractor where less than one thousand such person are employed shall be paid before expiry of seventh day & in other cases before expiry of tenth day after the last day of period in respect of which the wages are payable
- iv. Where the employment of any worker is terminated by or on behalf of the contractor the wages earned by him shall be paid before the expiry of the second working day from the date on which his employment is terminated.
- v. All payment of wages shall be made on a working day at the work premises and during the working time and on a date notified in advance and in case the work is completed before the Expiry of the wage period, final payment shall be made within 48 hours of the last working day.
- vi. Wages due to every worker shall be paid to him direct or to other person authorized by him in this behalf.
- vii. All wages shall be paid in current coin or currency or in both.
- viii. Wages shall be paid without any deductions of any kind except those specified by the Central Government by general or special order in this behalf or permissible

under the Payment of Wages Act 1956.

- ix. A notice showing the wages period and the place and time of disbursement of wages shall be displayed at the place of work and a copy sent by the contractor to the Engineer-in-Charge under acknowledgment.
- x. It shall be the duty of the contractor to ensure the disbursement of wages in the presence of the Engineer-in-charge or any other authorized representative of the Engineer-in-Charge who will be required to be present at the place and time of disbursement of wages by the contractor to workmen.
- xi. The contractor shall obtain from the Engineer-in-charge or any other authorized representative of the Engineer-in-Charge as the case may be, a certificate under his signature as the end of the entries in the "Register of wages" or the "Wage cum-Muster Roll " as the case may be in the following from :-

"Certified that the amount shown in column No----- has been paid to the workman concerned in my presence on ----- at -----"

5. FINES AND DEDUCTIONS WHICH MAY BE MADE FROM WAGES

- (i) The wages of a worker shall be paid to him without any deduction of any kind except the following
 - (a) Fines
 - (b) Deduction for absence from duty i.e. from the place or the places where by the terms of his employment he is required to work. The amount of deduction shall be in proportion to the period for which he was absent.
 - (c) Deduction for damage to 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 his neglected or default.
 - (d) Deduction for recovery of advance or for adjustment of overpayment of wages, advances granted shall be entered in a register.
 - (e) Any other deduction which the central government may from time to time allow.
- (ii) No fine should be imposed on any worker save in respect of such acts and omissions on his part have been approved of by the Chief Labour Commissioner.

Note:- An approved list of Acts & Omissions for which fine can be imposed is enclosed at Appendix-X

- (iii) No fine shall be imposed on a worker and no deduction for damage and loss shall be made from his wages until the worker has been given opportunity of showing cause against such fines or deductions.
- (iv) The total amount of fine which may be imposed in any one wage period on a worker shall not exceed an amount equal to three paise in a rupee of the total wages, payable to him in respect of that wage period.
- (v) No fine imposed on any worker shall be recovered from him by installment, or after the expiry of sixty days from the date on which it was imposed.
- (vi) Every fine shall be deemed to have been imposed on the day of the act or omission in respect of which it was imposed.

6. LABOUR RECORDS

- (i) The contractor shall maintain a **Register of persons employed** on work on contract in Form XIII of the CL (R&A) Central Rules 1971 (Appendix IV)
- (ii) The contractor shall maintain a **Muster** Roll register in respect of all workmen employed by him on the work under Contract in Form XVI of the CL (R&A) Rules 1971 (Appendix V).
- (iii) The contractor shall maintain a **Wage Register** in respect of all workmen employed by him on the work under contract in Form XVII of the CL (R&A) Rules 1971 (Appendix VI).
- (iv) **Register of accident** - The contractor shall maintain a register of accidents in such form as may be convenient at the work place but the same shall include the following particulars:
 - a) Full particulars of the labourers who met with accident
 - b) Rate of Wages
 - c) Sex
 - d) Age
 - e) Nature of accident and cause of accident.
 - f) Time and date of accident
 - g) Date and time when admitted in Hospital,
 - h) Date of discharge from the Hospital
 - i) Period of treatment and result of treatment.
 - j) Percentage of loss of earning capacity and disability as assessed by Medical officer
 - k) Claim required to be paid under Workmen's Compensation Acts.
 - l) Date of payment of compensation.

- m) Amount paid with details of the person to whom the same was paid.
- n) Authority by whom the compensation was assessed.
- o) Remarks

The contractor shall maintain a **Resister of Fines** in the in the form XII of CL(R&A)Rules 1971(Appendix-XI)

The Contractor shall display in good condition and in conspicuous place of work the approved list of acts and omission for which fine can be imposed (Appendix-X).

The contractor shall maintain a **Resister of deduction for damage or loss** in Form XX of the CL(R&A) Rules 1971(Appendix-XII)

The contractor shall maintain a Register of **Advances** in Form XXIII of the CL (R&A) Rules 1971 (Appendix-XIII).

The contractor shall maintain a Register of Overtime in Form XXIII of the CL (R&A) Rules 1971 (Appendix-XIV).

7.ATTENDANCE CARD-CUM-WAGE SLIP

- i) The contractor shall issue an **Attendance card-cum-wage slip** to each workman employed by him in the specimen format (Appendix-VII)
- ii) The card shall be valid for each wage period.
- iii) The contractor shall mark the attendance of each workman on the card twice each day, once at the commencement of the day and again after the rest interval, before he actually starts work.
- iv) The card shall remain in possession of the worker during the wage period under reference.
- v) The contractor shall complete the wage slip portion on the reverse of the card at least a day prior to the disbursement of wages in respect of the wage period under reference.
- vi) The contractor shall obtain the signature or thumb impression of the worker on the wage slip at the time of disbursement of wages and retain the card with himself.

8. EMPLOYMENT CARD

The contractor shall issue an **Employment Card** in Form XIV of the CL (R&A) Central Rules 1971 to each worker within three days of the employment of the (Appendix-VIII).

9. SERVICE CERTIFICATE

On termination of employment for any reason whatsoever the contractor shall issue to the workman whose services have been terminated, a **Service certificate** in Form XV of the CL (R&A) Central Rules 1971 (Appendix-IX)

10. PRESERVATION OF LABOUR RECORDS

All records required to be maintained under Regulation Nos. 6&7 shall be preserved in original for a period of three years from the date of last entries made in them and shall be made available for inspection by the Engineer-in- Charge or Labour Officer or any other officers authorized by the Ministry of Urban Development in this behalf.

11. POWER OF THE LABOUR OFFICER TO MAKE INVESTIGATION OR INQUIRY

The Labour officer or any person authorized by Central Government on their behalf shall have power to make to make enquiry with a view to ascertaining & enforcing due & proper observance of Fair wage Clauses and the Provisions of these Regulations. He shall investigate in to any complaint regarding the default made by the contractor or subcontractor in regard to such provision.

12. REPORT OF LABOUR OFFICER.

The Labour Officer or other persons authorized as aforesaid shall submit a report of result of his investigation or enquiry to the Director IISER Pune concerned indicating the extent, if any, to which the default has been committed with a note that necessary deductions from the contractor's bill be made and the wages and other dues be paid to the labourers concerned. In case appeal is made by the contractor under Clause 13 of these regulation, actual payment to labourers will be made by Director IISER Pune after the Engineer-in-Charge has given his decision on such appeal.

- i) The Director IISER shall arrange payments to the labour concerned within 45 days from the receipt of the report from the Labour Officer or the Engineer-in-Charge as the case may be.

13. APPEAL AGAINST THE DECISION OF LABOUR OFFICER

Any person aggrieved by the decision and recommendations of the Labour Officer or other person so authorized may appeal against such decision to the Engineer-in-Charge concerned within 30 days from the date of decision, forwarding simultaneously a copy of his appeal to the Director IISER concerned but subject to such appeal, the decision of the officer shall be final and binding upon the contractor.

14. PROHIBITION REGARDING REPRESENTATION THROUGH LAWYER

- i) A. workman shall be entitled to be represented in any investigation or enquiry under these regulations by:
 - a) An officer of a registered trade union of which he is a member.
 - b) An officer of a federation of trade unions to which the trade union referred to in Clause (a) is affiliated.
 - c) Where the employer is not a member of any registered trade union, by an officer of a registered trade union, connected with the industry in which the worker is employed or by any other workman employed in the industry in which the worker is employed.
- ii) An employer shall be entitled to be represented in any investigation or enquiry under these regulations by
 - b) An officer of an association of employers of which he is a member.
 - c) An officer of a federation of associations of employers to which association referred to in Clause (a) is affiliated.
 - d) Where the employers is not a member of any association of employers, by an officer of association of employer connected with industry in which employer engaged or by any other employer, engaged in the industry in which the employer is engaged.
- iii) No party shall be entitled to be represented by legal practitioner in any investigation or enquiry under these regulations.

15. INSPECTION OF BOOKS AND SLIP:-

Contractor shall allow inspection of all the prescribed labour records to any of his workers or to his agent at a convenient time and place after due notice is received or to the Labour Officer or any other person, authorized by the Central Government on his behalf.

16. SUBMISSION OF RETURNS

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

17. AMENDMENTS

The Central Government may from time to time add to or amend the regulation and on any question as to the application /interpretation or effect of those regulations the decision of the Engineer-in-Charge concerned shall be final.

APPENDIX (xv) -CLAUSE 25

APPENDIX XV Notice for appointment of Arbitrator [Refer Clause 25]

To

The Chairman

Building and Works Committee

IISER Pune.

Dear Sir,

In terms of clause 25 of the agreement, particulars of which are given below, I/we hereby give notice to you to appoint an arbitrator for settlement of disputes mentioned below:

1. Name of applicant
2. Whether applicant is Individual/Prop. Firm/Partnership Firm/Ltd. Co.
3. Full address of the applicant
4. Name of the work and contract number in which arbitration sought
5. Name of the Division which entered into contract
6. Contract amount in the work
7. Date of contract
8. Date of contract Date of initiation of work
9. Stipulated date of completion of work
10. Actual date of completion of work (if completed)
11. Total number of claims made
12. Total amount claimed
13. Date of intimation of final bill (if work is completed)
14. Date of payment of final bill (if work is completed)
15. Amount of final bill (if work is completed)
16. Date of request made to SE for decision
17. Date of receipt of SE's decision
18. Date of appeal to you
19. Date of receipt of your decision.

Specimen signatures of the applicant

(only the person/authority who signed the contract should sign)

I/We certify that the information given above is true to the best of my/our knowledge. I/We enclose following documents.

1. Statement of claims with amount of claims.
- 2.

Yours faithfully

Copy in duplicate to:

Engineer in Charge.

(vi) PROFORMA OF SCHEDULES

(Operative Schedules to be supplied to each intending tenderer)

SCHEDULE 'A'

Schedule of quantities

Enclosed as section IV

SCHEDULE 'B'

Schedule of materials to be issued to the contractor.

S.No	Description of item	Quantity	Rates in figures & words at which the material will be charged to the contractor	Place of issue
1	2	3	4	5
	NIL			

Tools and plants to be hired to the contractor

S.No	Description	Hire charges per day	Place of issue
1	2	3	4
	NIL		

Extra schedule for specific requirements/document for the work, if any. -- NIL

Name of work: Supply and Installation Lab benches, Fume Hoods and exhaust system in GF Chemistry block, Main Building at IISER Pune.

NIT- 3/ IISER/PUNE/2015-16

Estimated cost put to tender : **Rs 128 lakh**

Period of completion: 2(Two) months

(i) Earnest money : Rs 2,56,000/-

(ii) Performance Guarantee 5% of tendered value.

(iii) Security Deposit 5% of tendered value.

SCHEDULE 'C'

GENERAL RULES & DIRECTIONS :

Officer inviting tender

Superintending Engineer
IISER, Pune.

Maximum percentage for quantity of items of work

to be executed beyond which rates are to be

determined in accordance with Clauses 12.2 & 12.3: See below

Definitions:

2(v) Engineer-in-Charge

Superintending Engineer
IISER, Pune.

2(viii) Accepting Authority

The Director, IISER, Pune

2(ix) Percentage on cost of materials and labour
to cover all overheads and profits

15%

2(x) Standard Schedule

Schedule of quantities
Schedule of Rates 2014
(CPWD)
Schedule of Rates
(Departmental)IISER Pune

2(viii) Department Indian institute of Science Education
& Research, IISER, Pune

2(ix) Standard contract Form Item rate tender form & Contract of works

Clause 1

- (i) Time allowed for submission of Performance Guarantee
from the date of issue of letter of acceptance 15.....days
- (ii) Maximum allowable extension beyond the period
provided (i) above 7.....days

Clause 2

Authority for fixing compensation The Director Indian institute of Science
under clause 2. Education & Research, IISER Pune

Clause 2 A

Whether Clause 2A shall be applicable Not Applicable

Clause 5

Number of days from the date of issue of letter
of award works for reckoning date of start 15... days

Mile stone(s) as per table given below:-

Table of Mile stones(s)

SL No.	Description of Milestone (Physical)	Time allowed in days/months (From date of start)	Amount to be withheld in case of non achievement of Milestone
1	Supply of complete furniture for Lab and completion of ducting work	45 days	3.00 % of tender value
2	Complete Installation Lab furniture and testing of the fumehoods.	60 days	2.00 % of tender value

Time allowed for execution of work **2 (Two) Months**

Authority to decide:

(i) Extension of time..... The Director Indian institute of Science Education & Research, IISER Pune.

(ii) Rescheduling of mile stones..... Engineer in charge

Clause 6, 6 A

Clause applicable – (6 or 6A)

6A

Clause 7

Gross work to be done together with net payment

/adjustment of advances for material collected,

if any, since the last such payment

for being eligible to interim payment

Rs 100 Lakh

Clause 10

List of testing equipment to be provided by the contractor at site lab. As per work requirements.

Clause 10 B

Whether Clause 10 B shall be applicable Not applicable

Clause 10 C

Component of labour expressed as percent of value of work = Not Applicable

Clause 10 CA

Not Applicable

Material covered Nearest Materials (other than Base price of all the
Under this clause cement, reinforcement bars and the materials covered
Structural steel) for which all India under clause 10CA*

Wholesale price Index to be followed

1Nil

CLAUSE 10 CC

NOT Applicable

Clause 10 CC to be applicable in contracts with stipulated period
of completion exceeding the period shown in next column **18 (Eighteen) months**

Schedule of component of the other Materials, Labour, POL etc. for price escalation.

Component of Cement – expressed as percent of total value of work.	XcNIL %
Component of Steel- expressed as percent of total value of work.	Xs
Component of civil (except cement & steel) /Electrical construction Materials expressed as percent of total value of work.	Xm %
Component of Labour :- expressed as percent of total value of work.	Y
Component of P.O.L- expressed as percent of total value of work.	Z%

Clause 11

Specifications to be followed

- 1) For Electrical works Part-I 2005 & Part-II External 1995, with up to date correction slips. CPWD specification 2009 Volume 1 & II with up to date correction slips for civil related work.
- 2) Technical specifications given in the tender.
- 3) Indian Standard Specification
- 4) Manufactures specifications
- 5) Engineer In charge decision.

Clause 12

12.2 & 12.3	Deviation Limit beyond which clauses	(±) 30 %
	12.2 & 12.3 shall apply for building	

Super structure work & other Associated

Electro-mechanical works

12.5 Deviation Limit beyond which clauses (±) 100%

12.2 & 12.3 shall apply for foundation work

Clause 15

Competent Authority for deciding Director Indian institute of Science
reduced rates Education &. Research, IISER Pune

Clause 17

List of mandatory machinery, tools & plants - NIL

to be deployed by the contractor at site :

Clause 25

Constitution of Dispute Redressal Committee (DRC) Chairman - Prof. L S Shashidhara

Members: (1) Mr Sushant Baliga, Retd. ADG CPWD, New Delhi (2) Mr K S Wagh, Retd. Chief
Engineer, IIT Mumbai.

Clause 34 (i)

Requirement of Technical Representative(s) and recovery rate to be affected from contractor bill for non-deployment of technical staff at site of work:

S.No.	Technical Representative(s)	Qualification & Discipline of the Technical representative(s)	Minimum Experience of the Technical representative(s)	Minimum Numbers to be employed at site	Rate at which recovery shall be made from the contractor in the event of not fulfilling provision of clause 36(i)	
					Figure	Words
1	Project Manager (Full duration of project)	BE (electrical/ Mechanical)	5 years	1	60000	Sixty thousand only
2	Site Engineer mechanical/Electrical (Full duration of project)	Diploma in Electrical/Mechanical Engineering	5 years	1	35000	Thirty five thousand only

ADDITIONAL CONDITIONS OF CONTRACT

1. GENERAL

These special conditions supplement the General Conditions of Contract and shall be considered as part of the contract document. Where these special instructions are at variance with the corresponding conditions, stipulations, and specifications elsewhere in the tender document, these special instructions shall prevail.

2. SCOPE OF WORK

The scope of work is described in Section-V, Technical Specifications and Section-VIII, Schedule of Quantities and Rates.

3. LAYOUT

The contractor shall layout his work from existing structure established by IISER and shall be responsible for all measurement and survey work in connection therewith. The contractor shall at his own expenses furnish all stakes, templates, platforms, equipment, arrange labour that may be required in setting or laying out any part of the work. The contractor shall be held responsible for proper execution of the work to such lines and grades as may be established or indicated in the drawings and specifications.

4. SPECIFICATIONS TO BE FOLLOWED

The work shall be carried out strictly in accordance with the Contract Specification. In the absence of any specification for any work or material, relevant Indian Standard Specifications or CPWD specification will be applicable and where no Indian Standard Specification exists, relevant International Standard Specifications will apply.

Further, in absence of any mention of specification in these specifications provided for the contract regarding work, material or workmanship, the decision of adaptability of relevant IS, BSS, American Standard Specifications or International standard etc, will be entirely at the discretion of Engineer in charge-in-charge and the same shall be binding on the Contractor.

5. CLARIFICATIONS

The tenderer shall note that if any clarifications regarding specifications, conditions of contract, schedule of quantities, scope of work etc. are required, the tenderer should get it clarified before submission of the tender.

No claim on accounts of any ambiguity in any respect will be entertained after the submission of the tender

6 QUANTITIES

The schedule of quantities indicated in Section-VIII is only indicative and may vary. Payment will be made for actual quantities executed. Contractor's quoted rate shall remain firm for all such variation limits as specified under clause 10 of Section-III General Conditions of Contract of the tender.

7 CARE IN SUBMISSION OF TENDERS

Before submitting the tender, the tenderer will be deemed to have satisfied himself by actual inspection of the site, locality of the works, the geological and weather conditions of the site, approaches, availability of materials, camping facilities for the labour force etc. and ensure that all conditions liable to be encountered during the execution of the work are taken into account and that, the rates he enters in the tender form are adequate and all inclusive to comply with the provisions of the special and general conditions of the contract for the completion of the works to the satisfaction of the Engineer in charge.

8 SITE INSPECTION

The tenderer shall ensure that he has satisfied himself as to the nature and location of the work i.e. **IISER Pune campus located Dr.Homi Bhabha Road , Pahsan , Pune-411008 "** the general and local conditions, particularly those bearing upon transportation, disposal, handling and storage of materials, availability of labour, water, electric power, roads and uncertainties of weather, or similar physical conditions of the site, the conformation and conditions of the ground character, the quality and quantities of surface and sub-surface materials to be encountered, including the sub-soil water level, the character of equipment/facilities needed, preliminary to and during the progress of the work, and all other matters upon which information is reasonable obtainable and which can in any way affect the work or his cost thereof under contract. Any failure of the contractor to acquaint himself with all the available information concerning these conditions will not relieve him of the responsibility of estimating properly, the difficulty or cost of successfully performing the work.

The tenderers should visit the site at own cost and familiarize themselves thoroughly with the site conditions, before submitting their tenders. Non-familiarity with site conditions shall not be considered as a reason for extra claims or for not carrying out the work in strict conformity with the drawings and specifications.

9 SPECIFICATIONS AND DRAWINGS

9.1 The work shall conform to the contract specifications enclosed in Section-

- 9.2 The work shall also conform to the enclosed drawings in Section-VI, and to such other drawings relating thereto as may be furnished from time to time by the Engineer in charge in explanation of details or modifications, including such modifications as the Engineer in charge may consider necessary to meet the conditions encountered during the execution of the work.
- 9.3 It shall be understood that drawings furnished to the contractor shall be interpreted by the use of given dimension and nomenclature only and that the drawing shall not be scaled.
- 9.4 Prior to the execution of the work, the contractor shall check all drawings and shall immediately report all errors, discrepancies and/or omissions discovered therein to the Engineer in charge. All such errors, discrepancies and/or omissions will be adjusted by the Engineer in charge. Any adjustment made by the contractor without prior approval of the Engineer in charge shall be at his own risk and the settlement of any complications arising from such adjustment shall be made by the contractor at his own expense.
- 9.5 In case of difference between drawings and specifications, clause 8.1 Definition of Condition of Contract in General Conditions of Contract (GCC) of Section III shall be followed.

10 CONSTRUCTION PROGRAMME

- 10.1 The time allowed for carrying out the work as entered in the tender 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 the 15th days from the date of issue of work order to the Contractor. All work shall be completed in accordance with approved construction schedule, which forms a part of the contract. Monsoon or inclement weather will not be considered for extension of time.

On award of the work, the contractor shall submit a construction time schedule, keeping the phasing of the work for approval of the Engineer in charge-in Charge. The contractor shall strictly adhere to such an approved Programme.

- 10.2 The Contractor is required to record the hindrance if any, while carrying out the construction work as well as executing the work in respect of design, engineering, procurement and supply related issues, in the hindrance register maintained by the Engineer-in-charge. The Contractor shall record hindrances in the Hindrance Register(s) and get it approved/endorsed by the Engineer-in-Charge, as the case may be.
- 10.3 Hindrances recorded in the register shall form the basis for granting extension of time. The format of the hindrance register is **below mentioned**.

FORMAT FOR 'HINDRANCE REGISTER'

Sl. No	Nature of hindrance	Date of occurrence	Date of removal	Period of hindrance	Overlap-ping period if any	Net extension	Dated sign of Contract-or with name	Dated sign of Engr. with name	Remarks

11 SECURITY RULES

The contractor shall follow at site all security rules as may be framed by the IISER from time to time regarding removal/movement of materials and equipment from site, issue of identity cards, control of entry of personnel and all similar matters.

The contractor and his personnel shall abide by all security measures imposed by the Engineer in charge or his duly authorized representative from time to time any other statutory orders. Nothing extra will be payable on account of stoppage/hindrance of the work.

The contractor, his employees and agents shall not disclose any information or drawings furnished to him by the IISER Any drawings, reports and other information prepared by the contractor/by the Corporation or jointly by both for the execution of the contract shall not be disclosed without the prior written approval of the Engineer in charge. No photographs of the works or plant within the site premises will be taken without the prior written approval of the Engineer in charge.

12. REPLACEMENT OF METRIC UNITS BY BRITISH EQUIVALENTS

Wherever dimensions for materials, fittings fixtures to be used in work are given in metric units, materials with nearest British dimensions may be used with specific prior approval of the Engineer in charge. No extra claim or variation in the rates will be entertained on account of this change.

13 MAINTENANCE OF CLEAN SITE CONDITION

During the construction stage the Contractor shall keep the entire site in neat and tidy conditions by proper housekeeping & stacking of construction materials at the construction site and will remove all debris and waste materials from the site regularly. He will also remove the water in the buildings and maintain the site in hygienic condition. Accumulation and piling of construction materials /debris will not be permitted except only at the locations approved for this purpose from time-to-time.

Cost of maintaining the clean site condition is deemed to have been included in the rates quoted by the contractor.

14. CONTRACTOR TO PROVIDE LABOUR AND ASSISTANCE

The contractor shall provide necessary labour and assistance to the Engineer in charge for checking layout, alignments, levels and other survey works connected with execution of work and also for taking measurement for finished works at no extra cost to the Corporation.

15. MODE OF MEASUREMENT

Mode of measurement when not specified in the tender shall be in accordance with relevant Indian Standard Specifications and where not spelt out in IS; Engineer in charge's decision shall be final and binding on the contractor.

16. VALIDITY OF RATE:

The tenderer shall note that the tender rates quoted by him shall be valid for the period of contract from the date of opening of the tender

The rate for all items of work shall unless clearly specified otherwise, include cost of all labour, materials, tools & plant appliances, transport, equipment, taxes, duties, contractor's supervision, overheads, profits and all that are necessary for the satisfactory completion of the job.

The rates quoted by the tenderer in the schedule shall be inclusive of sales tax on all materials, Value added tax, Royalty octroi duty and/or other duties levied by the Central State Government or other public bodies. Unless otherwise stated in the schedule of quantities, rates for all items shall be for the complete work including supplying and fixing of all materials, etc.

The contractor, when called for by IISER shall furnish detailed analysis in support of the rates quoted by him against each item of the tender. IISER reserves the right to utilize the analysis thus supplied in setting any deviations or claims arising on this contract

The rates for the items included in the Section-VIII 'Schedule of Quantities and Rates' are inclusive of all material, labour, plant and equipment, transport and storage of materials and equipment, necessary supervision by Contractor's / manufacturers authorized representatives, overheads, profits and all incidental expenditures(s) as may be required for the complete and satisfactory execution of the work covered under this contract.

17 LAND FOR SITE ESTABLISHMENT& LABOUR

- 17.1 No land will be made available by IISER for Setting up of contractor's labour camp. Contractor should make his own arrangement of land for labour camp anywhere outside IISER Premises. Rent for the land and cost of transport of labour to site daily to and fro from the labour camp is deemed to have included in the rates quoted for the work.
- 17.2 IISER shall give suitable and limited land within the premises for Contractor's timber and steel yards, aggregate yards, workshop, office, site office, toilets, godowns and for erection of equipments etc, required for the work. Qualified vendor shall submit the layout plan showing all the space requirements to IISER before the commencement of work for their prior approval.
- 17.3 Contractor shall be solely responsible for security and safe storage of all his materials and all his establishments.
- 17.4 The Contractor shall arrange adequate facilities for medical aid and treatment for his staff and workers engaged on the project, both at work site, as well as at the labour camp.

18 WATER SUPPLY

18.1 The contractor shall make his own arrangements for construction water supply and water to meet the domestic requirements for his employees/ workers. Contractor may be permitted to drill bore wells for construction, domestic and fire fighting water requirement by IISER in their premises However permission if any required from local Authorities for use of underground water shall be obtained by contractor at no extra cost to IISER

18.2. The contractor shall at his own cost arrange to draw and distribute the water and shall lay and maintain water supply lines to his construction site. He shall construct suitable storage tanks to meet at least 4 day's requirement at work site. To ensure adequate water supply at all levels on the works for the purpose of construction, he shall install necessary pumps, for delivery of water at all levels with requisite pressure. Water supply scheme proposed by the contractor shall be subjected to the approval of the Engineer in charge. The contractor shall provide necessary number and capacity of electrical/diesel operated high lift pumps to ensure supply of water at the highest point of the structure. To ensure uninterrupted water supply in the event of power failure, contractor is directed to install diesel pumps as a stand by measure. The contractor shall ensure availability of potable quality of water as specified and required for all his construction activities at all times. Chemical analysis of the water likely to be available at site is enclosed in Annexure 1. This information is for general guidance of the tenderer, who will have to verify the quality before quoting to assess the cost for arranging construction water. In general the contractor

shall make his own arrangements for water supply for labour camp. The Contractor shall make his own arrangement to receive, treat, test, pump and distribute the water required for the Camp. He shall construct at his own cost storage tank(s) of adequate capacity to meet 4 day's requirement. He shall also lay at his own cost the distribution lines and maintain the same during the currency of the contract.

19. FIRE FIGHTING

19.1 The contractor shall make his own arrangements for fire fighting and fire prevention both at the construction site and at his camp. He shall have storage of adequate capacity dedicated to meet the fire fighting and fire prevention requirement, both at the construction site and labour camp at his own cost

19.2 The equipment and piping required for this purpose will be installed and maintained by the contractor during the entire construction period till the works are handed over to the IISER. Notwithstanding this, the contractor shall be entirely responsible for the consequences arising due to fire, if it occurs during the period of construction and no payment will be made, or claim will be entertained on any account by the IISER. Fire fighting lines shall not be used for any other purpose. The quoted rates shall be deemed to have taken into account these measures for Fire Fighting / Fire Prevention.

20 SUPPLY OF ELECTRIC POWER

20.1 No electric power supply for construction as well as for labour camp shall be provided by IISER. Contractor may apply to concerned Authorities (MSEDCL) for temporary connection for construction and pay the charges to MSEDCL directly at no extra cost to IISER. Cost of electric Power required for construction is deemed to have been included in contractor's rate structure. Contractor is advised to make his own arrangements of diesel generators to meet his requirements of electrical power during interruption in power supply and keep electrically operated equipments to the minimum in view of uncertainty of 24 hours power supply. Non-availability of regular power supply shall not be a reason for extension of time and/or extra payment. IISER will only issue recommendation letters for obtaining temporary electric connection from MSEDCL.

The contractor shall make his own arrangement for the distribution of power to all his works

20.1 It shall be the responsibility of the contractor to provide and maintain the complete installation to the safety requirements of site. All cabling and installation shall be subject to the approval of the Engineer in charge / Safety Engineer in charge and shall comply in all respects with the appropriate statutory requirements given as follows:

- a) Indian Electricity Act 1910 (as amended)
- b) Electricity Supply Act 1948 (as amended)
- c) Indian Electricity Rules. 1956 (as amended) and shall be subject to approval of the Engineer in charge.
- d) Latest MS&EDCL regulations.

For this purpose, the contractor shall provide full specifications of the equipment and the layout drawing for approval. Approval of the Engineer in charge does not absolve the contractor from complying with any or all other conditions laid down in this section.

20.2 IISER will not be liable for any loss / damage to the contractor's equipments as a result of variations in voltage or frequency or interruptions in power supply. IISER will also not be liable for any loss to the contractor arising from failure, interruption or stoppage of power supply or variation in voltage or frequency

20.3 Power supply shall be subjected to all restrictions and regulations which are in existence now and as may be enforced MS&EDCL from time to time, for which contractor will not have any claim whatsoever

20.4 Power supply shall not be used for any other unauthorized use.

20.5 After completion of the work and after obtaining approval of the Engineer in charge, the contractor shall promptly dismantle the distribution and other facilities, which he may have erected for execution of job at his own cost.

20.6 After completion of works the contractor shall at his own cost, promptly dismantle the distribution and other facilities he may have erected

21. CONTRACTOR'S SITE ORGANIZATION

21.1 In view of the quantum and nature of work involved and time frame, it is essential that the site organization is necessarily headed by a senior Engineer in charge of the Company. The site in-charge will have to be senior enough to liaise the management directly and shall be vested with powers to take prompt decision. In addition to posting of a senior Engineer in charge with sufficient field experience/ background in the asking to head the site organization, it is also incumbent upon the Contractor that the progress of the project is reviewed fortnightly with the project authorities with appropriate senior level

representation from the contractor so that necessary prompt corrective actions could be initiated.

- 21.2 It is to be noted that the time is essence of contract and in order to meet the schedules and to meet targets the Contractor has to plan for work at least in two shifts. Necessary supervisory staff and the labour force will have to be deployed in each shift to ensure that the schedules are met with.
- 21.3 The construction manpower shall be planned taking in to consideration the commencement and completion of various activities
- 21.4 The Contractor shall furnish along with the tender a detailed site organization he proposes to deploy on the works. The organisation shall include the number and category of personnel of different grades for supervisory works up to the grade of Foreman/Asst. Foreman
- 21.5 The Contractor will also submit along with the tender his assessed phase wise, induction of skilled, semi-skilled, un-skilled work force of all categories for the satisfactory and timely completion of the contract

Contractor should submit along with the tender information regarding Manpower deployment in the format enclosed at Annexure IV.

22 LIABILITY FOR LOSS, DAMAGE, ACCIDENT ETC

22.1 During the execution of the contract, and until completion certificate is issued, the contractor will be fully liable to compensate all concerned, for any loss, damage or destruction of “works”, structures, materials, plant & machinery, persons, property etc. Including third party risk arising due to causes attributable to the Contractor as may be decided by the Engineer in charge whose decision in this regard shall be final. No claim shall be made against IISER Pune on this account. The contractor shall immediately on award of work take out at his own cost a “Contractor’s all risk insurance policy” for an amount equivalent to work order value plus the cost of free issue materials of the works with an insurer acceptable to IIESR Pune contract wherein IISER Pune shall be named as “co-assured”. The taking out of such policy shall not in any way limit or diminish the responsibility of the Contractor for any loss or damage. The Contractor shall obtain insurance for their plant and machinery deployed by them, including third party risks at their own cost.

23. PLANT AND MACHINERY

- 23.1 The tenderer should submit along with the tender, phase wise deployment chart of plant & machinery. He should also indicate all the technical specifications for special and conventional equipment viz. Type, capacity, year of manufacture / purchase of the plant and
- 23.2 Notwithstanding the approval of equipment listed by the tenderer in his deployment chart, to enable timely completion of work, the tenderer should also bring and deploy additional plants and equipment, at no extra cost to IISER Pune, as may be deemed necessary by Engineer in charge.

24 MOBILIZATION

Contractor shall bring all plant machinery and personnel required for the satisfactory completion of the work as mentioned in specification schedule of quantities and drawings. The contractor shall provide for all the transports required for bringing the above initially to site and for final removal of the same from site after completion of works under relevant schedule items. He shall maintain all the plant; equipment and machinery in good working condition throughout the period of his work at his own cost and same shall be available for inspection of the Engineer in charge.

25. METHODOLOGY FOR CONSTRUCTION WORK.

- 25.1** The tenderer shall submit along with the tender a detailed comprehensive write up/scheme for successful and timely completion works:

26. REMOVAL OF TEMPORARY WORK, PLANT AND SURPLUS MATERIALS

- 26.1** Prior to final acceptance of the completed work but excepting as otherwise expressly directed or permitted in writing, the contractor shall at his own expense, remove from the site and dispose off the temporary structure, including all false work and scaffolding, grid work, all plant and material and debris for which he is responsible, to the satisfaction of the Engineer in charge.

27 TAXES

27.1 ROYALTIES DUTIES

All quarry fees, royalties, excise duties, sales tax and other duties/levies on materials brought by the contractor to the site, will be paid for by the contractor directly. If refunds of such payments are, however, admissible, under the rules made by local authorities, the contractor may obtain such refund by following prescribed procedure laid down by the concerned authorities. Assistance of Engineer in charge will be limited to the extent of issuing a certificate stating that the materials so brought to site have become the property of the IISER. The contractor shall take into account this fact while quoting his rates in the tender. If the quarry falls in private land or Government land leased to private parties, the contractor shall have to obtain the permission of such private parties and shall pay the royalties and other charges to them. IISER will help the contractor to obtain permission in

such cases to the extent possible but will not be responsible for payment due from the contractor in this regard.

Any variation in the rates of taxes/duties mentioned above, from those prevailing at the time of tender opening, except service tax and Value added Tax are to be borne by contractor.

27.2 SERVICE TAX

Sales Tax/VAT (except service tax), building and other construction worker welfare cess or any other cess/ tax in respect of this contract shall be payable by the contractor and Government shall not entertain any claim whatsoever in this respect. However, in respect of service tax on Contract, same shall be paid by the contractor to the concerned department on demand and it will be reimbursed to him by the Engineer-in Charge after satisfying that it has been actually and genuinely paid by the contractor.

27.3 VALUE ADDED TAX

The tendered rates shall be inclusive of Value added tax as prevailing at the time of tender opening. Any variation in the rate VAT during the execution of the work from the rate of VAT prevailing at the tender opening will be considered for reimbursement/ recovery. The reimbursement/ recovery shall be calculated based on the increase/ decrease in the rate of VAT applied on the liability of VAT (as a percentage of the value of work) as mentioned below and the increase/ decrease in the liability will only be reimbursed/ recovered.

WCT/VAT @ **2% (two percent)** of the value of work done shall be recovered from the bills of the agency and labour cess @ 1 % shall be recovered from the bills of the agency

27.4 DEDUCTION OF INCOME TAX

As per Income-Tax Act, as amended by Ministry of Finance from time to time, Income Tax at the applicable rate, as notified, will be recovered on the gross value of work done from the R.A. Bills. A certificate for the amount so recovered will be issued by IISER Pune to the contractor on demand.

28 CONSULTANTS APPOINTED BY IISER

IISERhas engaged M/s. C R Narayana Rao and company Chennai as Architecture and design consultant for the work and appointed agency of Construction management consultants. Representative of Architect will be visiting site and give direction regarding architectural and structural works. Contractor shall follow the direction and instruction given by the Architects

representative at site. However if any financial implications are involved due to such instruction contractor shall bring the same to the notice of IISER before executing. PMC will be supervising the construction work. They will be deploying project Manager & site engineers to overall supervision on work, day to day checking of all Construction activities, quality control, testing of materials, billing, reporting process Etc. Project Manager shall be acting on behalf of IISER and will look after the work as per contract specification & agreement. Contractor shall follow all the instructions from Project Manager and site engineers appointed by project management consultants. However if any financial implications are involved any time during the work the contractor shall bring the same to the notice of IISER before execution.

29 RIGHTS OF OTHER AGENCIES

The contractor shall note that several other agencies may also be simultaneously working within and around the structures covered under the present contract.

The contractor shall permit as directed by the Engineer in charge from time to time, such works to be carried out without any hindrance and fully co-ordinate his activities and extend all his co-operation to the other agencies working therein. In case of dispute in such co-ordination, the Engineer in charge's decision shall be final and binding on the contractor.

30 SAFETY MEASURES

To avoid possible accidents to staff and labour employed during execution of work, it is imperative to observe the safety code provisions specified under -General Conditions of Contract and Section

The contractor shall follow the safety regulations as prescribed in the tender and Indian Standards. He shall provide necessary safety appliances to his employees as instructed by the Engineer in charge-in-charge/Safety Officer deputed by the IISER Pune depending upon the nature of work. Chains/ ropes or other lifting materials used for the suspension must be of adequate strength and suitable quality and shall be of tested quality. Contractor shall employ minimum following staff for the work

Safety Officers:

Qualifications: Degree in Engineering and Diploma in Industrial safety. One number with minimum 2 years experience.

Safety Supervisors:

Qualifications: Diploma in Engineer in charge and Diploma in Industrial Safety or 6 years experience. 2 numbers

These safety personnel shall not be assigned any other responsibility. The cost of such safety measures shall be included by the tenderer in his rates quoted for items in the schedule of quantities and rates.

31 GOVERNMENT LABOUR ACTS / LAWS

The contract shall strictly follow the Government Labour Acts which are in force at present and introduced from time to time, such as Acts enforced by Regional Provident Fund commissioner, Directorate of ESIS and Enforcement Officer of Contract Labour Act and all necessary arrangements for Labour Security Insurance will have to be made by the Contractor at his own cost.

FAIR WAGES

The wage paid to the labourers shall not be less than the fair / minimum wages as fixed under any law, statutory rule or order from time to time. However, increase in the wages due to any statutory act or by rules framed there under by the Government or by local authorities during the currency of the contract or during any valid period of extension of contract shall not be considered reason for any reimbursement or extra claim. The bidder is deemed to have taken this aspect into consideration in his unit rates for various items of work covered under this contract.

The notified rates of minimum wages as applicable to different categories of employees are given as under for the guidance of the tenderer.

SL.NO.	CATEGORY RATES OF BASIC WAGES
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1. Unskilled	As approved by LEO of the region
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The rates are applicable for the period work is in progress.

The tenderer is advised to confirm the latest rate of basic wages and special allowance, if any as declared by the State / Central Government on the date of submission of the tender.

IISER Pune is registered with Assistant Labour Commissioner (Central), Pune under the Contract Labour (Regulation and Abolition) Act.

Note: The Contractor shall submit the labour report every month

The contractor shall strictly comply with all provisions of labour laws given– General Conditions of Contract and subsequent statutory requirements in this regard.

The contractor should take into account the provisions of the labour laws while quoting his rates.

LICENSE TO EMPLOY LABOUR

Contractor shall arrange labour license for the labourers employed by him directly or through one or more sub-contractors or agents or any other person, before he undertakes execution of the job.

The Contractor shall get a license from the competent authority of the area where the work is undertaken under sub section 12(I) of the contract labour (Regulation & Abolition) Act, 1970, in case twenty or more workmen are employed by him directly or through one or more sub-contractors or agents or any other person, before he undertakes execution of the job.

32 PRESENTATION BY SUCCESSFUL BIDDER

The successful bidder is required to make a detailed presentation at a short notice of 2-3 days, from the date of intimation regarding the methodology he proposes to execute the job with respect to schedule/deployment of plant and machinery, manpower etc.

33. QUALITY MANAGEMENT REQUIREMENTS

The contractor is responsible for planning and developing a programme that assures that all his management; design and technical responsibilities for quality executed effectively.

34 QUALITY ASSURANCE

34.1 Assuring reliability and quality of work carried out under this package is the primary responsibility of the contractor. Contractor shall have a documentation quality system addressing the mechanism to achieve the required quality level and the work carried out conforming to the best manufacturing and work practices prevailing at the time of execution of contract.

34.2 Contractor shall have a well-structured organization of Personnel and resources to specify, achieve, verify and document all work. This should also include the approval from IISER Pune wherever required. Quality system can be in line with National / International standards

34.3 The Contractor / Vendor / Sub-vendors shall have an independent Quality Control Inspection and testing organization. They should also make provision for setting up a test facility wherever required.

The Contractor shall furnish along with this bid an organization chart which includes the structure and size of the Manpower of the Quality Department for detailed scrutiny / approval and acceptance of IISER.

34.4 wherever found essential the contractor may have to provide for hiring outside inspection agency.

35 QUALITY PLAN

35.1 The Contractor shall

- a) Plan the inspection and test activities.
- b) Identify in the quality plan the inspections and tests to be performed on the items listed in the contract, in compliance with contractual and / or technical requirements.

- c) Submit the plan for the Engineer in charge's concurrence / approval following the award of the contract and before the work starts. Referenced inspection and test specifications and / or procedures shall be made available to the quality assurance representative during the implementation of the quality plan. This quality plan shall identify at appropriate stage witness points and hold points and also give clearly the acceptance standards for all inspections, tests and examinations performed.
- d) Update the plan during the life of the contract to reflect current conditions of manufacturing, construction, inspecting and testing and resubmit the plan to the Engineer in charge.

The Quality Plan shall be on a format to be approved by the Engineer in charge.

- 35.2 The quality plans for subcontracted items, when concurred with by the contractor, shall be submitted to the Engineer in charge as applicable, for concurrence and insertion of witness and hold points.

35.3 QUALITY ASSURANCE PROCEDURES

The contractor shall have procedures for the following specific requirements should they apply to the contract:

- Document control
- Procurement
- Measuring and testing equipment
- Inspection and test
- In-process inspection
- Final inspection
- Inspection status
- Identification and traceability
- Preservation, handling and storage during construction
- Construction
- Special Processes
- Quality records
- Non-conformances
- NPC-supplied items
- Corrective actions.

Each QA procedure shall define, as applicable, such things as; its purpose and scope; who is responsible for what; how all steps are to be performed; what materials, equipment and documentation are to be used; how it is all controlled.

QA procedure shall be updated when necessary.

35.4 MEASURING AND TESTING EQUIPMENT

All measuring and testing equipment and devices used to verify characteristics that can affect item quality shall be controlled and maintained. At prescribed intervals, or prior to use, they shall be calibrated and adjusted against certified equipment having a known valid relationship to nationally recognized standards. Where no national standards exist, the basis employed for calibration shall be documented.

35.5 The Contractor shall provide for the performance of inspections and tests as specified in the quality plan. These inspections and tests shall be carried out in accordance with written procedures that define the acceptance / rejection criteria. .

35.6 Inspections and tests shall be documented in inspection and test reports that identify as a minimum the item inspected or tested, applicable drawings, specifications or procedures, the date of inspection or test, the inspector, tester or data recorder, the type of observation, the results, the acceptability and the action taken in connection with any deficiencies identified.

36 QUALITY RECORDS

The Contractor shall:

36..1 Maintain quality records as evidence that:

a) The quality assurance programme meets the requirements of these Quality Management Requirement (manual, procedures, quality plan).

- b) The items or services meet contractual or other applicable technical requirements) specifications, drawings, calculations, manufacturing, inspection and test procedures).
- c) Personnel and procedures for special processes are qualified.
- d) Measuring and testing equipment is calibrated.
- e) The procurements meet the requirements.
- f) Corrective actions are being taken and are effective as required.
- g) Audits are performed as required.

36.2 Maintain Final performance quality records which include as appropriate:

- a) As built records
- b) Material test reports or certificates.
- c) Non-destructive examination records or certificates.
- d) Inspection and test records
- e) Non-conformance reports
- f) Concrete batch plant printout.

Items (c) and (d) apply to those operations performed after receipt materials from the supplier.

37 NON-CONFORMANCE

- 37.1 The Contractor is responsible for the identification and disposition of all non-conforming items, including those of subcontractors. Final acceptance of the contractor's disposition of those items that violate contractual requirements is the prerogative of the Engineer in charge.

38 CORRECTIVE ACTION

The contractor shall:

- 38.1 Investigate the causes of significant or recurring non-conformances and take appropriate action to prevent repetition.

39 AUDIT

- 39.1 There shall be provision for having periodic internal audits conducted on the Quality Assurance System and the activities affecting quality of this package. These audits may be carried out once in six months by independent group of the contractor.

भारतीय विज्ञान शिक्षा एवं अनुसंधान संस्थान पुणे
INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH (IISER), PUNE
Main Building, IISER Pune Dr. Homi Bhabha Road, Pune : 411 008

VOLUME-II

TECHNICAL SPECIFICATIONS

NAME OF WORK: SUPPLY AND INSTALLATION LAB BENCHES, FUME HOODS AND EXHAUST SYSTEM IN GF CHEMISTRY BLOCK, MAIN BUILDING AT IISER PUNE.

NIT NUMBER: 03/IISER/PUNE/2015-16

DATE OF SUBMISSION OF TENDER : 01/09/2015 UP TO 15 00 HRS

SUB HEAD- 1:

LABORATORY FURNITURE & ACCESSORIES

GENERAL SPECIFICATIONS

1.0 MODULAR LAB FURNITURE WITH C FRAMES

I. GENERAL SCOPE OF WORK:

1. The supplier shall furnish all cabinets and casework, including tops, ledges, "C-FRAME" assemblies, knee space panels, filler panels etc.; including delivery to the building, set in place, properly levelled and handing over after commissioning.
2. The supplier shall furnish and deliver all utility service outlet accessory fittings, electrical sockets and switches identified on drawings as mounted on the laboratory furniture.
3. The supplier shall furnish and deliver all laboratory sinks, cup sinks or drains, drain troughs, overflows and sink outlets with integral tailpieces, which occur above the floor, and where these items are part of the equipment. All tailpieces shall be furnished less the couplings required to connect them to the drain piping system.
4. The supplier shall furnish service strip supports where specified, setting in place service tunnels, service turrets, supporting structures and reagent racks of the type shown on the drawings.
5. All various equipment fittings, assemblies, accessories, hardware, foundation bolts, supports, terminal lugs for electrical connections, cable glands, junction boxes and other sundry items for proper assembly and installation of various equipment and components of the work shall be deemed to be included in the tender, irrespective of the fact whether such items are specifically mentioned in the tender or not.
6. The supplier shall remove all debris, dirt and rubbish accumulated as a result of the installation of the laboratory furniture to an onsite container, leaving the premises broom clean and orderly.
7. After award of work, bidder has to integrate all the components of the work in consultation with the IISER appointed Lab consultant i.e. (Lab furniture, fume hoods, exhaust system, integration with HVAC and all other services included in the BOQ with the help of respective specialised agencies), prepare shop drawings and get it approved from Engineer in charge before taking up the production/placing order for supply, checking/ensure the efficacy of the overall design and get it vetted from the IISER appointed consultant, submit three sets of Lab wise and complete master plan of as built drawings of all the components.
8. Quoted rates shall includes the cost of all the components specified in the specifications, all necessary tests in the factory and the tests conducted after receipt of materials at site in approved testing labs, performance tests, all taxes as per bid document, all minor accessories not specified in the BOQ item but necessary/ required to make the component operational /functional. Clarification if any can be asked during the pre bid meeting.

II. STANDARDS:

Conformity with Statutory Acts, Rules, Standards and Codes.

1. All components shall conform to relevant up to date Indian Standard Specifications, wherever existing irrespective of whether explicitly mentioned or not.
2. All electrical work shall be carried out in accordance with the provision of Indian Electricity Act 2003 and Indian Electricity Rules 1956, amended to date.
3. All lab fixtures shall conform to relevant international standards or guidelines and should provide documentary evidence to this effect. These include the following:
 - a. SEFA 3 – Scientific Equipment and Furniture Association
 - b. SEFA 8 - Scientific Equipment and Furniture Association
 - c. NFPA 30 - National Fire Protection Association
 - d. NFPA-45 - National Fire Protection Association
 - e. UL - Underwriters Laboratories
 - f. ASTM D522 - Bending Test
 - g. ASHRAE

(OR)

- a) BGI/GUV-I 850-0 Laboratories
- b) TRGS 526 Laboratories
- c) DIN 12898 Laboratory fittings; hose nozzles
- d) DIN 12918 Laboratories - laboratory fittings – part 1:Water taps
- e) DIN 12918 Laboratories – laboratory fittings – part 2:Taps for combustion gases
- f) DIN 12918 Laboratories-laboratories fittings – part 3:Taps for industrial gases
- g) DIN/EN 13792 Labels for laboratory fittings
- h) DIN/EN 15154-1 Safety emergency showers – part 1:Body showers with water connection for laboratories
- i) DIN/EN 15154-2 Safety emergency showers – part 1:Eye showers with water connection
- j) DIN/EN 14470-1 Fire resistance storage cabinets – part 1:Safety cabinets for flammable liquids
- k) DIN/EN 14470-2 Fire resistance storage cabinets – part 2:Safety cabinets for pressurised gas cylinders
- l) DIN/EN 14175-2 Fume cupboards– part 2: requirements for safety and performance capacity
- m) DIN/EN 14175-2 Fume cupboards – part 3: design test procedures
- n) DIN 12924-2 Laboratories – fume cupboards – part 2: high performance fume cupboards
- o) DIN 12924-4 Laboratories – fume cupboards – part: fume cupboard for pharmacies

III. Quality Assurance, Testing and Warranty

1. The supplier shall have a history of successful projects of similar size and complexity.
2. Single Source Responsibility: The supplier shall provide complete C Frame assembly, work top, modesty panel, shelves, storage, service fixtures and accessories, fume hoods, exhaust ducting, VAV system with all controls, exhaust blowers and scrubbers, as a single responsibility.
3. The supplier shall submit test results for SEFA-3 & 8, as indicated in performance criteria from recognized NABL Third Party testing labs., for a min. of any 2 Cabinets & 2 “C”- Frames of different respective sizes as listed in the BOQ. The supplier shall at his own expense and at no cost to the purchaser carry out all such tests and inspections of goods and related services as specified here. Fume hoods shall be type tested at manufacturers own test facility by reputed third party testing agency.
4. Whenever the supplier is ready to carry out such tests , reasonable advance notice shall be given to the purchaser including obtaining necessary permission or consent from third party agency to enable the purchaser or its designated representative to attend the test and/or inspection.
5. Warranty of equipment should be for a period of 12 months from the date of completion of work. Free upgrades of software, if any, should be provided during this period.

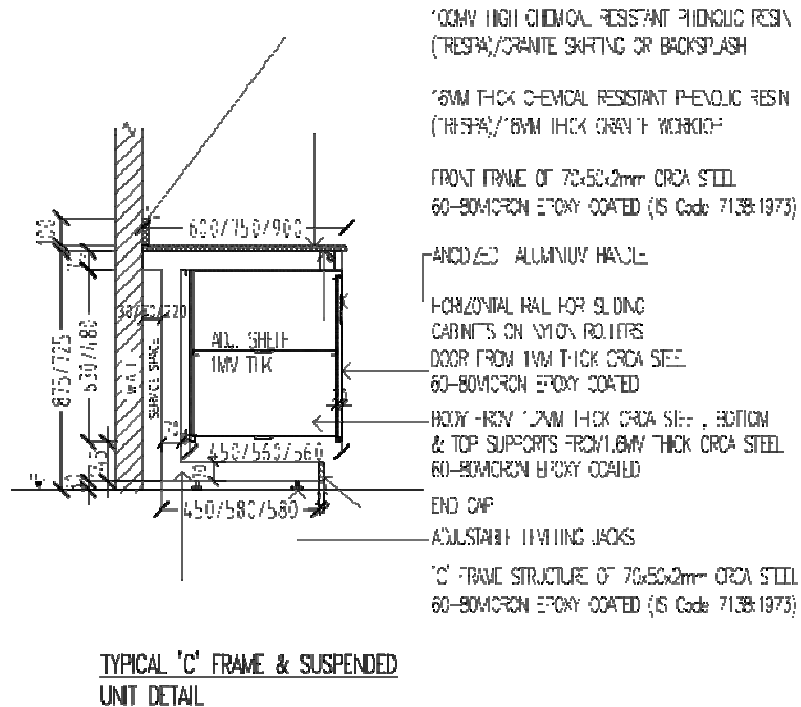
GENERAL SPECIFICATION

1.1.1 C-Frame Structure:-

All C-Frames assemblies shall be manufactured from CRCA sheets, 2mm thick, conforming to I.S. Code 513 'D Grade', free of surface blemishes, assembly designed for overall load carrying capacity of 300 kg/sqm. Alternatively, standard hollow metal sections, conforming to I.S. Code 7138:1973 (Indian Standard specification for steel tubes for furniture) can also be used with prior approval of the Engineer in charge.

C- Frame"- Standard support assembly shall comprise of the following.

- a. All standard leg assemblies are approximately 750mm high for sitting height & 900mm high for standing height as per architect drawings. Work top support of C frame assembly shall be adjustable in order to provide flexibility in working height from 600mm to 900mm.
- b. The legs shall be structurally manufactured of 70mm x 50mm x 2 mm thick CRCA tubing, bead welded for maximum structural strength.
- c. Each leg assembly shall include minimum two wide base plastic levelers of 50mm dia., adjustable to a range of +23/-5mm.
- d. Horizontal support between C frames shall be manufactured of 70mm x 50mm x 2 mm thick CRCA tubing.
- e. All C frame assemblies shall be powder coated with minimum 60 to 80 microns high chemical resistant epoxy powder.
- f. All C frame open ends shall be covered with CRCA sheet.
- g. Modesty panels, where shown or specified, shall be 1.00 mm thick, finished same as casework cabinets with edge bending/moulding, and easily removable for access to mechanical service areas.
- h. C frame shall be provided with suitable unistuds and angle frame to facilitate holding and sliding horizontally under bench cabinets.



1.1.4 Under bench sink base unit.

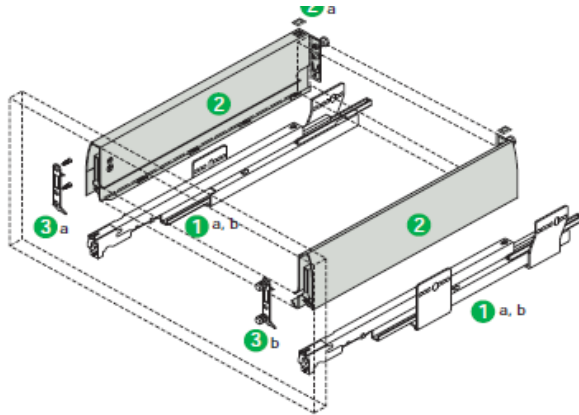
- Stand alone sink base unit should be flush face construction with 2 doors in the same plane as the cabinet face frame, without overlap.
- All cabinets shall be flush front construction with intersection of all surfaces in same plane without overlap. Exterior corners shall be spot welded with heavy back up reinforcement at exterior corners. All face joints shall be welded and ground smooth to provide a continuous flat plane.
- Thickness of CRCA steel used in construction of cases shall be 1.2mm thk.
- Leg shoes shall be provided on all table legs, unless otherwise specified, to conceal leveling device. Shoes shall be a pliable, black vinyl material. Use of a leg shoe, which does not conceal leveling device, will not be acceptable.
- Base molding to be provided for the free standing base units. Base moulding shall be sealed at the bottom to prevent dust accumulation beneath the cabinet.
- Sink supports shall be the hanger type, suspended from top front and top rear horizontal rails of sink cabinet by four 6mm dia. rods, threaded at bottom end and offset at top to hang from two full length reinforcements welded to the front and rear top rails. Two 19mm x 1-50mm x 2.6mm thk channels shall be hung on the threaded rods to provide an adjustable sink cradle for supporting sinks.
- Support struts shall consist of two 1.6mm thk channel uprights fastened top and bottom by two adjustable "U" shaped spreaders, each 2.6mm thk, 1- 37.5mm x length required formed from galvanized steel. Struts shall be furnished to support drain troughs, and to support worktop at

plumbing space under fume hood superstructures or other heavy loads. Support struts can be furnished with hangers at extra cost when specified, to support mechanical service piping and drain lines.

- h. The sinks should be with self draining base and should be suitable for mounting on top or underside of the work benches. Sinks shall have bottle trap.
- i. PP Single Molded Sinks -550mm x 400mm x 230mm
- ii. Epoxy Molded sinks for Wash Areas -750mm x 450mm x 450mm.
- iii. Polyethylene cup drains shall be molded in one-piece of acid-resistant polyethylene. They shall have an integral mounting flange and an integral tailpiece with an 38mm I.P.S. male straight thread outlet with Bottle Trap.

1.1.5 Under Bench suspended Cabinets

- a. Under bench suspended cabinets should be flush face construction with doors and drawers in the same plane as the cabinet face frame, without overlap. The suspended cabinets should have provision for sliding arrangements from one end to other end of the table so making knee space below the bench top. Thickness of CRCA steel used in construction of cases shall be 1.2 mm thick except as follows:
 - i. Case and drawer suspension channels, 2mm thk.
 - ii. Top and intermediate front horizontal rails, table aprons, hinge reinforcements, and reinforcement gussets, 1.6mm thk.
 - iii. Drawer assemblies, door assemblies, bottom, bottom back rail, toe space rail, and adjustable shelves, 1mm thk
- b. The overall load carrying capacity of under bench cabinet should be 80 kg of UDL (40kg on the shelf and 40kg on the bottom)
- c. Door shutters and drawers facias shall be bent to 19mm thick square edges, recessed aluminium pull, offering a comfortable handgrip, shall be securely fastened to doors and drawers with screws. All pulls shall be satin finish aluminum, with a clear, lacquer finish.
- d. Drawer cabinets shall be made in one-piece construction including the bottom, two sides, back and front. They shall be fully coved at interior bottom on all four sides for easy cleaning. The top front of the inner drawer body shall be offset to interlock with the channel formation in drawer head providing a 19mm thick drawer head.
- e. Drawer slides shall consist of high precision, fully extendable, double extension slides with minimum 40 kg load carrying capacity. Drawer slides shall be equipped with soft closure mechanism by air suspension, self-closing when the drawer reaches 80% closure. Drawer channels shall maintain alignment of drawer and provide an integral stop, but the drawer shall be removable without the use of tools. Drawers shall provide minimum 340mm front to back clearance when fully extended. Drawers shall rise when opened thus avoiding friction with lower drawers and/or doors.



- f. Hinges shall be made of Type 304 stainless steel 22mm thick, 62.5mm high, with brushed satin finish with a five-knuckle bullet-type barrel. Hinges shall be attached to both door and case with two screws through each leaf. Welding of hinges to the door or case shall not be accepted. Doors under 900mm height shall be hung on one pair of hinges, and doors over 900mm high shall be hung on 3 hinges.
- g. Suspended cabinets should be provided with heavy duty nylon rollers for horizontal sliding arrangement, as per drawing in item 1.1.1
- h. Handles shall be anodized aluminium, recessed type- 100mm x 50mm size.
- i. All storage units except sink units shall be provided with locks. Locks shall be a 5-disc tumbler with heavy duty interchangeable cylinder and 2 sets of keys and one master key for all locks.
- j. A two-piece heavy-duty cam action positive catch shall be provided on all base cupboard doors and shall be positioned near the pivoting edge of door to provide a clean unobstructed opening. Main body of the catch shall be confined within an integral cabinet divider rail, while latching post shall be mounted on the hinge side of door. Nylon roller type catches are not acceptable.
- k. Adjustable shelves shall be formed down 19mm, returned back 22.5mm and up 6.5mm into a channel formation front and rear; formed down 19mm at each end, shelves over 1050mm long shall be further reinforced with a channel formation welded to underside of shelf. Shelf adjustment clips shall be nickel-plated steel.
- l. Shelves and Drawers: CRCA shelves and drawers shall have a load bearing capacity of 40kg of UDL.

Storage Cabinets

1.1.6 Full Height Cabinets

- i. Swinging door full height storage cabinets shall have a completely finished interior same as exterior.
- ii. End uprights shall be formed at the front in a 25mm channel formation with the inside flange formed to provide a 775/800mm x 12.5mm door recess. The back of the upright shall be formed to a 62mm formation. A 1.6mm thk hinge reinforcement, same as specified for BASE CABINETS, shall be welded to inner side of front uprights.
- iii. Cabinet tops shall be formed into a 25mm x 1.5mm channel shape at front, with a 775/800mm x

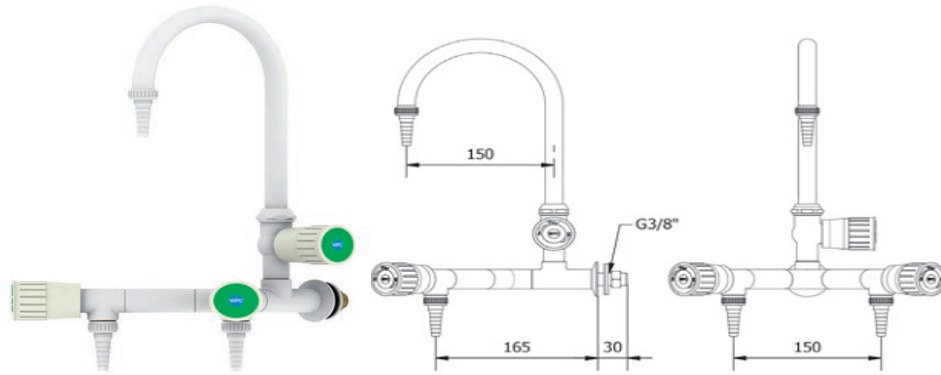
12.5mm offset for door recess, and with flange at rear and sides for electro-welding cabinet top to cabinet back and ends.

- iv. Cabinet bottoms for storage cabinets shall be formed down on sides and back to create a square edge transition welded to cabinet end panels, and front edge shall be offset to create a seamless drawer and door recess rabbet for dust stop. Cabinet bottoms shall be formed to provide a flush 25mm face rail with a return flange to give a 14mm deep x 125mm high toe space.
- v. Cabinet backs shall be welded to the top, bottom and ends. Backs shall be perforated for shelf adjustment holes on not more than 25mm centers. Holes shall be set in a channel formation in cabinet back and enclosed by end uprights.
- vi. Adjustable shelves shall be formed down 19mm, returned back 22mm and up 6mm into a channel formation front and rear, formed down 19mm at each end, shelves over 1050mm long shall be further reinforced with a channel formation welded to underside of shelf.
- vii. Toe space rails shall interlock in back of bottom rail and with end panel to provide a welding plate, and shall extend to the floor with a flange turned back 13mm and turned up 9mm for support.
- viii. Glazed swinging doors shall be 19mm thick and consist of an inner and outer door pan welded to form a single unit. Outer door pan shall be 1.2mm thk steel, formed into a channel or flanged shape at all four sides. It shall be pierced and formed to create a 75mm wide frame with a beveled edge around the glass opening in the center of the door. Inner door pan shall be 1.2mm thk steel, flanged at all four sides, pierced for a glass opening in center of the door, with a 1.6mm thk hinge reinforcements welded in place. Doors shall be glazed with 6mm thick toughened glass, held in place by a rubber or vinyl gasket around the entire edge of the glass. Outer door pan shall be pierced for a recessed flush pull, as described under HARDWARE.
- ix. Solid panel swinging doors (two-piece) shall consist of an inner and outer pan formation, mechanically assembled after painting. All exterior surfaces shall be welded and ground smooth. Inner door pan shall be flanged for mechanical assembly. Door shall have a 2mm thick hinge reinforcement welded at hinge slot; as well as a full-height channel formation welded to inner pan. Doors shall be 19mm thick with sound deadening material.

1.1.10 Above Bench 5 stage reagent shelves

Reagent shelves shall be complete modular design consisting of 5 stage horizontal storage shelves. The ends and intermediate vertical supports should be 1.2mm and horizontal shelves of 1.0mm thick CRCA steel supported on 2mm thick aluminium extrusion with MS brackets of 2mm thick. Each shelf should have a load bearing capacity of 50 kg of UDL for a length of 1000mm

1.1.11 Water Tap:



3 Way Wall Mounted Fittings with Swivelling GOOSENECK Spout

Wall mounted Water Tap shall be made up of PP Handle & Brass with surface protected by Epoxy Powder Coating RAL 7035 having male connection thread G3/8" & G1/2". Waterflow capacity of around 30 l/mn at 3 bar pressure & working temperature range of 0 70°C with test pressure 9 bars & max working pressure of 10 bar.

1.1.13 Safety Shower:

Emergency Shower ; total height 2300 mm, projection 655 mm, should be capable of delivering water at a min 75 litres /min & Eye wash at a minimum of 11 litres /min with min working pressure of 1.5 bar, conforming to the following specifications:

flange plate with 4 mounting holes made of stainless steel, chemical resistant green powder coated, dimensions 200 x 200 mm

- Vertical stand pipe 2300mm height, 32 dia made of stainless steel, chemical resistant green powder coated, with shower arm 19mm dia made of brass, chemical resistant green powder coated, total pojection length of 655 mm

- ball valve 19mm dia with pull rod made of stainless steel, DIN-DVGW tested and certificated

- pull rod made of steel, chemical resistant green powder coated, length 700 mm

- high-performance shower head made of chemical resistant plastic, with improved spray pattern, corrosion resistant, largely scale and maintenance-free, very robust, self-draining

- integrated automatic flow regulation 50 l/min. for a spray pattern according to the norms at a specified operating range of 1.5 to 3 bar dynamic water pressure

- eye-/face wash unit with bowl

- body and bowl made of UV and impact resistant ABS plastic

- activation by pressing the big push plate made of stainless steel

- high-performance spray heads made of brass, for large-scale dispersion of water, chemical resistant powder coated, largely scale-free, with rubber sleeves and sealed dust caps

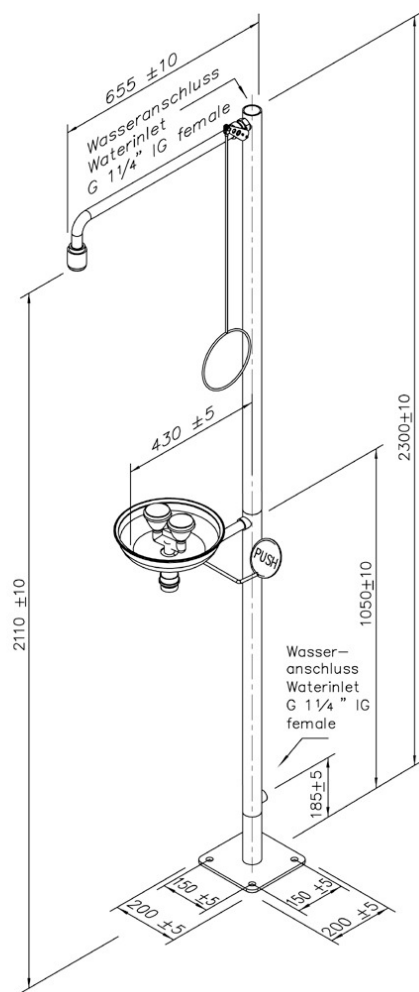
- integrated flow regulation valve

- water inlet 3/8" male, water outlet 1 1/2" male

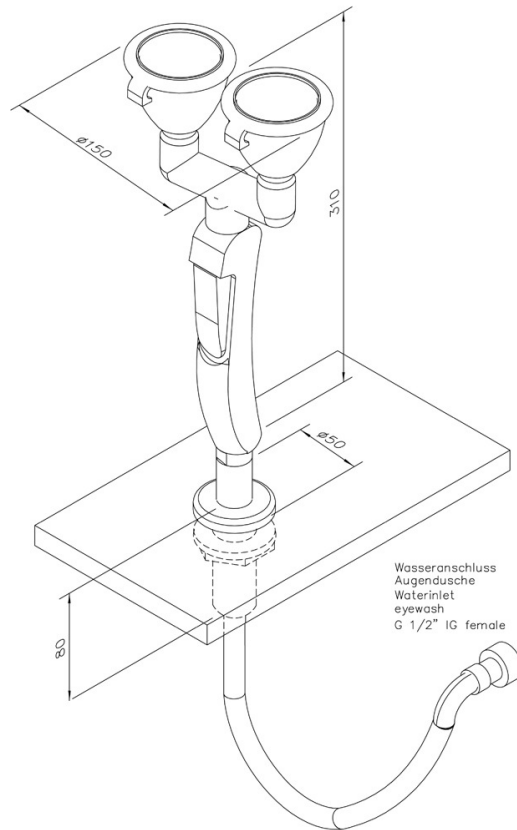
- height 235 mm, width 445 mm, depth 300 mm

- according to DIN EN 15154-1:2006 , DIN EN 15154-2:2006, ANSI Z358.1-2004 and DIN 12899-3:2009

Manufacturer: Broen or Water saver or equivalent.



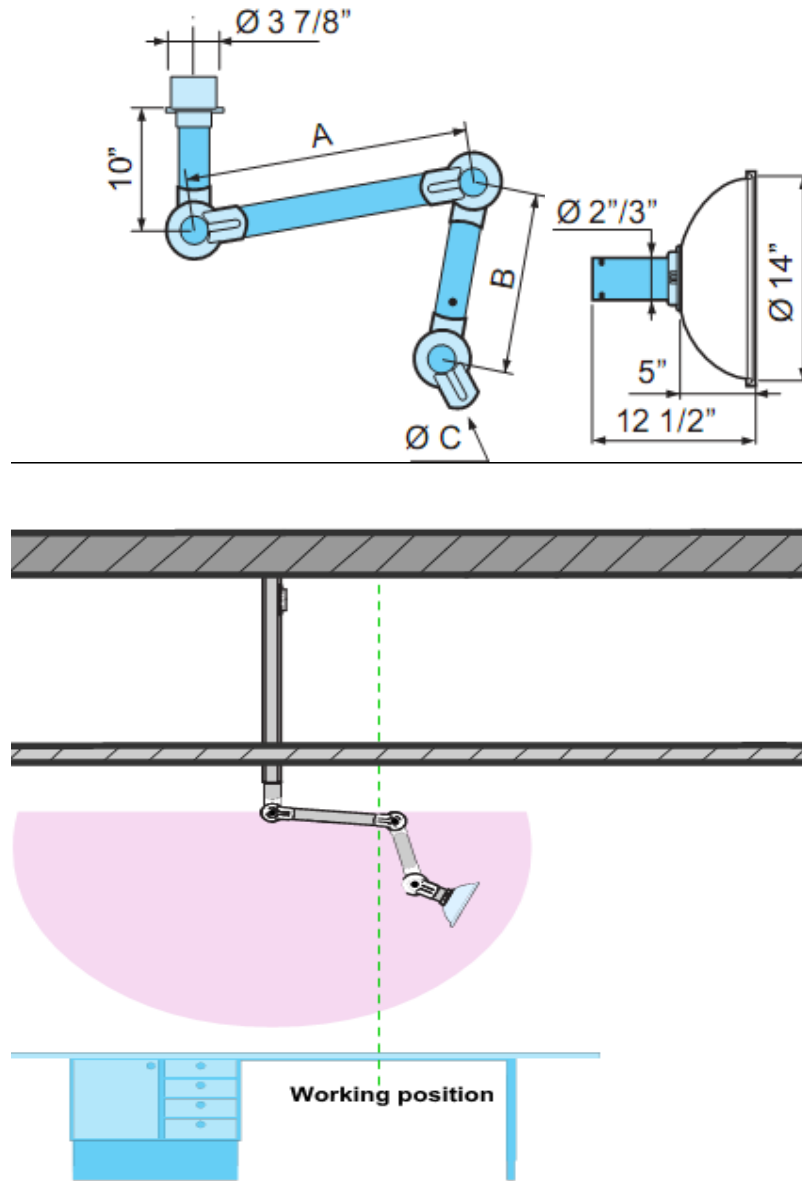
Twin cup eye wash:



Twin cup eye wash shall comprise of the following

- all water-bearing parts made of brass
 - handle with integrated, adjusting activation made of plastics, valve not self-closing
 - high-performance spray heads made of brass, for large-scale dispersion of water, chemical resistant powder coated, largely scale-free, with rubber sleeves and sealed dust caps
 - integrated flow regulation 14 litre / minute
 - integrated backflow preventer
 - stainless steel covered hose, length 1.5 meter, water inlet 12.5mm dia. female, DIN-DVGW tested and certificated
 - table mounting accessories M28x1,5x80mm made of brass, incl. fastening-parts kit with nut M28x1,5mm and 2 screws M5 for mounting difficult to access, chrome-plated rosette, sealing to table surface with O-Ring
 - sign for eye shower according to DIN 4844-2-D and BGV A8, self-adhesive PVC-film, 100 x 100 mm
 - Twin cup eye wash shall conform to the following codes ;DIN 1988 und DIN EN 1717, DIN EN 15154-2:2006 and ANSI Z358.1-2004
- Manufacturer: Broen or Water saver or equivalent.

1.1.15 Spot Extractor:



Spot extractor shall be made of Poly Propylene with joints and tube in recyclable PP. All vertical drops from slab shall be made up of corrosion resistance SS 316. Extraction arm shall be $\Phi 75$, Lengths $A=750$ & $B=450$ with 360° rotation. SS pipe length upto 1500mm, which shall be mounted from ceiling with ms brackets with chemical resistance epoxy powder coating.. Arms are provided with dampers, tight down to under pressure of 3500pa & air temperature of -10° to 70°C .

PART 2: PERFORMANCE REQUIREMENTS

Steel Casework Construction Performance (SEFA 3)

1. C frame assembly shall be constructed to support a minimum uniformly distributed load of 600 kg/sqm on top, including working surface without distortion or interference with door and drawer operation of suspended base cabinets.
2. Each adjustable and fixed shelf upto 1200mm length shall support an evenly distributed load of per 25 kg per square ft. up to a maximum of 80 kg per sq ft, with nominal temporary deflection, but without permanent bend.
3. Drawer construction and performance shall allow 340mm clear when in an extended position and suspension system shall prevent friction contact with any other drawer or door during opening or closing. All drawers shall operate smoothly, a minimum of 10,000 cycles with an evenly distributed load of 70 kg..
4. Swinging doors on floor mounted casework shall support 90 kg. suspended at a point 300mm from hinged side, with door swung through an arc of 160 degrees. Weight load test shall allow only a temporary deflection, without permanent distortion or twist. Door shall operate freely after test and assume a flat plane in a closed position.

Steel Paint System Finish (SEFA 8)

1. Steel Paint System Finish:
After Cold Rolled Steel component parts have been completely welded together and before finishing, they shall be given a pre-paint treatment to provide excellent adhesion of the finish system to the steel and to aid in the prevention of corrosion. Physical and chemical cleaning of the steel shall be accomplished by washing with an alkaline cleaner, followed by a spray treatment with a complex metallic phosphate solution to provide a uniform fine grained crystalline phosphate surface that shall provide both an excellent bond for the finish and enhance the protection provided by the finish against humidity and corrosive chemicals.

After the phosphate treatment, the steel shall be dried and all steel surfaces shall be coated with a chemical and corrosion-resistant, environmentally friendly, electrostatically applied powder coat finish. All components shall be individually painted, insuring that no area be vulnerable to corrosion due to lack of paint coverage. The coating shall then be cured by baking at elevated temperatures to provide maximum properties of corrosion and wear resistance.

The completed finish system in standard colors shall meet the performance test requirements specified under PERFORMANCE TEST RESULTS.

2. Performance Test Results (Chemical Spot Tests):
 - a. 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.

b. 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, cratering, swelling, or erosion of coating. Obvious and significant deterioration.

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

c. 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.	Dimethylformamide	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	Cotton ball & bottle
23.	Hydrochloric Acid, 37%	Watch glass
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.

3. Performance Test Results (Heat Resistance):

Hot water (190° F - 205° F) shall be allowed to trickle (with a steady stream at a rate not less than 6 ounces per minute) on the finished surface, which shall be set at an angle of 45° from horizontal, for a period of five minutes. After cooling and wiping dry, the finish shall show no visible effect from the hot water treatment.

4. Performance Test Results (Impact Resistance):

A one-pound ball (approximately 2" diameter) shall be dropped from a distance of 12 inches onto the finished surface of steel panel supported underneath by a solid surface. There shall be no evidence of cracks or checks in the finish due to impact upon close eye-ball examination.

5. Performance Test Results (Bending Test):

An 18 gauge steel strip, finished as specified, when bent 180° over a 1/2" diameter mandrel, shall show no peeling or flaking off of the finish.

6. Performance Test Results (Adhesion):

Ninety or more squares of the test sample shall remain coated after the scratch adhesion test. Two sets of eleven parallel lines 1/16" apart shall be cut with a razor blade to intersect at right angle thus forming a grid of 100 squares. The cuts shall be made just deep enough to go through the coating, but not into the substrate. They shall then be brushed lightly with a soft brush. Examine under 100 foot-candles of illumination. Note: This test is based on ASTM D2197-68, "Standard Method of Test for Adhesion of Organic Coatings".

7. Performance Test Results (Hardness):

The test sample shall have a hardness of 4-H using the pencil hardness test. Pencils, regardless of their brand are valued in this way: 8-H is the hardest, and next in order of diminishing hardness are 7-H, 6-H, 5-H, 4-H, 3-H, 2-H, F, HB, B (soft), 2-B, 3-B, 4-B, 5-B (which is the softest).

The pencils shall be sharpened on emery paper to a wide sharp edge. Pencils of increasing hardness shall be pushed across the paint film in a chisel-like manner until one is found that will cut or scratch the film. The pencil used before that one-that is, the hardest pencil that will not rupture the film-is then used to express or designate the hardness.

FITTINGS

1. Laboratory Service Fittings:
Service fittings shall be laboratory grade, and water faucets and valve bodies shall be cast red brass alloy or bronze forgings, with a minimum content of 85%.
2. Plastic Coated Finish (Sepia Bronze):
When specified, laboratory service fittings shall have an acid resistant plastic coating applied over a fine sand-blasted surface. Surfaces shall be sprayed and baked three times with a minimum thickness of .0005 to .0010 mils.
3. Service Indexes:
Fittings shall be identified with service indexes with color coding:
4. PERFORMANCE:
Maximum Line Pressures:
Laboratory Ball Valves (Gas and Air) 75 PSI
Needle Point Cocks (Gas and Air) 65 PSI
Vacuum 28.5" Mercury
Hot and Cold Water 80 PSI
Steam 30 PSI

PART III — EXECUTION

3.00 SITE EXAMINATION

- B. Agency shall visit site before bidding for the tender and get himself acquainted with site conditions, type of buildings, lifts and leads and scope of work and no claim shall be entertained on this ground at later date. The work shall be executed as per direction of Engineer in charge.

3.01 INSTALLATION

- C. Preparation:
Prior to beginning installation of casework, check and verify that no irregularities exist that would affect quality of execution of work specified.
- D. Coordination:
Coordinate the work of the Section with the schedule and other requirements of other work being prepared in the area at the same time both with regard to mechanical and electrical connections to and in the caseworks and the general construction work.
- E. Performance:
 1. Casework:
 - a. Set casework components plumb, square, and straight with no distortion and securely anchor to building structure. Shim as required using concealed shims.
 - b. Bolt continuous cabinets together with joints flush, tight and uniform, and with alignment of adjacent units within 1.5mm tolerance.
 - c. Secure wall cabinets to solid supporting material, not to plaster, lath or gypsum board.
 - d. Abut top edge surfaces in one true plane. Provide flush joints not to exceed 3mm.
 2. Worksurfaces:
 - a. Where required due to field conditions, scribe to abutting surfaces.
 - b. Only factory prepared field joints, located per approved shop drawings, shall be

- permitted. Secure the joints in the field, where practical, in the same manner as in the factory.
- c. Secure work surfaces to casework and equipment components with materials and procedures recommended by the manufacturer.

Adjust and Clean:

3. Repair or remove and replace defective work, as directed by IISER representative upon completion of installation.
4. Adjust doors, drawers and other moving or operating parts to function smoothly.
5. Clean shop finished casework; touch up as required.
6. Clean work surfaces and leave them free of all grease and streaks.
7. Casework to be left broom clean and orderly.

Protection:

8. Provide reasonable protective measures to prevent casework and equipment from being exposed to other construction activity.
9. Advise IISER representative of procedures and precautions for protection of material, installed laboratory casework and fixtures from damage by work of other trades.

SUB HEAD-2:

FUMEHOOD & ACCESSORIES

GENERAL SPECIFICATIONS

A. General Description of Work:

Furnishing and installing Fume hood, Base Units with Vent connection to the hood, Ceiling Cover Panels, Filler Panels and scribes as shown on drawings.

B. Accessories :

Furnishing and delivering all service outlets, accessory fittings, electrical receptacles and switches, as listed in these specifications, equipment schedules or as shown on drawings. Fittings attached to the fume hood superstructure shall be mounted on the front fascia of the hood as per the drawings. Furnishing and delivering all service outlets, accessory fittings, electrical receptacles and switches, as listed in these specifications, equipment schedules or as shown on drawings. Plumbing fixtures mounted on the fume hood superstructures shall be pre-plumbed up to 150mm above the Fume hood with SS-304 TUBING. Electrical fixtures shall be prewired up to the Junction box provided on top of every Fume hood. Final plumbing and electrical connections are the responsibility of Plumbing & Electrical contractor.

Removal of all debris, dirt and rubbish accumulated as a result of the installation of the fume hoods to an on-site container provided by others, leaving the premises clean and orderly.

C. Related Publications:

1. ASHRAE Standard 110.1995 - Method of Testing Performance of Laboratory Fume Hoods
2. NSF STD#49 – Photometric Method of Testing
3. NIH03-112C - National Institute of Health Specification
4. UL – Underwriters Laboratories
5. ASTM D552 – Bending Test
6. NFPA-45 – National Fire Protection Association

PART I- MATERIAL OF CONSTRUCTION

A. Fume Hood Superstructure Frame:

A free-standing rigid frame structure of steel angle shall be provided to support exterior panels and interior liner and baffle panels. To allow for maintenance and replacements, the interior liner panels shall be removable without disassembly of the frame structure and outer steel panels. Likewise, the exterior steel panels shall be removable without disassembly of the frame structure and inner liner panels. Fume hoods that require disassembly of the superstructure for liner replacement are not acceptable.

B. Fume Hood Interior Walls:

Double wall ends, not more than 100mm wide, shall be provided to maximize interior working area. The area between the double wall ends shall be closed to house the remote control valves. The front vertical fascia section shall have a full 135 degree 25mm radius at the front leading edge to provide a streamlined section and insure smooth even flow of air into the hood. The vertical facias shall contain the required service controls, electrical switches and receptacles. The hood interior end panels and sash track shall be flush with the fascia to prevent eddy currents and back flow of air.

C. Fume Hood Airfoil:

A streamlined airfoil shall be integral at the bottom of the hood opening on bench and distillation hoods. This foil shall provide a nominal 25mm 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 airfoil shall extend back under the sash, so that the sash does not close the 25mm opening. The foil shall be removable to allow large equipment into the hood. The foil shall be of 12-gauge 2.6mm thk steel to resist denting and flexing. Walk-in hoods shall have a stop located at the bottom of the sash track that will ensure a nominal 25mm opening between the bottom of the sash and the floor.

D. Fume Hood Baffles:

A stable, non-adjustable baffle with three fixed horizontal slots shall be provided to aid in distributing the flow of air into and through the hood. The baffle shall be spaced out 60mm from the back liner. The baffle shall be removable for cleaning

E. Fume Hood Duct Collar:

A 250mm to 300mm diameter polyethylene bell-mouthed duct collar shall be located in the top of the hood plenum chamber. Coated common steel duct collars are not acceptable.

F. Fume Hood Lighting:

A one-tube, energy-efficient, T-5 fluorescent light fixture of the size given below shall be provided in the hood roof. Illumination at 325mm above the work surface shall be at least 100 foot-candles.

Hood Size, MM.	Nominal Fixture Length, MM.
1200	900
1500	1200
1800	1200
2400	900 (2 Fixtures)

The light fixtures shall be isolated from the hood interior by a 6mm thick tempered glass panel sealed from the hood cavity. Fixture shall be UL labelled.

G. Fume Hood Sash:

Combination Sash:

A combination sash shall be provided. The sash shall have horizontal sliding glass panels in a vertical rising steel frame. The bottom of the sash frame shall have a full length metal handle. The sash track shall be a neutral coloured polyvinyl chloride set flush with the interior liner panels to minimize turbulence. The sash shall be counterbalanced with a single weight to prevent tilting and binding during operation. The glass panels shall be 6mm laminated safety float glass mounted on metal rollers in an aluminium track.

H. Fume Hood Plumbing Services:

All Utility services shall consist of remote control valves as selected located within the end panels, controlled by extension rods projecting through the control panels of the hood, with color coded plastic handles. All plumbing fittings shall be installed and piped upto 150mm above the Fume hood top. All the Plumbing shall be SS-304 ONLY.

I. Fume Hood Electrical Services

The hood superstructure shall be pre-wired and contain a UL label certifying acceptable wire gauge, connections, fixtures and wire color coding. Wiring electrical services shall consist of 3 X 3 6/16 Amps Socket & Switch and a light switch. All Wiring shall terminate in one 150mm x 150mm x 100mm service junction box located on the fume hood roof. Final wiring and circuit dedication shall be by others. The control panel should be located in the front face panel of the fume hood for easy accessibility for maintenance.

J. Fume Hood Epoxy Work Top:

Hood work surface shall be 32mm thick molded epoxy resin made in the form of a watertight pan, not less than 9.5 mm deep to contain spillage with a 75 mm wide safety ledge across the front edge. A cup drain flush with the recessed work surface shall be provided. The work surface and cup drain shall be available in black.

K. Access Opening:

The interior end liner panels shall be furnished with an opening that provides access to the service piping and valves to facilitate installation and maintenance. The openings shall be covered with a removable panel with rounded corners. Panels that require tools to remove are not acceptable. The panel shall provide an overlapping seal on all edges.

L. Fume Hood Finish:

After the component parts have been completely welded together and before finishing, they shall be given a pre paint treatment to provide excellent adhesion of the finish system to the steel and to aid in the prevention of corrosion. Physical and chemical cleaning of the steel shall be accomplished by washing with an alkaline cleaner, followed by a spray treatment with a complex metallic phosphate solution to provide a uniform fine grained crystalline phosphate surface that shall provide both an excellent bond for the finish and enhance the protection provided by the finish against humidity and corrosive chemicals.

After the phosphate treatment, the steel shall be dried and all steel surfaces shall be coated with a chemical and corrosion resistant, environmentally friendly, electrostatically applied powder coat finish. All components shall be individually painted, insuring that no area be vulnerable to corrosion due to lack of paint coverage. The coating shall then be cured by baking at elevated temperatures to provide maximum properties of corrosion and wear resistance.

The completed finish system in standard colors shall meet the performance test requirements specified under PERFORMANCE REQUIREMENTS

M. Fume Hood Acid Storage Cabinets:

Acid storage fume hood cabinets shall utilize the same thickness of steel and construction features as other base cabinets except they shall be completely lined with a one piece Polyethylene corrosion resistant liner. The liner shall be 6mm thick, molded into a seamless tub, including top, sides and bottom, with a 25mm lip at the bottom front to contain spills. Each door shall have a set of louvers at the top and bottom, and have a 3mm sheet polyethylene liner. Where specified, each cabinet shall be vented into the fume hood with a 40mm vent pipe. It should provide a positive airflow directly into the fume hood exhaust system. Where specified or shown on drawings, epoxy coated wire shelf supported by integral brackets shall be built into the Polyethylene liner.

N. Solvent Storage Cabinets:

Solvent storage cabinets shall be UL labelled and specifically designed for the storage for the storage of flammable and combustible liquids. Construction shall be based upon the requirements listed by UL, UFC, OSHA, and NFPA No. 30 – 1993. The bottoms, top, sides and doors shall be fabricated of 1.2mm thk steel and shall be all double panel construction with a 40mm air space between panels. All joints shall be welded, or screwed, to provide a rigid enclosure. The doors shall swing on full-length stainless steel piano hinges and shall be fully insulated. The right hand door shall be equipped with a three point latching device and the left-hand door shall have a full height astragal. The doors are self-closing and synchronized so that both doors will always fully close. The right

hand door is equipped with a three-point latching system that automatically engages when the doors close. Each door is equipped with a fusible-link hold-open feature that will ensure the door closes should the temperature outside the cabinet exceed 165 degrees Fahrenheit. Units 600mm long have only one door, self-closing, and equipped with a three-point latching system and hold-open feature. A 50mm deep liquid tight pan that covers the entire bottom of the cabinet shall be furnished to contain liquid leaks and spills. A full-depth adjustable shelf is also provided. The shelf is perforated to allow air circulation within the cabinet. Two diametrically opposed vents with spark screens are provided in the back of the cabinet as well as a grounding screw. The cabinet shall have interior finish same as exterior. The cabinet shall be labeled: **"FLAMMABLE – KEEP FIRE AWAY"**.

O. VAV Digital Face Velocity Monitor :

Fume hoods shall be provided with an alarm system to detect low and high hood face velocities. The alarm system shall indicate the actual face velocity of the hood regardless of sash position. The system shall have an air velocity sensor mounted on the interior side liner of the hood where it is easily accessible for cleaning. The velocity monitor shall have a digital display of the air velocity through the hood face in feet per minute. The alarm signals shall activate any time the face velocity falls below the low velocity alarm set point or rises above the high velocity alarm set point. There shall be both visual and audible alarm signals. The audible alarm shall have a mute. Low and high alarm contacts shall be provided for remote monitoring.

P. Fume Hood Liners: Trespa Toplab Plus or Equivalent

Reinforced Phenolic Resin Lining:

Interior liner panels shall be 6mm thick made from a compression molded cellulose fiber reinforced phenolic resin core with integrally cured white melamine surfaces. Interior liner panels shall be fastened using stainless steel screws with plastic covered heads.

PART 2: PERFORMANCE REQUIREMENTS

A. 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 30mm 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 60ml 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.

B. 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.

C. 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.	Dimethylformamide	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	Cotton ball & bottle
23.	Hydrochloric Acid, 37%	Watch glass
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.

D. Performance Test Results (Heat Resistance):

Hot water (190° F - 205° F) shall be allowed to trickle (with a steady stream at a rate not less than 180 per minute) on the finished surface, which shall be set at an angle of 45° from horizontal, for a period of five minutes. After cooling and wiping dry, the finish shall show no visible effect from the hot water treatment.

E. Performance Test Results (Impact Resistance):

A one-pound ball (approximately 50mm diameter) shall be dropped from a distance of 300mm onto the finished surface of steel panel supported underneath by a solid surface. There shall be no evidence of cracks or checks in the finish due to impact upon close eye-ball examination.

F. Performance Test Results (Bending Test):

An 1.2mm thk steel strip, finished as specified, when bent 180o over a 12.5mm diameter mandrel, shall show no peeling or flaking off of the finish.

G. Performance Test Results (Adhesion):

Ninety or more squares of the test sample shall remain coated after the scratch adhesion test. Two sets of eleven parallel lines 1.5mm apart shall be cut with a razor blade to intersect at right angle thus forming a grid of 100 squares. The cuts shall be made just deep enough to go through the coating, but not into the substrate. They shall then be brushed lightly with a soft brush. Examine under 100 foot-candles of illumination. Note: This test is based on ASTM D2197 68, "Standard Method of Test for Adhesion of Organic Coatings".

H. Performance Test Results (Hardness):

The test sample shall have a hardness of 4 H using the pencil hardness test. Pencils, regardless of their brand are valued in this way: 8 H is the hardest, and next in order of diminishing hardness are 7 H, 6 H, 5 H, 4 H, 3 H, 2 H, F, HB, B (soft), 2 B, 3 B, 4 B, 5 B (which is the softest).

The pencils shall be sharpened on emery paper to a wide sharp edge. Pencils of increasing hardness shall be pushed across the paint film in a chisel like manner until one is found that will cut or scratch the film. The pencil used before that one that is, the hardest pencil that will not rupture the film is then used to express or designate the hardness.

I. Liner Tests – Chemical Spot Tests – 24 Hours:

1. Chemical spot test shall be made by applying 10 drops (approximately 1/2 cc) of each reagent to the surface to be tested. Each reagent (except those marked **) shall be covered with a 38mm diameter watch glass, convex side down to confine the reagent. Spot tests of volatile solvents marked ** shall be tested as follows: A 1" or larger ball of cotton shall be saturated with the solvent and placed on the surfaces to be tested. The cotton ball shall then be covered by an inverted 60ml, 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 24-hour test period and at a temperature of 77 degrees F. + 3 degrees F.
2. At the end of the test period, the reagents shall be flushed from the surfaces 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. Spots where dyes have dried shall be cleaned with a cotton swab soaked in alcohol to remove the surface dye. The test panel shall then be evaluated immediately after drying.

3. Ratings/Legend:

- 1 –Epoxy Resin
- 2 – Glass Reinforced Polyester
- 3 – Stainless Steel 304
- 4 – Stainless Steel 316
- 5 – Reinforced Phenolic Resin

- A = No effect or slight change in gloss
- B = Slight change in gloss or color
- C = Slight etching or severe staining
- D = Swelling, pitting, or severe etching

RESULTS:	1	2	3	4	5		
1. Acetic Acid 98%		A	B	B	B	A	
2. Acetone **			A	D	A	A	A
3. Acid Dichromate			A	A	A	A	A
4. Ammonium Hydroxide ** 28%		A	A	B	B	A	
5. Amyl Acetate **			A	A	A	A	A
6. Benzene **		A	A	A	A	A	
7. Butyl Alcohol **			A	A	A	A	A
8. Carbon Tetrachloride **			A	A	A	A	A
9. Chloroform **		A	D	A	A	A	
10. Chromic Acid 60%		B	B	C	C	A	
11. Cresol		A	A	A	A	A	
12. Dichloroacetic Acid		A	D	B	A	A	
13. Dimethylformamide		A	A	A	A	A	
14. Dioxane **		A	A	A	A	A	
15. Ethyl Acetate **			A	A	A	A	A
16. Ethyl Ether **		A	A	A	A	A	
17. Ethyl Alcohol **			A	A	A	A	A
18. Formaldehyde		A	A	A	A	A	
19. Formic Acid 90%			A	A	A	A	A
20. Furfural **			B	B	A	A	C
21. Gasoline **		A	A	A	A	A	
22. Hydrochloric Acid 37%		A	A	B	B	A	
23. Hydrofluoric Acid 48%			B	D	D	D	A
24. Hydrogen Peroxide 30%			A	A	A	A	A
25. Methyl Ethyl Ketone **			A	A	A	A	A
26. Methyl Alcohol **			A	A	A	A	A
27. Methylene Chloride **		A	D	A	A	A	
28. Monochlorobenzene **			A	A	A	A	A
29. Naphthalene **			A	A	A	A	A
30. Nitric Acid 20%		B	A	B	A	A	
31. Nitric Acid 30%			B	A	B	A	A
32. Nitric Acid 70%			B	D	B	A	A
33. Phenol ** 85%			A	C	A	A	A
34. Phosphoric Acid 85%		A	A	B	A	A	
35. Silver Nitrate		B	C	A	A	C	
36. Sodium Hydroxide 40%		A	D	A	A	A	
37. Sodium Hydroxide 20%		A	D	A	A	A	
38. Sodium Hydroxide 10%		A	D	A	A	A	
39. Sodium Hydroxide Flake			A	B	A	A	A

40. Sodium Sulfide	A	B	A	A	A	
41. Sulfuric Acid 77%	A	A	C	A	A	
42. Sulfuric Acid 96%	C	D	C	A	C	
43. Sulfuric Acid 33%	A	A	C	A	A	
44. Tincture of Iodine		A	C	B	B	A
45. Toluene **	A	A	A	A	A	
46. Trichlorethylene **	A	A	A	A	A	
47. Xylene **		A	A	A	A	A
48. Zinc Chloride	A	A	B	A	A	
49. Nitric 70%/Sulfuric Acid 77%*	B	B	B	A	A	

* Equal parts of Nitric Acid 70% and Sulfuric Acid 77%.

** Indicates these solvents tested with cotton and jar method

PART 3 – EXECUTION

3.00 SITE EXAMINATION

Bidder is requested to examine the site and installation work shall be taken up as per site availability

and as per installation schedule approved by the Engineer in charge.

3.01 INSTALLATION

A. Preparation:

Prior to beginning installation of fume hood, check and verify that no irregularities exist that would affect quality of execution of work specified.

B. Coordination:

Coordinate the work of the Section with the schedule and other requirements of other work being performed in the area at the same time both with regard to mechanical and electrical connections to and in the fume hoods and the general construction work.

C. Performance:

Install fume hoods, plumb, level, rigid, securely anchored to building and adjacent furniture in proper location, in accordance with manufacturer's instructions and the approved shop drawings. Provide filler panels between top of hood and ceiling. Securely attach access panels but provide for easy removal and secure reattachment. Do not install any damaged units.

D. Adjust and Clean:

1. After installations are complete, adjust all moving parts for smooth operation.
2. Remove all packing materials and debris resulting from this work, and turn over the fume hoods to the Owner clean and polished both inside and out.
3. Repair or remove and replace defective work, as directed by owner and/or his representative upon completion of installation.

E. Protection:

1. Provide reasonable protective measures to prevent casework and equipment from being exposed to other construction activity.
2. Advise owner and/or his representative of procedures and precautions for protection of material, installed laboratory casework and fixtures from damage by work of other trades.

F. Certification:

1. Fume Hood Manufacturer shall field test a random sample of 20% of the installed units using ANSI/ASHRAE 110-1995 to a control level of AI 0.01 ppm or better.
2. Project substantial completion shall be withheld until all required fume hood certification letters, tests, and reports have been submitted to and approved by the Consultant.

SUB HEAD -3:
EXHAUST SYSTEM SPECIFICATION

1. SPECIFICATIONS FOR PP/FRP DUCTING AND ACCESSORIES

Technical Specification for PP/FRP Ducting:

- a. PP means PPGL: One side smooth & glossy finish and other end is mat finish.
 - The smooth surface should be the inner surface of the duct.
 - On mat side, FRP lining to be done.
- b. FRP Lining to be done on the outer surface of PPGL i.e. on mat side.
 - One layer FRP is one mm.
 - The final layer should be with fine mat to have smooth and good finish.
- c. Fire resistant Bisphenol resin to be used
- d. All the flanges should be properly ground and dressed.
- e. Duct support distance should not be more than 2500 mm.
- f. Any duct length should not be more than 3600 mm.
- g. The finish paint should be admiral grey unless specified.
- h. 5 mm Thick Neoprene gasket to be used between the flanges.

1.3 Support System

- 1.3.1** A completely supporting system consisting of fully threaded rods, double L bottom brackets nuts, Washers, clamps for circular ducts and anchor bolts as supplied.
- 1.3.2** To provide the required thermal brake effect, Neoprene or equivalent material of suitable thickness shall be used between duct joints.

1.4 Installation

1.4.1 Tools and tackles for site work:

For duct assembly and Installation the use of suitable tools and tackles should be used to give the required duct quality and speed of installation including.

- a) Drilling machine with drill bits – for drilling holes on the PP/FRP flanges.
- b) Hammer drill machine with drill bits – for drilling holes in building structure for anchors.
- c) Hoisting system – for lifting the duct assembly up to mounting heights.
- d) The duct pricing shall inclusive of all above facility.

1.4.2 Installation Practice

- a. All necessary allowances and provision shall be made for beams, pipes, or other obstructions in the building whether or not the same are shown on the drawings. Where there is interference/ fouling with other beams, structural work, plumbing and conduits, the ducts shall be modified suitably as per actual site conditions.
- b. Ducting over false ceiling shall be supported from the slab or from beams. In no case shall any duct be supported from false ceilings hangers or be permitted to rest on false ceiling. All Sheet work in dead or furred down spaces shall be erected in time to occasion no delay to other contractor's work in the building.
- c. All ducts shall be totally free from vibration under all conditions of operation. Whenever ductwork is connected to fans that may cause vibration in the ducts, ducts shall be provided with a flexible connection, located at the unit discharge.

1.6 Dampers and Flexible Hose

1.6.1 General

Volume control damper sets shall be provided where specified according to the specifications in the offer BOQ. Dampers shall be double thickness heavier than the thickness of the large duct & shall be rigid in construction.

The volume control dampers shall be of an approved type , lever operated & complete with locking devices which will permit the dampers to be adjusted & locked in any positions.

Construct blades of 3 mm thick PP MOC, provide heavy-duty molded self-lubricating nylon bearings, 13mm (1/2") diameter Plastic axles spaced on 225mm (9") centers. Construct frame of 300 mm diameter outer with Flange for fitting minimum 6 bolts and nuts. The outer shell body shall be a transparent material of Poly propylene.

Automatic manual volume opposed blade shall be not over 225mm wide. The dampers for fresh air inlet shall additionally provide with fly mesh screen, on the outside of 0.8mm thickness with fine mesh.

1.6.2 Manually Adjustable Damper Sets

Damper sets shall be arranged in substantial supporting frames and each blade shall be mounted on a shaft, which turns in sintered bronze bearings. All damper blades shall be inter-connected by means of a suitable bar linkage for ganged operation.

All dampers shall be arranged with spindle horizontal and shall be sized to handle the air quantities shown on the drawings. Where manually adjustable damper sets are installed in ductwork or other accessible locations the operating shafts shall be extended through the duct and a lockable quadrant fitted.

1.6.3 Bird screens

Galvanized woven mesh or weld mesh bird screens in rigid galvanized iron frames shall be installed behind all Bypass exhaust air openings to the outside of the building.

1.6.4 Flexible Connections

Provide flexible duct connections wherever ductwork connects to vibration isolated equipment and on all exhaust final connections to spot extractor and as indicated on the drawings.

Flexible connections shall be fitted to isolate fans from equipments and/or ductwork. The connections shall be arranged to permit the renewal of the connection without disturbing the duct work or the plant. The metal parts of connected equipment shall be separated by not less than six inches and installed with sufficient slack to compensate for free movement of fans or spring vibration isolators.

1.7 Joint Measurements:

The following procedure for measurement shall be followed for the purpose of billing in case of items subject to variation in quantities.

1.7.1 Ducting:

1.1. Payment for ducting shall be on the basis of the external surface area of the ducting. The rate per square meter of the external surface shall include flanges, gaskets for joints, bolts and nuts, duct supports and hangers, vibration isolation pads or suspenders, flexible connections, inspection doors, dampers, turning vanes, straightening vanes, and any other item which will be required to complete the duct installation except external insulation and finish thereon.

- 1.2 The external area shall be calculated by measuring the over-all width and depth (including the corner joints) in the centre of the duct section and over-all length of each duct section from flange face to flange face in case of duct lengths with uniform cross section.

Total area will be arrived at by adding up the areas of all duct sections.

- 1.3 In case of taper pieces average width and depth will be worked out as follows:

W1 = Width of small cross section

W2 = Width of large cross section

D1 = Depth of small cross section

D2 = Depth of large cross section

Average Width = $(W1 + W2)/2$

Average Depth = $(D1 + D2)/2$

Width and depth in the case of taper pieces shall be measured at the edge of the collar of the flange for duct/sections. Face to face length for taper piece shall be the mean of the lengths measured face to face from the centre of width and depth flanges.

- 1.4 For special pieces like bends, branches, and tees, etc., the same principle of area measurement as for linear lengths shall be adopted, except for bends and elbows, the length of which shall be the average of the lengths of inner and outer periphery along with curvature of angle of the piece.

1.5 Duct measurements for calculation of area shall be taken before application of insulation.

1.6 Closeout Submittals such as Operation and maintenance manuals, including as-built diagrams and component lists, shall be provided as closeout submittals.

SPECIFICATION FOR PP EXHAUST BLOWER

- 2.1 The exhaust fans supplied and installed shall be of 'Centrifugal Corrosion Resistant' type and shall be capable of delivering the design flow rate against all duct losses. The contractor shall submit a calculation of all losses to the S.O. prior to ordering of equipment.
- 2.2 The fans shall be robust in construction and suitable for continuous duty operation. It shall be mounted with ease of maintenance and shall be installed with proper vibration isolators to minimize vibration transmission to ductwork and support structure.
- 2.3 Fans selected shall be silent and vibration free when running and suitable for outdoor use.
- 2.4 The fan speed shall not exceed 3000rpm.
- 2.5 Aerodynamic performance of the fan shall be tested and comply with 'AMCA' and 'ISO5801' standards.
- 2.6 Sound level test shall be tested and comply with 'ISO5136.2'.
- 2.7 The casing shall be of self-supporting design, thermoformed (size 400 and below), welded by machine (automatically welded for size 400 and below). The material of construction shall be fire retardant polypropylene (PPs) for fire safety and suitable for use against corrosive 'medium' and a maximum allowable operating temperature of 70°C.
- 2.8 Impeller material shall be fire retardant polypropylene (PPs) for fan size up to 400 (polypropylene {PP} for fan size 450 and above) suitable for use against corrosive 'medium' and a maximum allowable operating temperature of 70°C. It shall consist of 20 forward curved blades injection molded up to size 710 (thermoformed blades, automatically welded from 800). The impeller balancing shall be tested in accordance to VDI2060, Q6.3 standard.
- 2.9 Each impeller above size 450 shall be tested in an over speed test stand above its nominal rate and dynamically balanced on two levels in accordance to VDI2060, Q6.3 standard.
- 2.10 Stainless steel stand shall be used to support the fan and the motor for sizes up to 400 in view of the corrosive environment. Sturdy metal galvanized steel stand shall be used from fan size 450 onwards.
- 2.11 A standard hub seal shall be incorporated onto the impeller hub to prevent corrosive 'medium' from contacting the shaft.
- 2.13 The fans have to be installed with easy access for maintenance.

2.14 Test run and commissioning:

- Check, whether inlet and outlet are connected to ducts or protected by a protection grid.
- Check mechanical and electrical safety devices; make sure, they are properly installed.
- Remove foreign bodies, which still might be in the housing or ducts.

Test run and commissioning

- Check the rotation of the impeller by means of a quick switch on/off of the motor; it must run in the direction as shown on the arrow. In case of wrong direction, change the connection of the wires.
- To protect the motors against overload, the fans shall never be operated with open Inlet or outlet. For test runs, the inlet has to be covered with a suitable plate.
- The current (Amps) as indicated on the motor data plate shall never exceed. The fan has to be checked for its' smooth running.

2.15 SUBMITTALS

- The contractor shall submit a calculation of all Pressure losses, prior to ordering of Exhaust Blowers.
- Provide dimensional drawings and product data on each laboratory exhaust fan assembly.
- Provide fan curves for each fan at the specified operation point, with the flow, static pressure and horsepower clearly plotted.

3. SPECIFICATIONS FOR MOTOR AND ACCESSORIES

Use an electric motors built to IEC standards flange mounted (B5) and Foot mounted (B3), also in ex-protected or multistage versions, for the drive. The impeller hub is coated with aluminium. Power transmission from motor to impeller by means of a directly mounting the impeller on motor shaft. The impeller is fixed on to a flange bearing and the tightening adopter system guarantees secure mechanical connection.

Motor Standard IEC three-phase motors in accordance with IEC. Mounting B5 and B3

Available in motor-mounted (IP55) or cabinet-mounted versions.

The fan shall be driven by a standard TEFC electric motor with class 'F' insulation and class 'B' temperature rise. Motor shall be suitable for outdoor installation with IP55 protection and suitable for operation with 415V/3Ph/50Hz electrical supply. Motor supplied shall be in accordance to IEC standards.

SUB HEAD - 4:
GAS AND UTILITY SYSTEM SPECIFICATION

The laboratory has a requirement of LPG, Nitrogen, Argon, Compressed air, Carbon di oxide, Vacuum and raw water services to be installed at laboratory furniture, fume-hoods and for few floor mounted equipments, as detailed in layout. The gases and utilities will be sourced from following points:

LPG: Central manifold of LPG cylinders will be made outside the laboratory at place shown in drawings. The gas will be suitably and safely controlled and taken to required user points inside the laboratory through header piping system.

Nitrogen: Central manifold of Nitrogen cylinders will be made outside the laboratory at place shown in drawings. The gas will be suitably and safely controlled and taken to required user points inside the laboratory through header piping system.

Vacuum: User intends to use individual vacuum system for respective laboratories at their convenience. There shall be any centralised vacuum line distribution for this service. However, needle valves has been shown the drawings, which needs to be quoted under fume hood and lab furniture scope of work.

Compressed Air: Compressed air will be sourced from a compressor installed at suitable place as shown in drawing. The gas will be suitably and safely controlled and taken to required user points inside the laboratory through header piping system.

Carbon Di oxide: A central manifold of Carbon Di Oxide cylinders will be made outside the laboratory at place shown in drawings. The gas will be suitably and safely controlled and taken to required user points inside the laboratory through header piping system.

Argon: A central manifold of Argon cylinders will be made outside the laboratory at place shown in drawings. The gas will be suitably and safely controlled and taken to required user points inside the laboratory through header piping system.

Raw Water: Raw water will be sourced from booster pumps located at as shown in drawings only for PEB laboratory. The contractor scope is to take a tapping from booster and run it inside laboratory and connect it to user points at fume-hoods, sinks, eyewash and safety showers as shown in drawings. **The raw water service for chemistry, biology and physics blocks shall be under other PHE vendor scope.**

Orbital welding: It is intended to use orbital welding joints, when and wherever is applicable for the sizes of tube joints below 25.4mm OD.

HDPE Drain System: The drainage system to be considered only for PEB laboratory connecting all the sinks, eyewash, safety shower and terminating into the civil drain pit located as shown in drawings. From the drain pits to ETP tank connection shall be under other PHE vendor scope.

1. Codes & Standard

For design of the utility systems various International standards and codes, as applicable will be used. Below mentioned gives the list as applicable:

- American Society for Testing and Materials (ASTM)
A269 Seamless and Welded Austenitic Stainless Steel Tubing for General Service TP 304

- A370 Standard Methods and Definitions for Mechanical Testing of Steel Products
- A632 Seamless and Welded Austenitic Stainless Steel Tubing (Small Diameter) for General Service
- A-262 Standard Practices for Detecting Susceptibility to Intergranular Attack in Austenitic Stainless Steels
- American National Standards Institute (ANSI)
 - B31.1 Code for Pressure Piping, Chemical Plant and Petroleum Refinery Piping
 - B31.3 Process Piping
 - American Society of Mechanical Engineers (ASME)
 - Section IX Welding Qualification
 - Welding Procedure/Qualification:
 - ASME B 31.3/31.8, ASME Sec IX & IS: 817
 - ASME Sec IX & IS: 814:
 - Material Specifications, Welding rods, Electrodes & filler wire etc.
 - ANSI-B-16.5:
 - Pipe Flanges & Flanged Fittings
 - ASME/ANSI-B-16.10:
 - Face-to-Face & End-to-End Dimensions of Valves
 - ANSI-B-18.2.1:
 - Square & Hex Bolts & Screw.
 - ANSI-B-18.2:
 - Stud & Nuts.
 - IS Standard or Equivalent:
 - Gauges

2. System Components

Approved Makes SS tubes, fittings, accessories & support

Sr No	Specification	Details
A.	For Gas Service	
01	M. S. fabricated support framework for in Cylinders and Manifolds	
	Construction	Arc Welding and Bolting
	Finish	One Coat of Primer & two Coates Synthetic enamel paint
	Material Used	MS Channel /Angle/ Plate as per IS: 808/1730 / 1731
	Make	Local Fabricated
02	Cylinder Brackets with Chain	
	MOC	Powder coated M.S. with powder coated Gl. chain
	Specifications	Aesthetically designed gas cylinder brackets with powder coated chain suitable for holding the cylinder securely in upright position.
	Make	Excel Gas/Techman/ Proceca

03	LPG Cylinder adaptor	
	MOC	Brass
	Service	LPG
	Inlet connection	To suit self closing valve of collar dia
	Outlet Connection	LH
	Make	Vanaz / United / Globe
04	Nut Bullnose	
	MOC	
	Bullnose	SS 304
	Nut	Brass
	Filter	Sintered Brass
	Specifications	¼" NPTM X 5/8" BSP RH /LH nut suitable for individual gas. A sintered filter of 25 micron is inbuilt in bull-nose connector to prevent entry of dust / impurities in gas handling system.
	Make	Excel Gas / Proceca / Techman Systems
05	Check Valve	
	MOC	SS 304
	Specification	6.35 mm FNPT
	Cracking Pressure	10 psig (0.69 bar)
	Make	Excel Gas/Techman/ Proceca
06	Hose	
	Material of construction	SS double braided outer core and PTFE inner core
	Working Pressure	200 Bar
	Hydraulic Test Pressure	300 Bar
	Size	6.35 mm, 1000 mm Long
	Connection	6.35 mm Male NPT X 6.35 mm Female NPT
	Make	Excel Gas/Techman/ Proceca
07	Cylinder Isolation Valve	
	Type	Needle type
	Standard	IS 3224
	Material of construction	Brass
	Size	6.35 mm
	Working Pressure	150 Bar
	Make	Vanaz /Indofab/ Techno
08	Manifold Block	
	Working Pressure	150 Bar
	Hyd. Test Pressure	225 Bar
	MOC	SS 304
	Make	Excel Gas/Techman/ Proceca
09	Seamless Tube	

	Working Pressure	150 Bars
	Hyd. Test Pressure	225 Bars
	Standard	ASTM A 269 /ASME SA 213 TP 304
	MOC	SS 304
	Size	6.35mm (0.8mm Thk), 12.7mm (1.2 mm Thk), 19.05 mm (1.65mm Thk), 25.4 mm (1.65 mm Thk)
	Make	SCODA / SLS / Prakash
10	Needle Valve	
	Material of construction	SS 304
	Connection	6.35 mm OD / 12.7 mm OD
	Working Pressure	150 bar
	Make	Excel Gas/Techman/ Proceca
11	LPG Regulator	
	Material of construction	BRASS
	Connection	Inlet & Outlet
	Inlet Pressure	12 bar
	Outlet Pressure	0.5 bar
	Service	LPG
	Make	Vanaz / Techno / United / Messer
12	Semi Auto Changeover System	
	Max inlet pressure	150 kg/cm ²
	Inlet Connection	1/4" NPT (M)
	Outlet Pressure Range	8-10 Kg (Adjustable)
	Outlet connection	1/4"NPTF
	Service	CO ₂ ,N ₂ ,Ar & Spare
	Make	Excel Gas/Techman/ Proceca
13	Flash Back Arrestor	
	Material of construction	BRASS
	Gas Service	LPG
	Working Pressure	As per manufactures Standard
	Make	Vanaz / Messer / Witt
14	Line Regulator	
	Material of construction	SS304
	Size	12.7 mm / 6.35 mm
	Service	N ₂ , Ar, CA & Spare
	Connection	6.35 mm FNPT
	Inlet Pressure	0 – 40 Bar
	Outlet Pressure	0 to 4 Bar
	Make	Excelgas / Techman / Proceca
15	Pressure / Vacuum Gauges	
	Type	Bourdon
	Dial Size	63mm
	Bourdon material	SS 304

	Movement material	SS 304
	Socket	SS 304
	Casing	Aluminium / SS
	End Connection	6.35 mm OD
	Accuracy Range	+ / - 2 %
	Range	
	Pressure (Kg/cm ²)	0 to 10 (for outlet gauges) and 0 to 250 (for inlet gauges)
	Vacuum (mm Hg)	0 to -760 mmHg
16	Tube Fittings	
	Type	ittings with double compression ferrules and nuts / Orbital Weld / NPT M/F Ends
	Material	SS 304
	Size	5 mm OD, mm OD
	Services	CA, VA, CO ₂ , Ar, LPG, N ₂ & Spare
	Working Pressure	150 Bar
	Make	Excel Gas/Techman/ Proceca
17	Room / Line Isolation Ball Valve OR Outlet Isolation Valve Low Pressure	
	Service	Nitrogen, LPG, CA, VA
	Type	Ball Valve Fitting with Compression end
	Material of construction	SS 304
	Size	6.35 mm, 12.7 mm, 19.05 mm, 25.4 mm
	Operating pressure	21 Bar
	Operating Temperature	50 deg C
	Design & Type	BS 5351 & Two/Three piece Construction
	MOC	Body - ASTM A 351Gr. CF 8 Ball - AISI 304 Bore Type - Full Bore Stem - AISI304 Gland - AISI304 Seat Virgin - PTFE Seal Packing - Virgin PTFE Bolts, Nuts & Studs ASTM A 193 Gr. B ASTM A 194 Gr. 2 H
	Make	Excel Gas/Techman/ Proceca
	Body Test Pressure – Hydraulic	31 Kg/ cm ²
	End to End Dimensions	As per ASME B 16.10
	Type of Operation	Manual, Plastic Coated Hand lever
18	Low Gas Alarm Panel	
	Type	2 channel electronic alarm panel with LED indication and piezo buzzer.
	Protection Category	IP 54
	Signal Lamp	LED 5 mm
	Acoustic Signal	Piezo Buzzer f=3.3 KHz

	Housing	Polystyrene
	Make	Rotarex/ Messer / GCE Druva
18	Profile	
	MOC	Aluminium
	Size	27.5 mm x 1 Mtr Suitable for clamps and tee nut
	Make	Excel Gas/Techman/ Proceca
19	Clamps	
	MOC	Virgin Polypropylene
	Size	As per tube size
	Make	Excel Gas/Techman/ Proceca
20	Tagging	
		Non tearable, non earasable permanent Acrylic tags
	Make	Excel Gas/Techman/ Proceca
B.	For Raw Water service	
1	Pipes	
	MOC	CPVC
	Standard	ASTM A 2846
	Size	20 mm,40 mm,50mm,65mm
	Make	Astral/ Ashirwad
2	Pipe fittings & valves	
	MOC	CPVC
	Standard	ASTM A 2846
	Size	20 mm,40 mm,50mm,65mm
	Make	Astral/ Ashirwad
C	For Drainage System	
	MOC	HDPE
	Standard	IS 14333
	Size	50 MM,75 MM & 110 MM
	Make	Godavari / Prime / Finolex

SUB HEAD - 5:
ELECTRICAL SPECIFICATION

SPECIFICATIONS FOR LOW VOLTAGE WORKS

1.0 CODES AND STANDARDS :

All equipments shall generally, comply with the updated issues of:
Applicable Indian Standards.

- ▲ Indian Electricity Act.
- ▲ Indian Electricity Rules.
- ▲ Electricity Bill 2003.
- ▲ National Electrical Code by BIS.

1.1 complying with any other authoritative / internationally recognized standards such as IEC, British, U.S.A, German etc. will also be considered that ensures performance equivalent or superior to Indian Standards. In such case the bidder shall clearly indicate the standard adopted and furnish the copy of latest English version of the same along with the bid and bring out the salient features for comparison.

1.2 All Standards, specifications and codes of practice referred to herein shall be the latest editions including all applicable official amendments and revisions as published one month prior to the date of opening the bids. A list of some of the major standards applicable is given below :

IS: 5	Colours for ready-mixed paints and enamels.
IS: 694	PVC insulated cables for working voltages upto and including 1100 V.
IS: 722	A.C Electricity Meters.
IS: 1248	Electrical indicating instruments.
IS: 13947	LV Switchgear and Control gear. Part-1 to Part-5
IS: 2705	Current Transformers.
IS: 3043	Code of practice for earthing.
IS: 3072	Code of practice for installation and maintenance of Switchgear.
IS: 3231	Electrical relays for power system protection.
IS: 5082	Wrought Aluminium and Aluminium alloys for electrical purposes.
	IS: 8623 (3 parts) Specification for factory built assemblies of Switchgear and Control gear
IS: 13703/IEC-269	HRC Cartridge fuses.

IS: 10118	Code of practice for selection, installation and maintenance of Switchgear (4 parts) and Control gear.
IS: 11353	Guide for uniform system of marking and identification of conductors and apparatus terminals.

SPECIFICATION FOR WIRING / CONDUITING_

1. Wiring forms the most vital area as it is the closest point of access to all. Therefore this shall be done with utmost skill keeping all safety aspects and aesthetics and future works in mind. The workmanship shall be of the best quality, following good engineering and safety practices and adhering to the relevant codes/ Ruled / Acts / IS such as IS 2774/ IS 732 etc. Wherever such Codes / Rules / Acts / IS etc have conflicting views, the Contractor shall follow the better one not take advantage by providing /using inferior material / practices. Code of practice for electrical wiring installations system such as IS 2774 and IS 732 must be strictly adhered to.
2. Electrical grade, non-inflammable rigid PVC conduits and accessories shall be used throughout the installation. The thickness of the conduit shall be minimum 2 mm for 25/32 mm conduits and 2.5 mm for higher sizes.
3. All conduits which are to be taken in the ceiling slab shall be laid on the prepared frame work of the ceiling slab before concrete is poured. Conduits shall be properly fixed to the bends, junction boxes and outlet boxes shall be made water tight by using sealant at ends. Before the conduits are laid, the layout shall be planned to minimize offsets and bends, and a drawing of the final layout shall be submitted for approval / records.
4. Before conduit is embedded in the walls, cutting of all chases, grooves shall be complete. The outlet boxes, point control boxes and inspection boxes shall be properly clamped and embedded and shall be so arranged that at least 12 mm plaster is used to cover it.
5. Conduits shall be terminated into outlet boxes, with check nuts on both sides. All sharp edges etc. shall be removed before wires are drawn.
6. Open conduit shall be fully avoided. If however inevitable, they shall be fixed on to the wall surfaces, ceiling etc. with saddles, clamps and screws and neatly painted to matching colours.
7. All wires shall be of PVC insulated FRLS type of multi strand copper only. The minimum size of the wires shall be 4 sq mm for power circuits.
8. The number of wires in each conduit shall be such that there shall be a minimum 50% free space in the conduit.
9. Strands of wiring shall not be cut for connecting it to terminals.
10. Jointing in wires is to be totally avoided. Each length of wire shall be in single piece.

11. Lighting, Power, UPS wiring circuits shall be segregated and taken in separate conduits. Separate earth wire shall be run for each circuit.
12. Neutral leads shall be taken out separately for each circuit / sub-circuit and not looped amongst different circuits.
13. Colour coding of wires shall be given full importance. Phase wires shall be of red/ blue/ yellow in colour. The neutral wires shall always be black in colour. Earthing wires shall be always green in colour.
14. Earth bus / wires shall not be used as neutral conductors.
15. The incoming / outgoing wires to Distribution boxes / sub-distribution boxes shall be taken in separate conduits and not combined.
16. The number of power socket circuits, not more than 2 points shall be fed from one circuit, irrespective whether they are 6 Amps. or 16 Amps. Sockets. Separate circuits shall be drawn directly from the DBs for high-wattage loads.
17. All circuits shall have positive isolation of neutral by using Double pole / four pole isolators in single phase / 3 -phase circuits respectively. If three phase supply is feeding single phase loads, the loads shall be evenly distributed amongst all the three phases.
18. Switch boxes shall be branded and made of 16 Gauge sheet steel of minimum depth of 75 mm and shall be provided with 20/ 25/ 32 mm knockouts on all four sides, earthing studs of minimum 5 mm plated bolt/ screws, nuts and washers shall be provided in the boxes. The boxes shall be powder coated or plated. Prior to drawing of wires/ fixing of components, it shall be fully cleaned to remove all cement/plaster/dust etc.
19. The switch boxes shall be provided with 4 mm thick acrylic covers of approved color with plated / coloured / brass hardware or poly carbonate dual plates in case of Modular Switches are specified.
20. All unused knockouts/ cut-outs shall be neatly and properly plugged/ covered.

The measurements given in the Specifications / Schedule of quantities are tentative. The actual measurements will be taken at the time of execution of work. Measurement of cables / wires shall be taken from entry point to entry point of panels / distribution boards/ boxes/ switch boxes etc.

3.0 GENERAL SPECIFICATIONS FOR CABLE LAYING ON CABLE TRAYS

1. Cables used on 415 V system shall be of 1.1 KV grade, aluminium/Copper stranded/single conductor, PVC insulated, PVC sheathed, flat / round GI wire armoured and overall PVC sheathed.
2. Cable identification tags shall be of 2 mm thick, 20mm wide aluminium strip of suitable length to contain cable identification.
3. Cables shall be neatly arranged on trays and neatly clamped / tied to prevent sagging.

4. Wherever cables are laid in trenches (out door), depth of trenches shall not be less than 750mm and width 600mm, After cable has been laid and straightened, it shall be covered with 75mm thick layer of sand. Similarly the excavated trench should be filled upto 75mm sand prior to cable lying. Over this sand layer a course of cable protection tiles to overlap cables by 50mm on either side shall be laid. Trenches shall then be backfilled and consolidated. The suitable markers shall be provided at regular intervals

4.0 SOCKETS AND ACCESSORIES

4.1 GENERAL REQUIREMENTS

All sockets 6A and 16 A ratings shall be of flush mounting type (unless otherwise indicated with control switches of plate type design of the same rating as that of the sockets. All socket outlets shall be of 3 pin/multi pin type with PVC/metal boxes.

4.2 METAL OUTLET, COVERS AND SWITCHES

The switch box shall be made of modular metal boxes with suitable size modular cover plates. Modular metal box shall be made of mild steel on all sides except on the front. The metal box (other than modular type) shall be made of metal on all sides except on the front. Boxes shall be hot dip galvanized mild steel. Metal boxes up to 20 x 30 cm size M.S. box shall have wall thickness of 18 SWG and MS boxes above 20 x 30 cm size shall be of 16 SWG. The metallic boxes shall be painted with anti corrosive paint before erection. Clear depth of the box shall not be less than 60mm. All boxes shall be covered from top with Phenolic laminated sheet of approved shade. These shall be of 3 mm thick synthetic phenolic resin bonded laminated sheet as base material and conform to grade P-I of IS: 2036-1994.

All 5 and 15 Amp switches shall be modular type of 240 volts A. C grade. All switches shall be fixed on modular metal boxes. All 5 Amp socket shall be 5 pin type and 15 Amp socket shall be 6 pin type (unless otherwise specified) suitable for 15/5 Amp. All modular switches, sockets, telephone outlets, etc. shall be in off white finish unless otherwise specified. The switches controlling the lights or fans shall be connected to the phase wire of the circuit. Switch boards shall be located at 1200 mm/ above Furniture from finished floor level unless otherwise indicated on drawings or directed by engineer in charge

In case of computer power points, power points, telephone points etc. to be fixed on laminated partition board (furniture), same shall be fixed on laminated board (portion of laminated board meant for fixing power points) with base plate/cover plate as applicable, duly fixed with screws

All modular switches, sockets, telephone outlets etc. shall be fixed modular metal boxes with modular base plates and modular cover plates on top.

4.3 INDUSTRIAL TYPE SOCKETS

Industrial type sockets shall be provided wherever specifically called for on the drawings. Industrial sockets shall be rated as specified. Plugs and sockets shall have 3 pins for single phase applications and 5 pins for 3 phase applications. The sockets shall be provided with suitable plug top and cable entry device and shall be controlled by a suitably rated rotary switch. The sockets shall be housed in suitable PVC housings of IP 54 protection class.

4.4INSTALLATION

All switch connections shall be made only after ensuring the continuity of wires and terminations. Tapping of wires shall be done only at the terminals of switches, sockets and ceiling roofs and terminal blocks. Under joining and extension of wires in pipes and conduits shall not be carried out under any circumstances.

The arrangement of switches and sockets shall be neat, systematic, and aesthetic. The Contractor shall obtain approval from the CLIENT /CONSULTANTS with regard to the proper location of switches and all outlets.

The enclosures of sockets and pin of the sockets shall be connected to the ground through a proper size insulated earth continuity wire. Metal or FRP phase barriers shall be interposed between switches located in a common enclosure, when wired on different phases.

4.5 LABELING

The Contractor shall provide labelling for all, industrial-type sockets, socket outlets, permanently connected devices, etc, identifying the distribution board and circuit breaker number, in an approved manner, acceptable to the Client / Consultants, to provide ready identification. Hand painted labels are not acceptable.

5.0 POWER DISTRIBUTION BOARD WITH MINIATURE CIRCUIT BREAKERS

1. The enclosure should be of special grade CRCA sheets or thermoplastics, in case of metal enclosures, they should be subjected to seven tank phosphate and rust retardant process final finish to be powder coated and scratch resistant.
2. Enclosure to be of weather proof construction, IP 42 for indoor use, and IP54 for out Door use. Distribution boards to be designed to conform to IS 8623
3. Suitable knockouts should be provided for different size of cables and cable glands.
4. Adequate clearance to be provided between DIN rails. DIN rails to be designed for easy mounting of MCB's, RCCB's load insulators, etc.
5. Current carrying parts should be of electrolytic grade copper.
6. Neutral bars to be of brass with insulation and separate earth bars to be provided.
7. MCB's should have breaking capacity of 10KA (IEC 898) and 15KA (IEC and should meet the requirements of IS:8828 BS 3871, VDE 0641 and IEC : 898
8. Circuit identification stickers or charts to be provided.

6.0 SPECIFICATIONS FOR CAT-6 UTP CABLES

1. Shall be of Cat-6 UTP cable with 4-pair 23/24 AWG oxygen free copper wire and conforming to standards EIA/TIA 568-B.2, FCC part 68, IEC 60603-7 and support 100 Mbps speeds. Shall be

having factory crimped Cat-6 RJ45 modular plugs and thermally fused strain relief moulded boot with anti-snap mechanism fitted into clear poly-carbonate housing. The locking pin.

2. Shall have protection for avoiding breakage of the same while dressing of the patch cord.
3. Shall be of the 3ft / 1 mtr. And 10ft / 3 mtr and 15ft/5mtr. Specified lengths.
4. Shall have minimum mating cycles of 750.
5. Return loss should be r 23 dB and attenuation maximum of 0.2 dB.

7.0 TELEPHONE WIRING

The point wiring shall be carried out with Four pair cat-6 cable, unarmored, PVC insulated, 0.61 mm dia annealed tinned copper conductor in suitable size conduit (one pair always remaining spare for one point)

Minimum Dia of Conduit for Internal/External Telephone Wiring - 20mm. If more than one telephone point has to be provided at one point, multicore, unarmored telephone cable shall be used (pairs required are equal to 2 No. of points) in suitable size of conduit.

(b)The point shall commence from the main telephone tag box/sub tag box and would terminate at outlet box of point. Connection at both ends included in point wiring.

(c)Fixing of conduit, conduit accessories draw out boxes and outlet box etc. in concealed/surface conduit works as that of wiring for light fixtures shall be applicable for telephone wiring conduit system also.

(d)Joint in telephone wiring (between main tag box/sub tag box and Outlet box of point) shall not be allowed and the contractor should bear the wastages of wire if resulted due to this special requirement of telephone system.

(e)External/Internal telephone and intercom wiring can be drawn in the same conduit, provided after drawing wires, 50% of conduit cross sectional area is free. However, independent PVC insulated telephone wire of suitable pairs shall be used for external, internal and intercom.

(f)To identify each pair of multi pair telephone wire/cable, PVC indication numbers shall be put on both ends of pair just before termination.

Measurement of Telephone Point Wiring:

There shall be on linear measurement for telephone point wiring. These shall be measured on meter basis. Wiring for each jack type telephone outlet shall be done directly from the Telephone Tag Block of that floor/area.

7.1 Telephone Tag Boxes

These shall be of MS sheet 2 mm thick with connector suitable for telephone connection (as approved by ITI). It shall have hinged MS sheet cover during pulling. The continuity of the wires should be found OK before termination if not the damaged wires should be replaced. The wiring and location of the light and Switch points shall be carried out as per drawing and site conditions.

8.0 SPECIFICATION FOR RACEWAYS

8.1 METAL RACEWAYS:

As per NEC (National Electric Code) & NEMA (National Electric Manufacturers Association) standards, raceways should be fabricated from 2 mm M.S sheet, confirming to IS: 226/1975 and if these are galvanized, Galvanizing should confirm to IS: 2629. The Race Ways should be given with Synthetic Enamel Paints confirming to IS: 3537 or IS: 168. Either one coat of Red Oxide Primer followed by two coats of Epoxy Paint has to be provided on specific demand.

8.2 PVC RACEWAYS:

As per NEC (National Electric Code) & NEMA (National Electric Manufacturers Association) standards, raceways should be fabricated from 2.5 mm thick PVC-u sheet, confirming to CE marked, to meet the EMC and LV directives. The PV Cu materials used are non-corrosive and not affected by sea water, mineral adds, alkalies etc. Clip on covers with optional fix & interchangeable accessories provide continuous accessibility of rewiring & maintenance.

Expansion coupler plates/ jointing strips are used to join two Race Ways. It depends on the height of edge of a Race Ways whether coupler plate is needed or a jointing strip. These has to be supplied depends on the requirement at the site.

EARTHING OF RACE WAYS

Each length of Race Ways should be earthed at least at two places by G.I FLAT of minimum 25x3 mm, to main earthing systems.

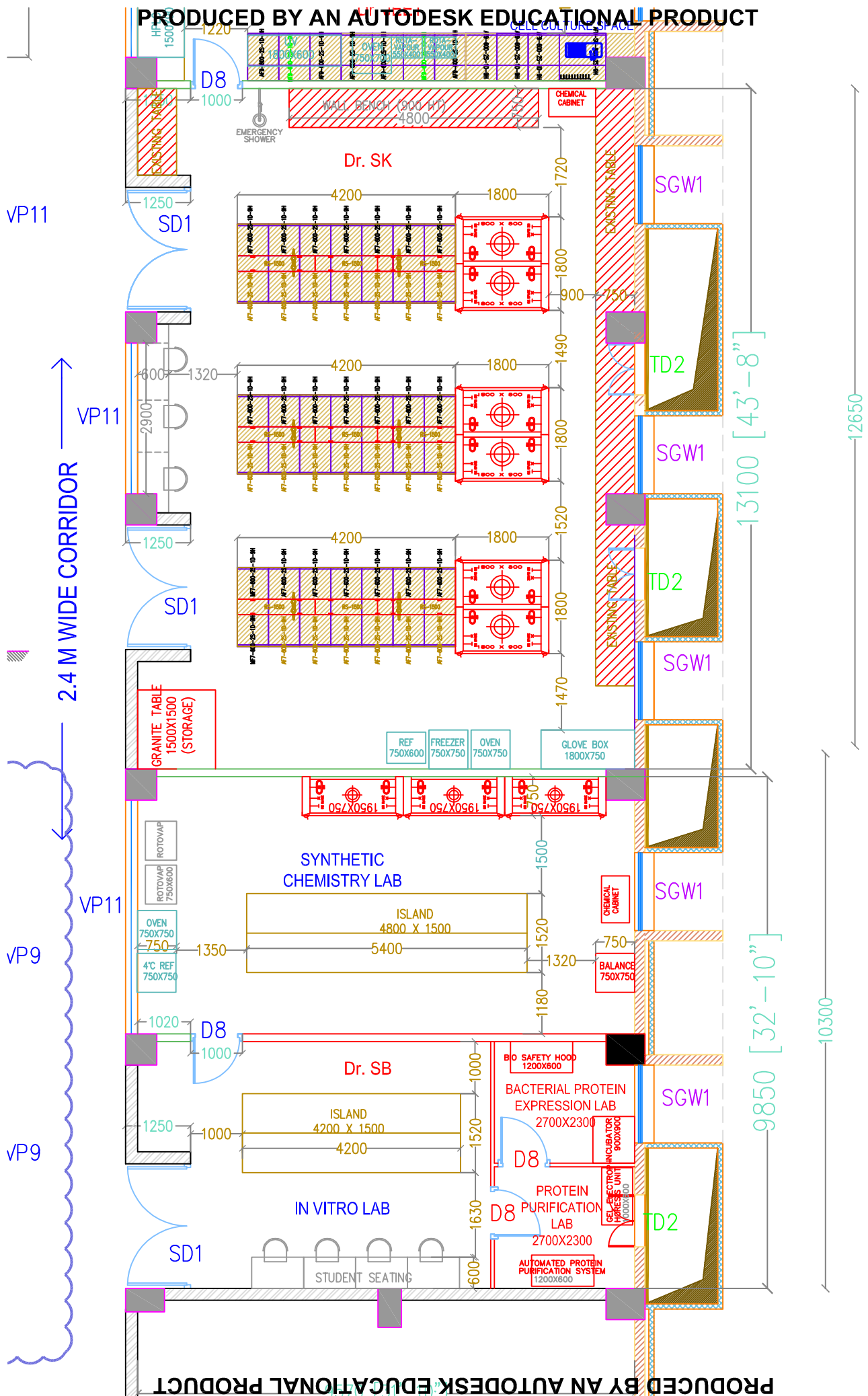
LIST OF APPROVED MAKES

S/N	DESCRIPTION	APPROVED MAKES
1	Laboratory Fittings	Water Saver / Broen / FAR
2	Laboratory Sinks and Drip cups	Water Saver / Broen / Alloyplas / Method
3	Laboratory Electrical Sockets	Northwest / Legrand (MOSAIC) MK / Siemens
4	Data & Voice Sockets	Northwest / Legrand (MOSAIC) MK / Siemens
5	Eyewash / Shower	Water Saver / Broen / B-Safety/FAR
6	Spot Extractor	Fumex / Alsident / Nedermann
7	FM Approved Safety Cabinets for Flammable liquids and Acids	Justrite / Kewaunee/ Koettermann / Asecos
8	Fume Hood Service Fixtures	Water Saver / Broen / / FAR
9	Fume Hood Electrical Socket	Northwest / Legrand (MOSAIC) MK / Siemens
10	Face Velocity & VAV Controls	Tel / Phoenix / Schneider
11	PP sheets for exhaust ducting	Mandhani/Dugar/Khanna / Simona / Beck
12	Isothelic Resin	Mechemco/Kaysynth/Orsyn / Simona
13	PP Moulded Exhaust Blower	Colasit/ Europ-plast / Plastifer
14	VFD	Invertek/Siemens/ABB/Danfoss
15	Fume hood face velocity monitor	Tel / Phoenix / Schneider
16	Room pressure Monitor	Tel / Phoenix / Schneider
17	Actuator	Siemens/Belimo/Neptronic / Schneider
18	Air cooled chillers and Heat pump	Trane / Climaveneta / York / Bluestar
19	Medium pressure AHU	ZECO / Caryaire /VTS
20	Supply & Return Diffusers & Grills	Carryaire / Ravi Star / Air Guide / Cosmos
21	Modulating Motors	Siemens / Trane / Sauter / Honeywell / Belimo
22	Filters	Aerosol / Erofil / John Fowler / EMW / AAF
23	Motors	ABB/ Kirloskar/ Siemens/CG
24	Galvanized Sheet Steel	SAIL / Jindal / Tata
25	MS Pipes	JINDAL / TATA
26	M. S. fabricated support framework for	EXCEL Gas / Local Fabricated
27	Cylinder Brackets with Chain	Excel Gas / Panam / Excel Hydro
28	LPG Adaptor	Vanaz
29	Nut Bullnose	Excel Gas / Panam / Excel Hydro
30	Check Valve	Excel Gas / Panam / Excel Hydro
31	Hose	Excel Gas / Panam / Excel Hydro
32	Cylinder Isolation Valve	Excel Gas / Panam / Excel Hydro
33	Manifold Block	Excel Gas / Panam / Excel Hydro
34	SS Pipe	Suraj / Ratnamani / Prakash
35	SS pipe fittings	DHV / SOPL
36	Needle Valve	Excel Gas / Panam / Excel Hydro
37	LPG Regulator	Vanaz / Indian
38	Shutoff Valve	Excel Gas / Panam / Excel Hydro
39	Flash Back Arrestor	Vanaz / Messer
40	Source Connector Compressor	Excel Gas / Panam / Excel Hydro
41	Single Stage Regulator	Excel Gas / Shavo
42	Pressure / Vacuum Gauges	Waree / H guru
43	Tube Fittings	Excel Gas / Panam / Excel Hydro
44	SS Tubes	Suraj / Ratnamani / Prakash

45	Room / Line Isolation Ball Valve OR Outlet Isolation Valve Low Pressure	EXCEL / Indian
46	Tube Support Profile	Excel Gas / Panam / Excel Hydro
47	Tube Support Clamps	Excel Gas / Panam / Excel Hydro
48	Tube Tagging	Excel Gas / Panam / Excel Hydro
49	PPR Pipes	Sangir/ Prime
50	Pipes fittings & valves	Sangir / Prime
51	SS ball valves	AUDCO,HABONIM
52	Air vent Valves	Emerald
53	Insulation	Lloyds / Beardshell
54	Gaskets	Klinger
55	Welding Rods	ESAB
56	Paints	Asian / Nerolac / Berger
57	Anchor Fasteners	HILTI
58	Balancing Valve	Flowcon /TA Hydronics
59	Butterfly Valve	Audco / Sanders/ Bonomi
60	Globe Valve	Neta/Leader
61	PUF Insulation Foam	Lloyds/Salvicate
62	Fibreglass material	KIMMCO, /UP Twiga / Owenscorning.
63	Thermostats and	Honeywell/Siemens/Trane/Sauter/Johnson
64	Humidistats	Honeywell/Siemens/Trane/Sauter/Johnson
65	2-Way Valves	Honeywell/Siemens/Trane/Sauter/Johnson
66	Motorized Isolation valves	Honeywell/Siemens/Trane/Sauter/Johnson
67	Vibration isolators	Dunlop
68	Measuring Instruments	Toshniwal / Meco/Rishab/ Motwane
69	Cable Tray	MEK / METALIMFACTS/Profab/BSPL Bhopal
70	DX Units	BLUESTAR/VOLTAS/CARRIER/LG
71	Flexible Ducts	ATCO / Supaflex / Polyaire
72	Pressure Gauges	Waree / H guru
73	Thermometers	Waree / Artherm, Italy
74	Test Points	Anergy
75	Automatic Air Vent	Anergy
76	Variable Air Volume Box	Trane, Barcol Air, Titus, Trox, Siemens
77	Fire Dampers	Greenheck / Carryaire/Ravistar
78	Inline and Axial Fans	Greenheck / Carryaire / System air / Almonard/ Sasthas
79	Self-Balancing	Aldes
80	Pump sets	ITT Bell & Gossett / Grundfos / Kirloskar
81	MS Conduit Pipes painted inside & outside 16 SWG ISI Marked	AKG / BEC / NIC
82	MS Conduit accessories & Junction Boxes	All made out from 16 SWG MS Sheet
83	FRLS PVC Electric Conduit Pipes & accessories & Junction Boxes	Bajajplast / Sun/ Precision / Phenolex
84	Modular Boxes, Switches & Sockets	Legrand (Mosaic) Crabtree / Hausman/ L & T
85	Industrial Sockets & Plugs	Legrand/ L&T / Neptune/Schneider
86	Distribution Boards	Legrand/ Siemans/ L&T(Hager) / Schneider
87	Loose Wire Box for Distribution Boards	Legrand/ Siemans/ L&T(Hager) / Schneider
88	MCBs, ELCBs	Legrand (Lexic)/ Siemens / L & T (Hager) / Schneider (Merlin Gerin)

89	MCCBs, Air Circuit Breakers	Legrand/ Siemens / L & T / ABB/ Schneider
90	Switch Disconnecter Fuse units & HRC Fuses	L & T / Siemens / GE Power / ABB /Schneider
91	Change Over Switch	L & T / HPL / Havells
92	Panel Meters	L & T/ Neptune / AE / Rishab
93	Current Transformers	AE/ Kappa/ Ind Coil
94	Selector switch	Kaycee / L&T (Salzer) / Siemens/BCH
95	Indicating Lamps, Push Buttons, Emergency switch	L&T(Esbee) / Siemens/C & S/ BCH
96	Protective Relays, Auxiliary Relays	ABB/Alstom/ Siemens/L&T/JVS
97	Contactors	L & T / Siemens / GE Power / ABB
98	Electronic Energy Meters, Multifunction Meters	Neptune / L&T/ HPL/ Konzerv
99	Timers	Siemens/L&T(GIC)/BCH/Schneider
100	Terminal Blocks	Connectwell/ Elmex
101	Electrical Switchboards / Feeder Pillars/ Panels/ MCC/ PCC	Electra Power/ Neptune/ BSPL
102	Wires PVC Insulated and PVC Sheathed FRLS / Control Wires ISI Marked	Skytone/ Polycab / R R Kabel / Lapp / Finolex/L&T
103	PVC / XLPE Insulated 1.1 KV LT Cables (ISI marked)	Universal/ Gloster/ Skytone/ Polycab / Ravin/ Finolex /CCI
104	XLPE Insulated HT Cables, (Armoured & Un-armoured)	Universal/ Gloster/ Skytone/ Polycab / Ravin/ Finolex
105	Cable Lugs	Alcon (Heavy Gauge)/ Jainson/ Dowells
106	Cable Glands	Comet/ Jainson/ Dowells
107	Lighting Fixtures & Luminaries	Philips/Crompton/GE/AHMayar
108	Fluorescent/CFL / T5 / MV/ SV Lamps	Philips/Crompton/Osram
109	Ceiling Fans	Orient / Usha/Crompton
110	Room Exhaust Fans	Almonard/ Alstom/ Crompton/ Usha
111	Lamp Holder (Brass)	KAY / SSK
112	GI Pipe 'B' Class	Jindal Hissar / Surya prakash
113	Telephone Wires/ Telephone Cables/ Jelly Filled Telephone Cables	Delton/ Skytone/ R R Kabel/ L&T
114	Telephone Tag Blocks	Krone/ Pouyet

115	Telephone Outlet	Hausman/ Legrand/ Crabtree / NorthWest, WIPRO
116	GI Raceways	MDS (mosiac)/ ESS AAR/ MK
117	PVC Raceways	Fixopan/ Modi
118	DLP Plastic Trunking	MDS / MK / OBO
119	Casework hardware- telescopic slides, hinges, tower bolts, locks, fixtures and fittings.	Hettich/ Haffle
120	Geysers	Racold/ Usha Lexus/ Bajaj





भारतीय विज्ञान शिक्षा एवं अनुसंधान संस्थान पुणे
INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH (IISER), PUNE
Main building, Dr. Homi Bhabha Road, Pune : 411 008

VOLUME III

COMMERCIAL BID

TENDER FOR

Name of work: Supply and Installation Lab benches, Fume Hoods and exhaust system in GF Chemistry block, Main Building at IISER Pune.

NIT- 3/ IISER/Pune/2015-16

DATE OF SUBMISSION OF TENDER-

On 01 09 2015 BEFORE 15 00 Hrs

TO BE SUBMITTED TO:

The Director,
IISER, Pune, Main Building,
Dr. Homi Bhabha Road, Pashan, Pune - 411 008
Maharashtra.

SCHEDULE OF QUANTITY (BOQ)					
Name of work: Supply and Installation Lab benches, Fume Hoods and exhaust system in GF Chemistry block, Main Building at IISER Pune.					
ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
1	LAB FURNITURE				
	MODULAR LAB FURNITURE WITH C FRAMES				
1.1	Providing, design ,supply, Installation and commissioning of best quality factory made ready built Knock down type modular steel laboratory furniture with working height 750 mm to 900mm high as per architectural drawings, all surfaces zinc phosphated/degreased and epoxy powder coated to 60 to 80 microns thickness to pass the required ASTM/ IS Codes, complete as per technical specifications given in the tender document. Rate shall be inclusive of cost of all materials and operations described in the item, drilling holes, necessary welding, required nuts and bolts for joining with the supporting members, rivets, pins including all part items complete as per approved shop drawings and directions of Engineer in charge. Laboratory furniture in general shall consists of under structure "C " frame and under bench suspended with sliding arrangement, sink units, Laboratory bench designed for carrying a loading of 300 Kg/sqm, regent shelves, wall rails, storage cabinets etc. consisting of the following:				
	PART A- SUPPLY OF LAB FURNITURE				
	C frame structure				
1.1.1	Providing and supply of "C" frame and supporting structure or upright frame members for complete knock down type lab furniture comprising of 70mm x 50mm x 2 mm thick or required approved size hollow tubes manufactured from prime quality CRCA steel 2 mm thick or standard hot finished welded type hollow tubes 2mm thick sections, screwed/ riveted/welded including all cross link members, zinc phosphated/degreased and epoxy powder coated to 60 to 80 microns thickness to pass the required ASTM standards complete as per technical specifications given in the tender document. Each C- frame should be provided with height adjusting plastic/cast feet approx. 30mm above the floor for easy cleaning, adjustable to a tolerance of -5/+5mm to compensate for uneven flooring. Work Top support of C frame assembly shall be of working height from 750mm to 900mm as per site requirements/architectural drawings. C frame should be provided with a suitable unistuds and angle frame to facilitate holding and sliding horizontally the under bench suspended cabinets. Rate shall be inclusive of cost of all materials and operations described, drilling holes, welding, nuts and bolts for joining the supporting members, rivets, pins, all taxes etc. complete as per approved drawings and directions of Engineer in charge. Finished "C" frames/upright frames of lab benches, fixed at site shall be measured in metres and multiplied by actual per m weight of finished member for calculating the net weight for payment.				
1.1.1.1	In general C frame height shall be 725 mm to 875 mm and 550 mm to 725 mm depth. Cross members length shall be 900 mm to 1800 mm as per required table size.	750	Kg		

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
1.1.1.2	Vertical/uprights supports for adjustable regent shelves, wall rails or supports for adjustable tables/shelves, supporting frame manufactured from prime quality CRCA steel 2 mm thick with chemical resistance epoxy powder coating 60 micron thickness matt finish of approved colour, with height adjustment arrangement for every 25 mm height floor mounted or connected with C frames with nuts and bolts or wall mounted with dash through fasteners of required size complete as per direction of Engineer in charge.	350	Kg		
	Back/End/Side/ Modesty Panels/panel for service ducts/shutters panels for service ducts				
1.1.2	Providing back/end/side panels, made of 1.0mm thick CRCA steel, all round edges folded and bent as per drawings, fixed/open able with snap fitting locking arrangements as per approved design, epoxy powder coated 60 microns thickness. All the electrical fittings, wires coming from mains to switches on service panels should be completely enclosed and all entry points of electrical/data/voice services wires/cables should pass through gland protected openings to avoid any accidental situations. All the accessories should have a very high temperature withstanding capacity and electrical insulation properties. Rate is inclusive of cost of all materials, wastages, edge moulded part of sheet, all fittings required for fixing and operations described below and in general specifications. Finished panel outer length and breadth of panel (out to out without considering the folded edge moulded sheet) shall be measured for working out the area in square meters for payment.	25	Sqm		
	18mm granite work top				
1.1.3	Providing and supply of Table top 18mm thick mirror polished jet black granite with all-round overhang of 30mm from the under structure for table tops, all exposed sides shall be with full round bull nosing, for sink table tops surface V grooves for drainage of surface water along with outer edge 25 mm wide granite edge border properly moulded fixed with Araldite etc over the granite top so as to avoid any spill over of water from the surface of the granite in sink units tops or wherever required, maximum length of 2.4m with joints to suit the bench length, fixed above steel sub structure with 6mm thick neoprene levelling strips. Drip groove shall be provided 2-3mm wide and depth to avoid spillage. Rate is inclusive of cost of all materials and operations described in the item and in general specifications. Finished work granite top (out to out) shall be measured for working out the area in sqm for payment. Rate shall be inclusive of cost of all the materials, making cut-outs, opening in the platform, rounding the edges, V grooves and all operations. Samples of the jet black granite to be got approved from the Engineer in charge before taking up the work. Table top surface area of granite fixed shall be measured for payment.	50	Sqm		
	Under Bench Base Unit				

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
1.1.4	Providing and supply of steel cabinet bodies with chemical resistance epoxy powder coating 60 micron thickness matt finish of approved colour with flush front construction with intersection of vertical and horizontal case members, such as end panels, top rails, bottoms and vertical posts in same plane without overlap. Exterior corners shall be spot welded with heavy back up reinforcement at exterior corners. All face joints shall be welded and ground smooth to provide a continuous flat plane. a) Steel used in construction of cases shall be 1.2mm thk except as follows: b) Case and drawer suspension channels, 2mm thk. c) Top and intermediate front horizontal rails, table aprons, hinge reinforcements, and reinforcement gussets, 1.6mm thk. d) Drawer assemblies, door assemblies, bottom, bottom back rail, toe space rail, and adjustable shelves, 1mm thk. Cabinets, 900mm to 1450mm length, shall be provided with 2 shutters, 600mm length shall be provided with 1 shutter. Rate is inclusive of cost of all materials and operations described above and in general specifications. Mode of measurement shall be in numbers as described below.				
1.1.4.1	BASE UNIT 2 DOOR - 875mm(H)x560mm(D)x900mm(L) with lock of approved make.	10	each		
1.1.4.2	BASE UNIT 2 DOOR - 875mm(H)x560mm(D)x1450mm(L) with lock approved make	10	each		
	Under Bench Suspended Units				
1.1.5	Providing and supply of under bench suspended base steel cabinets. All cabinet bodies shall be flush front construction with intersection of vertical and horizontal case members, such as end panels, top rails, bottoms and vertical posts in same plane without overlap. Exterior corners shall be spot welded with heavy back up reinforcement at exterior corners. All face joints shall be welded and ground smooth to provide a continuous flat plane. The rate is inclusive of the cost of all materials, labour, Aluminium handle as per specifications. Finished work shall be measured in numbers. Suspended cabinets should have a horizontal sliding arrangement with heavy duty nylon rollers. a) Steel used in construction of cases shall be 1.2mm thk with chemical resistance epoxy powder coating 60 micron thickness matt finish of approved colour except as follows: b) Case and drawer suspension channels, 2mm thk. c) Top and intermediate front horizontal rails, table aprons, hinge reinforcements, and reinforcement gussets, 1.6mm thk. d) Drawer assemblies, door assemblies, bottom, bottom back rail, toe space rail, and adjustable shelves, 1mm thk e) Cabinets of 600mm length shall be provided with one shutter, cabinets of 900mm, 1200mm and 1500mm length shall be provided with 2 shutters. Rate is inclusive of cost of all materials and operations described in item and technical specifications except cost of "C" frame and upright frames which shall be paid for separately. Mode of measurement shall be in numbers as described below.				

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
1.1.5.1	SUSPENDED BASE UNIT 490(H)mmx530(D)mmx600mm(L) with 1 front door shutter with lock approved make	10	each		
1.1.5.2	SUSPENDED BASE UNIT 640(H)mmx530(D)mmx450mm(L) with 1 front door shutter with lock approved make	10	each		
1.1.5.3	SUSPENDED BASE UNIT 640(H)mmx530(D)mmx600mm(L) with 1 front door shutter of 480H and 1 drawer of 150H with lock approved make	10	each		
1.1.5.4	SUSPENDED BASE UNIT 640(H)mmx530(D)mmx900mm(L) divided into 2 front door shutters of 480H and 1 drawer of 150 H with lock approved make	10	each		
	Full Height Open Storage				
1.1.6	Providing and supply of full height wall storage units made of CRCA steel with chemical resistance epoxy powder coating 60 micron thickness matt finish) of approved colour and should be 1.2mm thick, double wall construction for side walls with sound dampening technology or side and back wrap around body with corner posts with holes to support shelf supports. shelves shall be provided, constructed from 1.0mm thick CRCA steel with all around 27mm strengthening edge, load capacity of 90 kg/ shelf , height should be adjustable to optimise the storage space in side the cabinet. A steel plinth should be integrated into the carcass with four screw feet for height adjustments (-5/+15 mm). Plinth height 90 mm. The rate is inclusive of the cost of all materials, labour, all taxes etc. Finished item shall be measured in numbers.				
1.1.6.1	OPEN RACK OF SIZE: 900w x 400d x 2100ht with 5 nos. shelves	5	each		
	Full height solid swing door cabinets				

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
1.1.7	Providing and supply of full height wall storage units made of CRCA steel with chemical resistance epoxy powder coating 60 micron thickness matt finish of approved colour and should be 1.2mm thick, double wall construction for side walls with sound dampening technology or side and back wrap around body with corner posts with holes to support shelf supports. Shelves shall be constructed from 1.0mm thick CRCA steel epoxy powder coated with all around 27mm strengthening edge, load capacity of 90 kg, height should be adjustable to optimise the storage space in side the cabinet. Doors should be made of 1.2mm thick CRCA/ galvanized steel, double skin construction with sound dampening technology. Doors should have 270° open able 3-axis adjustable hinge with integrated latch or SS 304 knuckle hinges with separate door catches. All overclosing door tops should be chamfered by 45deg. to avoid collection of dust on it, for inclosing shutters square door profile is acceptable. All cabinets should have load carrying capacity of 90 kg per cabinet. All cabinets should have magnetic label to show details about it's content. All storage cabinets should be provided with interchangeable cylinder locks. A steel plinth should be integrated into the carcass with four screw feet for height adjustments (-5/+15 mm). Plinth height 90 mm. Rate is inclusive of cost of all materials and operations described above and in general specifications. Mode of measurement shall be in numbers as described below.				
1.1.7.1	900w x 560d x 2100 h with 5 shelves+ 450h open cabinet above	5	each		
	Overhead framed glass sliding door cabinets				
1.1.8	Providing and installing wall storage units made of CRCA steel with chemical resistance epoxy powder coating (60 to 80 micron thickness matt finish) of approved colour and should be 1.2mm thick, double wall construction for side walls with sound dampening technology or side and back wrap around body with corner posts with holes to support shelf supports, shelves shall be provided, constructed from 1.0mm thick CRCA steel epoxy powder coated with all around 27mm strengthening edge, load capacity of 90 kg/ shelf, height should be adjustable to optimise the storage space in side the cabinet. Framed glass sliding door leaf shall be constructed from 1.2mm thick CRCA/ galvanized steel panels, bent to 20mm thickness all around, dampened with contact cushions with 6mm thick float glass with polished edges fixed to shutter frame with pvc gasket. A guide runner shall be provided at the bottom with plastic coated ball bearings or the shutter should be top hung, supported on a ball bearing nylon roller running in a track attached to the top of the cabinet with a guide rail at the bottom. All cabinets should have load carrying capacity of 90 kg per cabinet. All cabinets should have a magnetic label to show details about it's content. All storage cabinets should be provided with interchangeable cylinder locks. Rate is inclusive of cost of all materials and operations described above and in general specifications. Mode of measurement shall be in numbers as described below.				

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
1.1.8.1	Size: 750w X 400d X 950h with 2 adjustable shelves	5	each		
	Tall Reagent Storage Case				
1.1.9	Providing and installing tall reagent storage cases made of 1.2mm thick CRCA steel with chemical resistance epoxy powder coating (60 to 80 micron thickness matt finish) of approved colour, having double wall construction for side walls, smooth exterior and interior surfaces, cabinet sides with spar edges in the front to accommodate door hinges, sides to have holes to accommodate shelving supports or side, back wrap around body with corner posts with holes to support shelf supports. A steel plinth should be integrated into the carcass with four screw feet for height adjustments (-5/+15 mm). Plinth height 90 mm. Shelving: Shelves shall be constructed from CRCA steel panels (1.0 mm thickness) with all around 27mm strengthening edge; load capacity of 90 kg., height should be adjustable to optimise storage inside the cabinet. Doors should be constructed with double skin construction with sound damping technology, 270° open able 3 axis adjustable hinge or SS304 knuckle hinges with separate door catches for both doors with integrated SS D handle- 160mm high, diameter 10mm. Reagent cabinet should be provided with 75mm dia, vent at the top to connect exhaust duct. Rate is inclusive of cost of all materials and operations described above and in general specifications. Mode of measurement shall be in numbers as described below.				
1.1.9.1	Size- 900w x 400d x 2100h with 5 shelves	6	each		
	Above bench- up to 5 stage reagent shelves				

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
1.1.10	Providing and supply of adjustable overhead shelves made of CRCA steel with chemical resistance epoxy coating (60 micron thickness matt finish), complete modular design consisting of maximum 5 stage horizontal storage shelves, 500mm width for bottom, second and third shelves and 600mm width for fourth and fifth shelves or as per required width with suitable brackets. The ends and intermediate vertical uprights/supports should be 1.2mm & horizontal shelves of 1.0mm thick CRCA steel. Each shelf should have a load carrying capacity of 50 kgs. of UDL for the length of 1000 mm. Each vertical panel shall be assembled with horizontal shelf with M6 fasteners having Zinc-Cobalt coating for better corrosion resistance. Supporting uprights, adjustable bracket for supporting shelves of reagent shelves shall be paid for separately under BOQ item no 1.1.1.2 and front supporting aluminium extruded section edging shall be paid under item No 1.1.15.2. Reagent shelf top -length and breadth (actual plan area for each shelf) shall be measured for working out the area for payment.				
1.1.10.1	METAL REAGENT SHELF 400 mm(D) to 600mm(D) and length 900 mm to 1700mm with suitable edge strengthening and fixing arrangements	10	sqm		
	Sink and Accessories				

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
1.1.11	Providing and supplying of PP/Epoxy Sink with all accessories. Work includes cutting opening in granite/ trespa as per drawing and polishing edges with half round nosing, 3 way Epoxy Powder Coated faucet, Make :- Broen / Water saver or equivalent; PEG BOARD made up of 1mm thick SS 304 , 750mm x 750mm with 33 No of projected polypropylene PEGS adjustable with minimum spacing of 100mm between pegs. PP Anti Siphon bottle trap and waste pipe up to drain outlet on the floor complete as per direction of Engineer-in-charge. Contractor shall be provided drain and water arrangement at floor level. PP sink to be fixed to granite/ trespa top with liquid glue all around with polysulphide sealant all around. Rate is inclusive of cost of all materials and operations described above and in general specifications. Mode of measurement shall be in numbers as described below. The rate is inclusive of cost of all material, labour involved, all taxes. Finished work shall be measured in numbers. Providing and supply of black colour, acid and corrosion resistant PP sink with integral 50mm pipe threaded drain outlet as a one piece unit. Sink shall be injection moulded from pure polyolefins/ co-polymer material with inside corners coved, undercounter mounted. Size- 550w x 400d x 230h. Sink shall be provided with the following accessories in PP- 3 way wall/ deck mounted water tap with swivelling gooseneck spout (as per detailed drawing and specifications), anti siphon bottle trap, reducing coupler as per the outlet dia, PP pipe lengths as required to connect to drain pipe at floor. Work includes making connections in CPVC, checking connections at pressure of 4kg for 24 hours and making water tight joints. Water inlet shall be minimum 25mm dia and drain shall be minimum 50mm dia. Price to include providing and supply of Pegboard (drying rack) of size 750 x 750, made from 1 mm thick SS 304 sheet with 33 nos. projected polypropylene pegs, adjustable with minimum spacing of 100mm between the pegs, suitable to hold different sizes of glassware. A drip channel with drain tube shall be provided at the bottom for draining out water. Pegboards shall be fixed on wall or furniture at accessible height. Mode of measurement for sink with all accessories shall be in numbers.	4	each		
	Safety shower and Twin cup Eye wash				
1.1.12	Providing and supply of emergency shower systems with twin cup eye showers, designed and engineered to secure easy operation. This allows for "one-action" activation of the shower system ensuring immediate and continued flushing without any need for further action. This easy operation also allows the injured person to use both hands to keep his eyes open for effective flushing, to undress under the shower or just to help exposing the affected area for better and more expedient treatment. On the eye shower the nozzles are protected by rubber cups to keep the injured person from hurting himself unintentionally. The nozzles are also protected against dust and dirt by the caps which are removed automatically by the initial jet of water. All eye showers & safety showers are delivered with water regulating devices ensuring 11.5 lit/min for eye wash and 75 lit/min for shower, constant adequate water flow regardless of high water pressure and to be fitted with backflow preventer. Make :- Broen / Water saver. The rate is inclusive of the cost of all the materials and labour involved as per drawing and detailed specifications. Mode of measurement shall be in numbers.	4	each		
	Acrylic Anti Splash Guard @ Sink Area				
1.1.13	Providing and supply of Acrylic Anti Splash Guard @ Sink Area made from ACRYLIC . Rate is inclusive of cost of all materials and operations described above and in general specifications. Mode of measurement shall be in numbers.				

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
1.1.13.1	ACRYLIC PARTITION OF 10mm THICK 400mm High x 750mm Length	15	sqm		
	Spot Extractor				
1.1.14	Providing and supply of spot extractors made of Poly Propylene with articulating joints having large frictional diameter and supported with ball bearings. All metal parts that come in contact with airstreams shall be made from acid resistant stainless steel (SS 316). Extraction arms shall be $\Phi 75\text{mm}$ with 360° rotation, which shall be mounted with a m.s. ceiling bracket, chemical resistance epoxy powder coated. Arms are provided with dampers, tight down to under pressure of 3500pa & air temperature of -10° to 70°C , as per drawing and detailed specification. Mode of measurement shall be in numbers.	8	each		
	Filler Panel				
1.1.15	Providing and supply of filler panel of 1.2mm thk CRCA steel sheet with 27mm strengthening edge, chemical resistance epoxy powder coating (60 micron thickness matt finish). Filler panels should be provided between wall to cabinet (front or rear) or between two cabinets as required. Mode of Measurement shall be in sqm.	5	sqm		
	PART B- INSTALLATION, TESTING & COMMISSIONING				
1.2	Installation/ fixing, testing & commissioning of all the supplied materials covered under Sh 1.1 above including the cost of nuts bolts and other accessories not covered under the supply sub head but necessary to complete the finished product, screws, scaffolding, loading unloading, storage/stacking the supplied materials, necessary protection arrangement from sun & rain, welding wherever required, making holes in floors, walls, ceilings, core cutting in RCC slabs, all equipment, machinery required for installation, cleaning the premises after installation, removal of all debris and packing materials from site, testing commissioning as per manufacturer standards and as per contract condition and direction of Engineer in charge. The quoted rate shall be quoted on lump sum basis and shall include the cost of all sundries materials, labour and taxes as per bid documents.	1	lumpsum		
2	PART A- SUPPLY OF FUME HOOD				

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
2.1	Providing and supply of bench top variable air volume type fume hood and accessories complete as per architectural drawings and as per approved final sample consisting of:				
	Walls & Panels: Double wall construction; outer wall of 1.2mm thk Epoxy powder coated CRCA; inner wall lined with 6 mm Thick Phenolic Resin. A free-standing rigid frame structure of steel angle to be provided to support exterior panels and interior liner and baffle panels. To allow for maintenance and replacements, the interior liner panels shall be removable without disassembly of the frame structure and outer steel panels. Likewise, the exterior steel panels shall be removable without disassembly of the frame structure and inner liner panels.				
	Fume Hood Sash: A combination sash to be provided. The sash shall have horizontal sliding glass panels in a vertical rising steel frame. The sash shall be counterbalanced with a single weight to prevent tilting and binding during operation. The glass panels shall be 6mm laminated safety toughen glass mounted on metal rollers in an powder coated aluminium track.				
	Fume Hood Baffles: A stable, baffle with three fixed horizontal slots shall be provided to aid in distributing the flow of air into and through the hood. The baffle shall be spaced out minimum 50mm from the back liner. The baffle shall be removable for cleaning				
	Fume Hood Duct Collar: 300 mm diameter polyethylene bell-mouthed duct collar shall be located in the top of the hood plenum chamber.				
	Service Port :- 80mm Dia Circular Service Port to be provided on either side of the Fume hood Fascia panel.				
	Fume Hood Work Top-				
	Fume hood worktop shall be 30mm thick moulded Solid -Epoxy resin made in the form of a watertight pan, not less than 10mm deep to contain spillage with a 75mm wide safety ledge across the front edge				
	Rate is inclusive of all materials and operations described above and in general specifications. Fume hood shall be manufactured in best aesthetic design and sample of the Fume hood to be got approved before taking up mass scale production. All items required to be provided in the fume hood needs to be integrated in the design, tested and commissioned. Mode of measurement shall be each fume hood.				
2.1.1	1800(L)x900(D)x1350(H)	8	each		

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
2.1.2	2100(L)x900(D)x1350(H)	3	each		
	FUMEHOOD BASE CABINET				
	Fume Hood Solvent Storage Cabinets:				
2.2	Providing and supply of 2 door Double Skin Solvent storage cabinets, UL labelled and specifically designed for the storage for the storage of flammable and combustible liquids. Construction shall be based upon the requirements listed by UL, UFC, OSHA, and NFPA No. 30 – 1993. The cabinet shall be labelled: "FLAMMABLE – KEEP FIRE AWAY". Rate is inclusive of cost of all materials. Mode of measurement shall be in numbers.				
2.2.1	900mm L x 560mm Dx 875mm H	11	each		
	Fume hood Acid Storage Cabinets				
2.3	Providing and supply of 2 Door Fume hood Acid Storage Cabinet having a one-piece liner insert made of linear low-density polyethylene. The liner insert shall form a 25mm high pan at the bottom to retain spillage. Each door will have a set of louvers at the top and bottom. The door shall be lined with a polyethylene sheet. Each cabinet shall be vented into the fume hood with a 38mm dia. vent pipe providing a positive airflow directly into the fume hood exhaust system. Rate is inclusive of all materials. Mode of measurement shall be in numbers.				
2.3.1	900mm L x 560mm Dx 875mm H	8	each		
2.3.2	1200mm L x 560mm Dx 875mm H	3	each		

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
2.4	FUMEHOOD CONTROL VALVE:				
	Providing and supply of gas and utility control valves, located in the end panels, controlled by extension rods and colour coated plastic handles. Mode of measurement shall be in numbers as described below.				
2.4.1	FH Front Control Valve for Compressed Air	22	each		
2.4.2	FH Front Control Valve for Nitrogen	22	each		
2.4.3	FH Front Control Valve for Vacuum	22	each		
2.4.4	FH Front Control Valve for Raw water	22	each		
	FUMEHOOD INTERNAL PIPING:				

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
2.5	Providing and supply of internal all Utility services piping in fume hoods, consisting SS 304 pipes of required dia and length, all pipes extended up to 150mm above the Fume hood top including making connections with control valves etc complete internal piping work. Fume hood sizes- 1200mm length- 25 Nos, 1800mm length- 81 Nos & 2100 mm length - 5 Nos. Control valve shall be paid separately. Rate is inclusive of cost of all materials, labour and operations. Mode of measurement shall be per each fume hood.	11	each		
	FUMEHOOD INTERNAL ELECTRICAL SYSTEM:				
2.6	Providing and supply of fume hood internal electrical supply system, consisting of - 6/16A sockets 3+3 nos, with 16A individual control switch; DB on Top or at suitable location of the fume hood with MCB's for each circuit; FRLS wiring with 4 sqmm wires for power sockets; with Two rapid start, approved fluorescent light fixtures with Electronic ballast installed on roof, 1200mm tube for 1800hoods, 2x900mm for 2400 hoods light switches on Fume hood Fascia, 32 amp 4 pole MCB for main incomer, wiring should be done by using proper raceway/conduit. Socket should be provided with proper earthing with 4 sqmm FRLS wire. Rate is inclusive of cost of all materials, mode of measurement shall be each fume hood. (Note the control box of fume hood should be placed in the front panel of fume hood for easy maintenance. Proto type sample to be got approved from the Engineer in charge before mass production.)	11	each		
	FUMEHOOD CEILING ENCLOSURES:				
2.7	Providing and supply of vertical side panels, made of 1.2mm thick CRCA sheet, epoxy powder coated minimum 60 microns thickness -Ceiling Enclosures to fill the space between the top of the hood and the ceiling to get a finished appearance. False ceiling height to be considered up to 3 Meter Height from FFL. The Ceiling Panel to be provided with an Access Panel in the front for easy access to the light fixture, Electrical Junction Box, VAV Dampers etc. Rate to include cost of all materials and operations. Mode of measurement shall be perimeter outer boxing panel and height of panel shall be measured for working out the area in Sqm for payment.	31	sqm		
2.8	CUP SINK: Providing and supply of PP cup Sink 75mmX150mmX100mm including all accessories with PP bottle trap.	22	each		
	PART B- INSTALLATION, TESTING & COMMISSIONING				

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
2.9	Installation/ fixing, testing & commissioning of all the supplied materials covered under Sh 2 above including the cost of nuts bolts and other accessories not covered under the supply sub head but necessary to complete the finished product, screws, scaffolding, loading unloading, storage/stacking the supplied materials, necessary protection arrangement from sun & rain, welding wherever required, making holes in floors, walls, ceilings, core cutting in RCC slabs, all equipment, machinery required for installation, cleaning the premises after installation, removal of all debris and packing materials from site, testing commissioning as per manufacturer standards and as per contract condition and direction of Engineer in charge. The shall be quoted on lump sum basis and shall include the cost of all sundry materials not specified in the item, labour and taxes as per terms and conditions of bid document.	1	lumpsum		
	TOTAL (SUB HEAD- 2)				
3	PART A- SUPPLY OF EXHAUST SYSTEM				
3.1	CENTRIFUGAL BLOWER & ACCESSORIES				
3.1.1	Design and supply of SISW DIRECT Drive PP Exhaust fans for Fume Hood Exhaust with the following capacity. Including suitably rated VFD & suitably rated Drive Motor suitable to operate with VFD, TEFC Foot mounted, 3phase, 50Hz, 415Volts, IP-55 Protection Class F & Class B Temperature rise. For outdoor application with anti vibration cushy foot mounting, suitable clamp adapter, stainless steel stand and fasteners like bolts, nuts and washers, base frame, motor guard & accessories.				
3.1.1.1	FH 20 : 10200 CMH (6000 cfm) : static 125-150mm wg approx TSP	1	each		
3.1.1.2	FH 21 : 8160 CMH (4800 cfm) : static 125-150mm wg approx TSP	1	each		
3.1.1.3	FH 22 : 8160 CMH (4800 cfm) : static 125-150mm wg approx TSP	1	each		
3.1.2	Design and supply of SISW DIRECT Drive PP Exhaust fans for Ventilated Cabinets Exhaust with the following capacity, Including suitably rated Drive Motor, TEFC Foot mounted, 3phase, 50Hz, 415Volts, IP-55 Protection Class F & Class B Temperature rise. For outdoor application with anti vibration cushy foot mounting, suitable clamp adapter, Electro galvanized stand and fasteners like bolts, nuts and washers, base frame, motor guard & accessories. (No VFD to be considered)				
3.1.2.1	CB-01 : 935 CMH (550 CFM) : 125-150 mm wg SP	4	each		

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
3.1.3	Design and supply of SISW DIRECT Drive PP Exhaust fans for Spot Exhaust / Snorkel Extract Arms with the following capacity, Including suitably rated Drive Motor with suitable DOL starter, TEFC Foot mounted, 3phase, 50Hz, 415Volts, IP-55 Protection Class F & Class B Temperature rise. For outdoor application with anti vibration cushy foot mounting, suitable clamp adapter, Electro galvanized stand and fasteners like bolts, nuts and washers, base frame, motor guard & accessories. (No VFD to be considered)				
3.1.3.1	SB-01 : 1020 CMH (600 CFM) : 125-150 mm wg SP	4	each		
	PP-FRP DUCTING & ACCESSORIES				
3.2.1	Design and supply of PP-FRP ducting with glass lined (GL) finish, FRP lining shall be of fire resistant Bisphenol resin. Duct pricing is inclusive of all necessary flanges, bends, entry branches, tapers, inspection door, gaskets for flanges, bolt & nuts, washers, support angle, hanger threaded rods with anchor bolts for fixing. Rate is inclusive of enamel painting for exposed surfaces. Mode of measurement shall be in sqm, measured as circumference x running length, extra will not be paid for accessories such as flanges, entry doors, inspection doors, gaskets etc.				
3.2.1.1	Ducting up to 500mm Dia - wall thickness shall be 3 mm for PP and FRP.	150	sqm		
3.2.1.2	Supply & fixing of PP/FRP 315mm dia. single leaf damper, manually operated for Fume hoods	11	each		
3.2.1.3	Supply & fixing of 325mm Dia flexible hose with 400mm Dia. Clips for Fume hood (Considered 0.5 mt as 1 No)	11	each		

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
3.2.1.4	Supply & fixing of 125mm Dia flexible hose with 200mm Dia. Clips for Spot Extractor (Considered 1 mt as 1 No)	22	each		
3.2.1.5	Supply & fixing of 125mm Dia flexible hose with 200mm Dia. Clips for Tall Units (Considered 1 mt as 1 No)	22	each		
3.2.1.6	Supply & fixing of Fume Hood base cabinet ducting with bends,flexible hose,"T" with complete accessories	22	each		
	PVC ACTIVATED CARBON FILTER BOX & ACCESSORIES				
	SUPPORTING STRUCTURE FOR PP-FRP DUCTS AT TERRACE FLOOR & BLOWER OUTLET DUCT SUPPORTING STACK FOR ALL LABS				
3.3.1	Design, supply and fabrication of Blower Outlet duct support / Stack support works consisting of plates, angles, rods, pipes, ISMC etc. in testing platform, Ladder, Safety railings etc. grill work for gas banks, doors frames and shutters etc. The rate shall be inclusive of design, supply, Fabrication to required size and shape, Welding, Cutting, erection, grouting, Anchor Bolts, Base plate, Gusset plates, brazing, GI Fasteners with washers, providing and applying of one coat of steel primer and two or more coats of epoxy paint of approved shade etc. complete as per direction of Engineer in charge. Weight of steel fixed at site shall be measured for payment.	1000	kg		
3.3.2	Providing & supply of by pass PVC activated carbon filter box complete assembly for filtering of chemical fumes with optimum aeraulic efficiency, compact carbon plates and prefilter unit of for the protection of carbon from the dust. Approved make is Italian, plastifer. PVC activated carbon filter with good absorption capacity, optimum areraulic efficiency, filter box combined with polyfan anti- acid aspiration unit complete as per manufacturer specifications suitable for the following range of capacities: (Rate is inclusive of cost of all the materials, taxes, duties, operations etc.				

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
3.3.2.1	capacity 1200 cum/hr	8	each		
	PART B- INSTALLATION, TESTING & COMMISSIONING				
3.4	Installation, integration and testing of all the above items under sub head 4 including making shop drawings and submission for approval, checking the design and functionality of the whole system including the cost of all accessories, termination, connections, conduiting, nuts & bolts as per manufacturer's requirements, all necessary supports from ceiling, walls, floors, necessary holes in walls, floors, foundation/ pedestals as required and all accessories necessary to make the whole system operational. The rate shall be inclusive of the cost of all items, labour, taxes etc.	1	lumpsum		
4	PART- A GAS DISTRIBUTION SYSTEM SUPPLY				
	SS tubes, fittings & accessories				
4.1.1	Providing and Supply of SS304 tube, as per detailed specification. Mode of measurement shall be in running Meters as described below.				
4.1.1.1	19.05 mm OD X 1.65 mm WT	20	m		
4.1.1.2	12.7 mm OD X 1.2mm WT	50	m		
4.1.1.3	6.35 mm OD X 0.8 mm WT	50	m		

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
4.2.	Providing and Supply of SS304 End caps, as per general specification. Mode of measurement shall be in numbers as described below.				
4.2.1	12.7 mm OD	4	each		
4.2.2	6.35 mm OD	4	each		
4.3	Providing and Supply of SS304 unions, as per attached specification. Mode of measurement shall be in numbers as described below.				
4.3.1	19.05 mm O.D	4	each		
4.3.2	12.7 mm O.D	4	each		

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
4.3.3	6.35 mm O.D	4	each		
4.4	Providing and Supply of SS304 bend, as per attached specification. Mode of measurement shall be in numbers as described below.				
4.4.1	19.05 mm O.D 90degree	4	each		
4.5	Providing and Supply of PP tube support clamps, as per attached specification. Mode of measurement shall be in numbers.				
4.5.1	19.05 mm O.D	25	each		

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
4.5.2	12.7 mm O.D	50	each		
4.5.3	6.35 mm O.D	50	each		
4.6	Providing and Supply of SS304 equal tee, as per attached specification. Mode of measurement shall be in numbers.				
4.6.1	19.05mm O.D	4	each		
4.6.2	12.7 mm O.D	4	each		

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
4.6.3	6.35 mm O.D	4	each		
4.7	Providing and Supply of SS304 unequal tee, as per attached specification. Mode of measurement shall be in numbers .				
4.7.1	19.05 mm OD x 12.7mm OD	2	each		
4.7.2	12.7mm OD x 6.35mm OD	2	each		
4.8	Providing and Supply of SS304 BALL VALVE with tube fitting end connections, as per attached specification. Mode of measurement shall be in numbers as described below.				

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
4.8.1	19.05 mm O.D	10	each		
4.8.2	12.7 mm O.D	44	each		
4.8.3	6.35 mm O.D	44	each		
4.9	Providing and Supply of pressure reducing regulators for header's(Range - 0 to 5 bar) with Outlet pressure gauge. Regulators should have a tube fitting end connections & Mounting Plate, as per attached specification. Mode of measurement shall be in numbers as described below.				
4.9.1	12.7 mm O.D	2	each		

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
4.9.2	6.35 mm O.D	2	each		
4.12	Providing and Supply of SS 304 reducer with tube fitting end connections as per attached specification. Mode of measurement shall be in numbers as described below				
4.12.1	19.05 mm X 12.7 mm OD	10	each		
4.12.2	12.7 mm O.D x 6.35 mm O.D	10	each		
4.13	Providing and Supply of SS 304 female connector's for valves with one end tube fitting end connections as per attached specification. Mode of measurement shall be in numbers.				

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
4.13.1	12.7 mm BSP (F) X 12.7mm OD	10	each		
4.13.2	12.7 mm BSP (F) X 6.35mm OD	10	each		
4.13.2	12.7 mm NPT (M) X 6.35 mm OD	10	each		
4.14	Providing and Supply of SS 304 ball valves , with flanges, bolts, nuts, gaskets, washers, etc. as per attached specification, Mode of measurement shall be in numbers as described below.				
4.14.1	19.5 mm dia (Ferrule End)	5	each		

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
4.14.2	12.7 mm dia (Ferrule End)	5	each		
	PIPES AND FITTINGS FOR FUMEHOOD AND SINK WATERSUPPLY SYSTEM				
4.15	Providing and Supply of CPVC plastic pipe as per ASTM D-2846 pipeline with necessary slope. The rate quoted shall include for necessary Adhesives solution(ASTM F-493), wall bores cutting through walls, column, metal supports as per dwg to be considered for all sizes of every 1.0 mts distance.				
4.15.1	25 mm dia	50	m		
4.15.2	20 mm dia	50	m		

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
4.16	Providing and Supply of CPVC 90 Deg elbow confirming to ASTM D - 2846.				
4.16.1	25 mm dia	10	each		
4.16.2	20 mm dia	10	each		
4.17	Providing and Supply of CPVC Couplings confirming to ASTM D2846.				
4.17.1	25 mm dia	10	each		

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
4.17.2	20 mm dia	10	each		
4.18	Providing and Supply of CPVC Unions confirming to ASTM D2846.				
4.18.1	25 mm dia	10	each		
4.18.2	20 mm dia	10	each		
4.19	Providing and Supply of CPVC End caps confirming to ASTM D2846.				

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
4.19.1	25 mm dia	10	each		
4..20	Providing and Supply of CPVC Equal Tee confirming to ASTM D2846.				
4.20.1	25 mm dia	10	each		
4.21	Providing and Supply of CPVC Reducing tee 25mm/20mm dia confirming ASTM D2846	10	each		
4.22	Providing and Supply of CPVC ball valves(CTS Sockets) of approved make as per detailed specification				

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
4.22.1	25 mm dia	10	each		
4.22.2	20 mm dia	10	each		
	PIPES AND FITTINGS FOR FUMEHOOD AND SINK DRAIN SYSTEM				
4.23	Providing and Supply of UV stabilized & antimicrobial fusion welded multi-layer, HDPE PE 100 PN-6 pipes confirming to IS 4984 complete with necessary slope and HDPE fittings specials like flanges, gaskets, bolts, nuts, washers, elbows, tees, unions, reducers, reducing tees,end caps, reducing sockets, reducing elbows, heat welding,etc.- (excluding earth excavation) .				
4.23.1	90 mm OD	50	m		
4.23.2	50 mm OD	50	m		
4.24	Providing and Supply of HDPE Long Bend of approved make as per detailed specification. The rate quoted shall include for supply & providing jointing materials as applicable.				

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
4.24.1	90 mm OD	10	each		
4.24.2	50 mm OD	10	each		
4.25	Providing and Supply of HDPE Equal Tee of approved make as per detailed specification. The rate quoted shall include for supply & providing jointing materials as applicable.				
4.25.1	90 mm OD	10	each		
4.26	Providing and Supply of HDPE Reducing Tee of approved make as per detailed specification. The rate quoted shall include for supply & providing jointing materials as applicable.				
4.26.1	90X50 mm OD	10	each		

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
4.27	Providing and Supply of HDPE End cap of approved make as per detailed specification. The rate quoted shall include for supply & providing jointing materials as applicable.				
4.27.1	90 mm OD	15	each		
	Supports for tubes				
4.28	Providing and Supply of M.S supports for ducts, piping etc. with 40 X 40 X 3mm thick standard hollow tube sections, M.S.Plate anchor plates welded to hollow tube sections including P/F with dash through fastners in RCC beams and slabs, necessary bolts & nuts, cutting and welding, one coat of red oxide primer and 2 coats of epoxy paint of approved make as per site requirements complete as per direction of Engineer in charge. Weight of steel fixed at site excluding the weight of fastners shall be measured for payment. (Rate shall be inclusive of the cost of all the materials, operations all taxes, leads and lifts.	1000	kgs		
4.29	Providing and Supply of SS304 miscellaneous supports consisting of stainless steel plates, rods, angles, pipes fabricated to required design and shape as per site requirements, stainless steel hand rails, wires, etc. including welding, cutting, clamps, bolts, nuts, fixed with dash through fastners, concrete supports/ foundation bolts etc. complete. The rate shall be inclusive of cost of all the materials, labour and painting with two or more coats with epoxy paint of approved make over and including priming coat of steel primer. Mode of measurement shall be in kgs of stainless steel fixed at site.	500	kg		
4.30	PART B- INSTALLATION, TESTING, COMMISSIONING & MAINTENANCE				

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
	Joining, testing & commissioning of all supplied materials covered above under sub head 5 including the cost of all specialties like nuts, washers, U-clamps and any other accessories as required and cutting, bending and tagging as per ASTM standards which includes scaffolding, loading unloading, storage/stacking the supplied materials, necessary protection arrangement from sun & rain, welding wherever required, making holes in floors, walls, ceilings, core cutting in RCC slabs, all equipment, machinery required for installation, cleaning the premises after installation, removal of all debris and packing materials from site, testing commissioning as per manufacturer standards and as per contract condition and direction of Engineer in charge. The rate shall be quoted on lump sum basis and shall include the cost of all sundry materials, labour and taxes as per terms and conditions & specification given in the bid document.	1	lumpsum		
5.1	PART A- SUPPLY OF ELECTRICAL WORK				
5.1.1	Power Sockets				
	Providing and Supply modular switch and socket on the modular plate & concealed/surface box of required size including connections etc as required with different colour plates for raw power and UPS power including 15A Bakelite connectors shall be provided for termination of all the socket wiring.				
5.1.1.1	2Nos of 15/5 A socket outlet controlled by 2Nos of 15A SP Switch	50	each		
5.1.1.2	3 Nos of 15/5 A socket outlet controlled by 3 Nos of 15A SP Switch	50	each		
5.1.1.3	4 Nos of 15/5 A socket outlet controlled by 4 Nos of 15A SP Switch	50	each		

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
5.1.1.4	5 Nos of 15/5 A socket outlet controlled by 5 Nos of 15A SP Switch	50	each		
5.1.1.5	RJ45 Computer jack	50	each		
	Power & Circuit wiring				
5.1.2	Providing and supply of wiring for power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed steel conduit/ Metal or PVC Raceway along with 1 No 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required. (The wiring is considered from MCB isolator to furniture socket). Mode of measurement shall be in running metres.	400	m		
5.1.3	Providing and supply of 3 core 4 sqm flexible PVC insulated FR cable Polycab or Finolux on surface/ recessed / Metal or PVC Raceway including connections. Mode of measurement shall be in running metres.	50	m		
5.2	PART B- INSTALLATION, TESTING & COMMISSIONING				

ITEM NO	DESCRIPTION	Quantity	Unit	Rate in figures & words	Amount
5.2.1	Installation/ fixing, testing & commissioning of all the supplied materials covered above under sub head 6 including the cost of nuts bolts and other accessories not covered under the supply sub head but necessary to complete the finished product, screws, scaffolding, loading unloading, storage/stacking the supplied materials, necessary protection arrangement from sun & rain, welding wherever required, making holes in floors, walls, ceilings, core cutting in RCC slabs, all equipment, machinery required for installation, cleaning the premises after installation, removal of all debris and packing materials from site, testing commissioning as per manufacturer standards and as per contract condition and direction of Engineer in charge. The quoted rate shall be on lump sum basis and shall include the cost of all sundry materials, labour and taxes as per terms and conditions and specifications defined in the bid document.	1	lumpsum		
	GRAND TOTAL				

Superintending Engineer
IISER, Pune