



मोतीलाल नेहरू राष्ट्रीय प्रौद्योगिकी संस्थान इलाहाबाद
इलाहाबाद-२११००४
Motilal Nehru National Institute of Technology Allahabad
Allahabad-211004

Date: 28.11.2016

**INVITATION FOR QUOTATIONS FOR CONSTRUCTION OF
CIVIL WORKS UNDER PROCEDURES**

To

Dear Sir,

Sub : INVITATION FOR QUOTATIONS FOR CONSTRUCTION OF
Repair/Refurbishment/Extension of Laboratories for PG Programmes
(TEQIP-II/MNNIT/367)

1. You are invited to submit your most competitive quotation for the following works:-

Brief Description of the Works	Approximate value of Works (Rs.)	Period of Completion (In Days)
Repair/Refurbishment/Extension of Laboratories for PG Programmes	4499342.46	40

2. Government of India has received a credit from the International Development Association (IDA) in various currencies equivalent to US\$ **24300000000** towards the cost of the **Technical Education Quality Improvement Programme[TEQIP]-Phase II** Project and intends to apply part of the proceeds of this credit to eligible payments under the contract for which this invitation for quotations is issued.
- 3¹. The **TEQIP-II** Project in Uttar Pradesh state is being implemented by MNNIT Allahabad, which is an autonomous society registered under the Societies Registration Act.
4. To assist you in the preparation of your quotation, we are enclosing the following:
- Layout Drawings of the works;
 - Structural Details;
 - Detailed Bill of Quantities, with estimated rates and prices;
 - Technical Specifications;
 - Instructions to Bidders (in two sections).
 - Draft Contract Agreement format, which will be used for finalizing the agreement for this Contract.
5. You are requested to provide your offer latest by **15:00** hrs. on **14-Dec-2016**
6. Quotations will be opened in the presence of Bidders or their representatives who choose to attend at **15:00** AM/PM on **14-Dec-2016** in the office of **Director, MNNIT Allahabad Teliarganj, Allahabad-211004**
7. We look forward to receiving your quotations and thank you for your interest in this project.

Name: **Motilal Nehru National Institute of Technology, Allahabad**

Address:

Director, MNNIT Allahabad
Teliarganj, Allahabad-211004

Tel. No: **0532-2545190, 2271101**

Fax No. **0532-2545285, 2545341**

Executive Engineer
(Convenor), Civil Works

Instructions to Bidders

SECTION - A

1. Scope of Works

The **Motilal Nehru National Institute of Technology, Allahabad** invites quotations for the construction of works as detailed in the table given below

Brief Description of the Works	Approximate value of Works (Rs.)	Period of Completion (In Days)
Repair/Refurbishment/Extension of Laboratories for PG Programmes	4499342.46	40

The successful bidder will be expected to complete the works by the intended completion date specified above.

2. Qualification of the bidder: The bidder shall provide qualification information which shall include:-

- Total monetary value of construction works performed for each year of the last 3 years;
- Income tax clearance certificate from the concerned IT circle;
- Report on his financial standing; and
- Details of any litigation, current or during the last 3 years in which the bidder is involved, the parties concerned and disputed amount in each case.

3. To qualify for award of the contract the bidder:-

- should have satisfactorily completed as a prime contractor at least one similar work of value not less than Rs. 500,000 in the last three years;
- should possess valid electrical license for executing building electrification works (in the event of the works being sub - contracted, the sub-contractor should have the necessary license);
- should possess required valid license for executing the water supply/sanitary works (in the event of the works being sub-contracted, the sub-contractor should have the necessary license);

4. Bid Price

- The contract shall be for the whole works as described in the Bill of quantities, drawings and technical specifications. Corrections, if any, shall be made by crossing out, initialling, dating and re writing.
- All duties, taxes and other levies payable by the contractor under the contract shall be included in the total price.
- The rates quoted by the bidder shall be fixed for the duration of the contract and shall not be subject to adjustment on any account.
- The rates should be quoted in Indian Rupees only.

5. Submission of Quotations

5.1 The bidder is advised to visit the site of works at his own expense and obtain all information that may be necessary for preparing the quotation.

5.2 Each bidder shall submit only one quotation.

5.3 The quotation submitted by the bidder shall comprise the following :-

- Quotation in the format given in Section **B**.
- Signed Bill of Quantities ; and
- Qualification information form given in Section B duly completed.

5.4 The bidder shall seal the quotation in an envelope addressed to the **Director, MNNIT Allahabad Teliarganj, Allahabad-211004** (Purchaser). The envelope will also bear the following identification:-

- Quotation for **Repair/Refurbishment/Extension of Laboratories for PG Programmes** (Name of the Contract)
- Do not open before **15:00 14-Dec-2016** (time and date of quotation opening).

5.5 Quotations must be received in the office of the **Motilal Nehru National Institute of Technology, Allahabad** (Employer) not later than the time and date given in the letter of invitation. If the specified date is declared a holiday, quotations shall be received upto the appointed time on the next working day.

- 1.6** Any quotation received by the **Motilal Nehru National Institute of Technology, Allahabad**, (Employer) after the deadline for submission of quotations will be rejected and returned unopened to the bidder.
- 6. Validity of Quotation**
Quotation shall remain valid for a period not less than **55** days after the deadline date specified for submission.
- 7. Opening of Quotations**
Quotations will be opened in the presence of bidders or their representatives who choose to attend on the date and time and at the place specified in the letter of invitation.
- 8.** Information relating to evaluation of quotations and recommendations for the award of contract shall not be disclosed to bidders or any other persons not officially concerned with the process until the award to the successful bidder is announced.
- 9. Evaluation of Quotations**
The Employer will evaluate and compare the quotations determined to be substantially responsive i.e. which
- (a) meet the qualification criteria specified in clause 3 above;
 - (b) are properly signed ; and
 - (c) conform to the terms and conditions, specifications and drawings without material deviations.
- 10. Award of contract**
The Employer will award the contract to the bidder whose quotation has been determined to be substantially responsive and who has offered the lowest evaluated quotation price and who meets the specified qualification criteria.
- 10.1** Notwithstanding the above, the Employer reserves the right to accept or reject any quotations and to cancel the bidding process and reject all quotations at any time prior to the award of contract.
- 10.2** The bidder whose bid is accepted will be notified of the award of contract by the Employer prior to expiration of the quotation validity period.
- 11. Performance Security**
Within 15 days of receiving letter of acceptance, the successful bidder shall deliver to the **Motilal Nehru National Institute of Technology, Allahabad** (Employer) the performance security (either a bank guarantee or a bank draft in favour of the Employer) for an amount equivalent of 3 % of the contract price. The Performance Security shall be valid till the expiry of the period of maintenance of the work, specified in clause 12.
- 12. Period of Maintenance :**
The "Period of Maintenance" for the work is six months from the date of taking over possession or one full monsoon season whichever occurs later. During the period of maintenance, the contractor will be responsible for rectifying any defects in construction free of cost to the Employer.
- 13.** Purchase of all construction materials including cement and steel as per the specifications (ISI certification marked goods wherever available) shall be the responsibility of the contractor.

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SECTION - B

- 1. Format for Qualification Information.**
- 2. Format for Submission of Quotation.**
- 3. Format of Letter of Acceptance.**

QUALIFICATION INFORMATION

1 For Individual Bidders

1.1 Principal place of business: _____

Power of attorney of signatory of Quotation.
[Attach copy]

1.2 Total value of Civil Engineering construction work performed in the last three years (in Rs. Lakhs)

	19	_____
	19	_____
	19	_____

1.3 Work performed as prime contractor (in the same name) on works of a similar nature over the last three years.

Project Name	Name of Employer	Description of work	Contract No.	Value of contract (Rs. Lakhs)	Date of issue of work order	Stipulated period of completion	Actual date of completion	Remarks explaining reasons for delay and work completed

Existing commitments and on-going works:

Description of Work	Place & State	Contract No. & Date	Value of Contract (Rs. Lakh)	Stipulated period of completion	Value of works* remaining to be completed (Rs. Lakhs)	Anticipated date of completion
(1)	(2)	(3)	(4)	(5)	(6)	(7)

* Enclose a certificate from Engineer concerned.

1.4 Proposed subcontracts and firms involved.

Sections of the works	Value of Sub-contract	Sub-contractor (name & address)	Experience in similar work
*	*	*	*
*	*	*	*
*	*	*	*
	*	*	

1.5 Evidence of access to financial resources to meet the requirements of working capital: cash in hand, lines of credit, etc. List them below and attach copies of support documents.

1.6 Name, address, and telephone, telex, and fax numbers of the Bidders' bankers who may provide references if contacted by the Employer.

1.7 Information on litigation history in which the Bidder is involved.

Other party (ies)	Employer	Cause of dispute	Amount involved	Remarks showing present status

QUOTATION

*

Description of the Works:

To:

Subject : Construction of
.....

Reference : Letter No.....dated.....from.....

Sir,

We offer to execute the Works described in your letter referred to above in accordance with the Conditions of Contract enclosed therewith at percentage above / below the estimated rates, i.e., for a total Contract Price of -

Rs.** _____ [in figures]

Rs. _____ [in words].

This quotation and your written acceptance of it shall constitute a binding contract between us. We understand that you are not bound to accept the lowest or any quotation you receive.

We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery.

We hereby confirm that this quotation is valid for 45 days as required in Clause 6 of the Instructions to Bidders.

Yours faithfully,

Authorized Signature : Date: _____

Name & Title of Signatory : _____

Name of Bidder : _____

Address : _____

* To be filled in by the Employer before issue of the Letter of Invitation.

** To be filled in by the Bidder, together with his particulars and date of submission at the bottom of this Form.

**LETTER OF ACCEPTANCE
CUM NOTICE TO PROCEED WITH THE WORK**

(LETTER HEAD OF THE EMPLOYER)

Dated : _____

[Name and address of the Contractor]

To : _____

Dear Sirs,

This is to notify you that your Quotation dated _____ for execution of the _____ for the contract price of Rupees _____ [amount in words and figures], is hereby accepted by us.

You are hereby requested to furnish performance security for an amount of Rs. _____ (equivalent to 3% of the contract price) within 15 days of the receipt of the letter. The Performance Security in the form of Bank guarantee or a Bank draft in favour of(Employer) shall be valid till the expiry of the period of maintenance i.e. upto _____. Failure to furnish the Performance Security will entail cancellation of the award of contract.

You are also requested to sign the agreement form and proceed with the work not later than _____ under the instructions of the Engineer, _____ and ensure its completion within the contract period.

With the issuance of this acceptance letter and your furnishing the Performance Security, contract for the above said work stands concluded.

Yours faithfully,

**Authorized Signature
Name and title of Signatory**

Draft Agreement form for Construction through National Shopping
ARTICLES OF AGREEMENT

This deed of agreement is made in the form of agreement on _____ day _____ month _____ 199 ____, between the _____ (Employer) or his authorized representative (hereinafter referred to as the first party) and _____ (Name of the Contractor), S/O _____ resident of _____ (hereinafter referred to as the second party), to execute the work of construction of _____ (hereinafter referred to as works) on the following terms and conditions.

2. Cost of the Contract

The total cost of the works (hereinafter referred to as the "total cost") is Rs. ____ as reflected in Annexure - A.

3.1 Payments under its contract:

Payments to the second party for the construction work will be released by the first party in the following manner:-

On signing of agreement	:	25% of total cost
On reaching plinth level (first stage)	:	25% of the total cost
On reaching lintel level (second stage)	:	25% of the total cost
On reaching roof level (third stage)	:	15% of the total cost
Plastering and completion of whole work (fourth stage)	:	10% of the total cost

(The above has been drafted for construction of school buildings; modify this suitably for other works)

3.2 Payments at each stage will be made by the first party:

- (a) on the second party submitting an invoice for an equivalent amount ;
- (b) on certification of the invoice (except for the first installment) by the engineer nominated by the first party with respect to quality of works in the format in Annexure - B; and
- (c) upon proper and justified utilization of at least 50 % of the previous installment and 100 % of any prior installment.

4. Notice by Contractor to Engineer

The second party, on the works reaching each stage of construction, issue a notice to the first party or the Engineer nominated by the first party (who is responsible for supervising the contractor, administering the contract, certifying the payments due to the contractor, issuing and valuing variations to the contract, awarding extensions of time etc.), to visit the site for certification of stage completion. Within 15 days of the receipt of such notice, the first party or the engineer nominated by it, will ensure issue of stage completion certificate after due verification.

5. Completion time

The works should be completed in _____ (months/weeks/days) from the date of this Agreement. In exceptional circumstances, the time period stated in this clause may be extended in writing by mutual consent of both the parties.

6. If any of the compensation events mentioned below would prevent the work being completed by the intended completion date, the first party will decide on the intended completion date being extended by a suitable period :

- a) The first party does not give access to the site or a part thereof by the agreed period.
- b) The first party orders a delay or does not issue completed drawings, specifications or instructions for execution of the work on time.
- c) Ground conditions are substantially more adverse than could reasonably have been assumed before issue of letter of acceptance and from information provided to second party or from visual inspection of the site.
- d) Payments due to the second party are delayed without reason.
- e) Certification for stage completion of the work is delayed unreasonably.

7. Any willful delay on the part of the second party in completing the construction within the stipulated period will render him liable to pay liquidated damages. @ Rs.* _____ per day

which will be deducted from payments due to him. The first party may cancel the contract and take recourse to such other action as deemed appropriate once the total amount of liquidated damages exceeds 10% of the contract amount.

(Note : The amount of liquidated damages per day should be determined at 0.07 % of the contract value of the works and indicated here).

8. Duties and responsibilities of the first party

8.1 The first party shall be responsible for providing regular and frequent supervision and guidance to the second party for carrying out the works as per specifications. This will include written guidelines and regular site visit of the authorized personnel of the first party, for checking quality of material and construction to ensure that it is as per the norms.

8.2 The first party shall supply 3 sets of drawings, specifications and guidelines to the second party for the proposed works.

8.3 Possession of the site will be handed over to the second party within 10 days of signing of the agreement.

8.4 The Engineer or such other person as may be authorized by the first party shall hold meeting once in a month where the second party or his representative at site will submit the latest information including progress report and difficulties if any, in the execution of the work. The whole team may jointly inspect the site on a particular day to take stock of activities.

8.5 The Engineer shall record his observations/instructions at the time of his site visit in a site register maintained by the second party. The second party will carry out the instructions and promptly rectify any deviations pointed out by the engineer. If the deviations are not rectified, within the time specified in the Engineer's notice, the first party as well as the engineer nominated by it, may instruct stoppage or suspension of the construction. It shall thereupon be open to the first party or the engineer to have the deviations rectified at the cost of the second party.

9. Duties and responsibilities of the second party

9.1 The second party shall :

- a) take up the works and arrange for its completion within the time period stipulated in clause 5;
- b) employ suitable skilled persons to carry out the works ;
- c) regularly supervise and monitor the progress of work ;
- d) abide by the technical suggestions / direction of supervisory personnel including engineers etc. regarding building construction ;
- e) be responsible for bringing any discrepancy to the notice of the representative of the first party and seek necessary clarification ;
- f) ensure that the work is carried out in accordance with specifications, drawings and within the total of the contract amount without any cost escalation ;
- g) keep the first party informed about the progress of work ;
- h) be responsible for all security and watch and ward arrangements at site till handing over of the building to the first party ; and
- i) maintain necessary insurance against loss of materials/cash, etc. or workman disability compensation claims of the personnel deployed on the works as well as third party claims.
- f) Pay all duties, taxes and other levies payable by construction agencies as per law under the contract (First party will effect deduction from running bills in respect of such taxes as may be imposed under the law).

10. Variations / Extra Items

The works shall be carried out by the second party in accordance with the approved drawings and specifications. However, if, on account of site conditions or any other factors, variations are considered necessary, the following procedure shall be followed:-

- a) The second party shall provide the Engineer with a quotation for carrying out the Variation when requested to do so by the Engineer. The Engineer shall assess the quotation, which shall be given within seven days of the request before the Variation is ordered.
- b) If the quotation given by the second party is unreasonable, the Engineer may order the Variation and make a change to the Contract Price which shall be based on Engineer's own forecast of the effects of the Variation on the Contractor's costs.
- c) The second party shall not be entitled to additional payment for costs which could have been avoided by giving early warning.

11. Securities

The Performance Security shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in an amount and form and by a bank or surety acceptable to the Employer. The Performance Security shall be valid until a date 28 days from the

date of issue of the Certificate of Completion in the case of a Bank Guarantee.

12. Termination

- 12.1 The Employer may terminate the Contract if the other party causes a fundamental breach of the Contract.
- 12.2 Fundamental breaches of Contract include, but shall not be limited to the following:
 - (a) the contractor stops work for 28 days and the stoppage has not been authorized by the Engineer;
 - (b) the Contractor has become bankrupt or goes into liquidation other than for a reconstruction or amalgamation;
 - (c) the Engineer gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Engineer;
 - (d) the Contractor does not maintain a security which is required;
- 12.3 Notwithstanding the above, the Employer may terminate the Contract for convenience.
- 12.4 If the Contract is terminated the Contractor shall stop work immediately, make the Site safe and secure and leave the Site as soon as reasonably possible.

13. Payment upon Termination

- 13.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Engineer shall issue a certificate for the value of the work done less advance payments received up to the date of the issue of the certificate, less other recoveries due in terms of the contract, less taxes due to be deducted at source as per applicable law.
- 13.2 If the Contract is terminated at the Employer's convenience, the Engineer shall issue a certificate for the value of the work done, the reasonable cost of removal of Equipment, repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works and less advance payments received up to the date of the certificate, less other recoveries due in terms of the contract and less taxes due to be deducted at source as per applicable law.

14. Dispute settlement

If over the works, any dispute arises between the two parties, relating to any aspects of this Agreement, the parties shall first attempt to settle the dispute through mutual and amicable consultation.

In the event of agreement not being reached, the matter will be referred for arbitration by a Sole Arbitrator not below the level of retired Superintending Engineer, PWD to be appointed by the first party. The Arbitration will be conducted in accordance with the Arbitration and Conciliation Act, 1996. The decision of the Arbitrator shall be final and binding on both the parties.

BILL OF QUANTITIES**Name of Work :- Provision of water proofing work & Renovation Works in CAD Lab.**

S.no	Particulars	Qty.	Unit.	Rate(Rs.)		Amount (Rs.)
				In Figure	In word	
1	Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations: a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment. b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep. e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test. All above operations to be done in order and as directed and specified by the Engineerin-Charge : With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	314.38	Sqm			
2	Providing and laying water proofing treatment to vertical and horizontal surfaces of depressed portions of W.C., kitchen and the like consisting of: (i) Ist course of applying cement slurry @ 4.4 kg/sqm mixed with water proofing compound conforming to IS 2645 in recommended proportions including rounding off junction of vertical and horizontal surface. (ii) IInd course of 20 mm cement plaster 1:3 (1	61.61	Sqm			

	<p>cement : 3 coarse sand) mixed with water proofing compound in recommended proportion including rounding off junction of vertical and horizontal surface.</p> <p>(iii) IIIrd course of applying blown or residual bitumen applied hot at 1.7 kg. per sqm of area.</p> <p>(iv) IVth course of 400 micron thick PVC sheet. (Overlaps at joints of PVC sheet should be 100 mm wide and pasted to each other with bitumen @ 1.7 kg/sqm).</p>					
3	Dismantling tile work in floors and roofs laid in cement mortar including stacking material within 50 metres lead. For thickness of tiles above 25 mm and up to 40 mm	314.38	Sqm			
4	Removing white or colour wash by scrapping and sand papering and preparing the surface smooth including necessary repairs to scratches etc. complete.	726.01	Sqm			
5	Finishing walls with water proofing cement paint of required shade : Old work (one or more coats applied @ 2.20 kg/10 sqm) over priming coat of primer applied @ 0.80 litres/10 sqm complete including cost of Priming coat.	726.01	Sqm			
6	Providing and fixing glazing in aluminium door, window, ventilator shutters and partitions etc. with EPDM rubber / neoprene gasket etc. complete as per the architectural drawings and the directions of engineer-in-charge. (Cost of aluminium snap beading shall be paid in basic item): With float glass panes of 5.50 mm thickness.	9.49	Sqm			
<u>Name of work:- Renovation /Repair of Shed of Power Electrical lab Automobile lab, Heat Engine Lab, Hydraulic Lab, Transportation Lab etc.</u>						
1	Providing valleys of 90 cm wide overall in plain G.S. sheet fixed with polymer coated J, or L hooks, bolts and nuts 8 mm dia G.I. limpet and bitumen washers complete : 1.60 mm thick with zinc coating not less than 350 gm/m ² .	350.00	Rmt			
2	Painting top of roofs with bitumen of approved quality @ 17kg per 10 sqm impregnated with a coat of coarse sand at 60 cudm per 10 sqm, including cleaning the slab surface with brushes and finally with a piece of cloth lightly soaked in kerosene oil complete : With residual type petroleum bitumen of grade VG - 10.	315.00	Sqm			
3	Extra for providing and fixing wind ties of 40x 6 mm flat iron section.	150.00	Rmt			
4	Providing high impact Polypropylene reinforced cement 6 mm thick corrugated sheets (as per IS: 14871) roofing up to any pitch and fixing with polymer coated J, or L hooks, bolts and nuts 8 mm dia. G.I. plain and bitumen washers or with self drilling fastener and EPDM washers etc. complete	357.13	Sqm			

	(excluding the cost of purlins, rafters and trusses), including cutting sheets to size and shape wherever required.					
5	Providing and fixing on wall face unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A, including jointing with seal ring conforming to IS : 5382, leaving 10 mm gap for thermal xpansion, (i) Single socketed pipes. 110 mm diameter	539.50	Rmt			
6	Providing and fixing on wall face unplasticised - PVC moulded fittings/ accessories for unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A, including jointing with seal ring conforming to IS : 5382, leaving 10 mm gap for thermal expansion. 110 mm bend.	111	Nos			
7	Providing and fixing on wall face unplasticised - PVC moulded fittings/ accessories for unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A, including jointing with seal ring conforming to IS : 5382, leaving 10 mm gap for thermal expansion. 110 mm Shoe.	100.00	Rmt			
8	Providing and fixing unplasticised -PVC pipe clips of approved design to unplasticised - PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with M.S. screws of required length, including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand) and making good the wall etc. complete. 110 mm.	400	Nos			
<u>Name of work:- Renovation of Electronics & Communication Lab.</u>						
1	Dismantling aluminium/ Gypsum partitions, doors, windows, fixed glazing and false ceiling including disposal of unserviceable surplus material and stacking of serviceable material with in 50 meters lead as directed by Engineer-in-charge.	34.60	Sqm			
2	Provision of Aluminium partition by reuse of old Aluminium section (materials) (Like Aluminium Partition, glass etc.)	10.48	Sqm			
3	Providing and fixing 6 mm dia. G.I. level adjusting hangers (upto 1200mm length), fixed to roof slabs by means of ceiling cleats made out of G.I. flat 40x3mm size 60 mm long and stainless steel expandable dash fastener of 12.5 mm dia and 50 mm long, complete as per direction of Engineer - in-charge.	100	Nos			
4	Finishing walls with water proofing cement paint of required shade : Old work (one or more coats applied @ 2.20 kg/10 sqm) over priming coat of primer applied @ 0.80 litres/10 sqm complete including cost of Priming coat.	472.36	Sqm			
5	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash	354.38	kg			

	fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/ neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing, paneling and dash fasteners to be paid for separately) : For shutters of doors, windows & ventilators including providing and fixing hinges/ pivots and making provision for fixing of fittings wherever required including the cost of EPDM rubber / neoprene gasket required (Fittings shall be paid for separately) Anodised aluminium (anodised transparent or dyed to required shade according to IS: 1868, Minimum anodic coating of grade AC 15).					
6	Providing and fixing glazing in aluminium door, window, ventilator shutters and partitions etc. with EPDM rubber / neoprene gasket etc. complete as per the architectural drawings and the directions of engineer-in-charge. (Cost of aluminium snap beading shall be paid in basic item): With float glass panes of 5.50 mm thickness	28.3 5	Sqm			
7	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS : 15622, of approved make, in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand), including grouting the joints with white cement and matching pigments etc., complete. Size of Tile 600x600 mm.	148. 12	Sqm			
8	Providing and fixing powder coated aluminium work (minimum thickness of powder coating 50 micron) consisting of tee/ angle sections, of approved make conforming to IS : 733 in frames of false ceiling including aluminium angle cleats with necessary C.P. brass/ stainless steel sunk screws, aluminium perimeter angles fixed to wall with stainless steel rawl plugs @ 450 mm centre to centre and fixing the frame work to G.I. level adjusting hangers 6 mm dia. with necessary cadmium plated machine screws all complete as per approved architectural drawings and direction of the Engineer-incharge (level adjusting hangers, ceiling cleats and expansion hold fasteners to be paid for separately).	19.9 9	kg			
9	Providing & Fixing of E-board classic 2' x 2' Size in above item.	33.6 0	Sqm			
Name of Work :-Provision of A.C. Sheet shed & flooring in CED Lab.						
1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation	4.68	Cum			

	trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, lift upto 1.5 m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m. All kinds of soil.				
2	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level : 1:4:8 (1 Cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size)	14.16	Cum		
3	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in foundation and plinth in: Cement mortar 1:6 (1 cement : 6 coarse sand)	2.44	Cum		
4	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 12.5 mm nominal size).	5.33	Sqm		
5	Reinforced cement concrete work in beams, suspended floors, roofs having slope up to 15°				
(a)	landings, balconies, shelves, chajjas, lintels, bands, plain window sills, staircases and spiral stair cases up to floor five level, excluding the cost of centering, shuttering, finishing and reinforcement, with 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size).	2.35	Cum		
(b)	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto plinth level. Thermo-Mechanically Treated bars.	481.99	kg		
(c)	Centering and shuttering including strutting, propping etc. and removal of form for : Lintels, beams, plinth beams, girders, bressumers and cantilevers	27.78	Sqm		
6	12 mm cement plaster of mix : 1:6 (1 cement: 6 fine sand).	8.11	Sqm		
7	Cement concrete flooring 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate) finished with a floating coat of neat cement, including cement slurry, but excluding the cost of nosing of steps etc. complete. 40 mm thick with 20 mm nominal size stone aggregate.	131.18	Sqm		
8	Painting with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade : Two or more coats on new work over an under coat of suitable shade with ordinary paint of approved brand and manufacture .	7.48	Sqm		
9	Finishing walls with Acrylic Smooth exterior paint of required shade : New work (Two or more coat applied @ 1.67 ltr/10 sqm over and including priming coat of exterior primer applied @ 2.20	194.21	Sqm		

	kg/ 10 sqm) .					
10	Structural steel work riveted, bolted or welded in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete.	1505.44	kg			
11	Providing high impact Polypropylene reinforced cement 6 mm thick corrugated sheets (as per IS: 14871) roofing up to any pitch and fixing with polymer coated J, or L hooks, bolts and nuts 8 mm dia. G.I. plain and bitumen washers or with self drilling fastener and EPDM washers etc. complete (excluding the cost of purlins, rafters and trusses), including cutting sheets to size and shape wherever required.	131.18	Sqm			
12	Kota stone slab flooring over 20 mm (average) thick base laid over and jointed with grey cement slurry mixed with pigment to match the shade of the slab, including rubbing and polishing complete with base of cement mortar 1 : 4 (1 cement : 4 coarse sand) : 25 mm thick .	86.10	Sqm			
13	Kota stone slabs 20 mm thick in risers of steps, skirting, dado and pillars laid on 12 mm (average) thick cement mortar 1:3 (1 cement: 3 coarse sand) and jointed with grey cement slurry mixed with pigment to match the shade of the slabs, including rubbing and polishing complete.	5.79	Sqm			

Name of work:- Refurbishment & extension of Fluid Engg./Fluid Mech. & Hydraulic research laboratory.

(a) Refurbishment of Fluid Mechanics & Hydraulics lab and Fluids Engineering Laboratory.

1	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/ neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing, paneling and dash fasteners to be paid for separately) : For fixed portion Anodised aluminium (anodised transparent or dyed to required shade according to IS: 1868, Minimum anodic coating of grade AC 15).	822.12	kg			
2	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z	154.56	kg			

	sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/ neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of engineer-in-charge. (Glazing, paneling and dash fasteners to be paid for separately) : For shutters of doors, windows & ventilators including providing and fixing hinges/ pivots and making provision for fixing of fittings wherever required including the cost of EPDM rubber / neoprene gasket required (Fittings shall be paid for separately) Anodised aluminium (anodised transparent or dyed to required shade according to IS: 1868, Minimum anodic coating of grade AC 15).					
3	Providing and fixing 12 mm thick prelaminated particle board flat pressed three layer or graded wood particle board conforming to IS: 12823 Grade I Type II, in panelling fixed in aluminum doors, windows shutters and partition frames with C.P. brass / stainless steel screws etc. complete as per architectural drawings and directions of engineer-in-charge. Pre-laminated particle board with decorative lamination on both sides	36.95	Sqm			
4	Providing and fixing glazing in aluminium door, window, ventilator shutters and partitions etc. with EPDM rubber / neoprene gasket etc. complete as per the architectural drawings and the directions of engineer-in-charge. (Cost of aluminium snap beading shall be paid in basic item): With float glass panes of 5.50 mm thickness	72.35	Sqm			
5	Providing and fixing double action hydraulic floor spring of approved brand and manufacture conforming to IS : 6315, having brand logo embossed on the body / plate with double spring mechanism and door weight upto 125 kg, for doors, including cost of cutting floors, embedding in floors as required and making good the same matching to the existing floor finishing and cover plates with brass pivot and single piece M.S. sheet outer box with slide plate etc. complete as per the direction of Engineer-in-charge. With stainless steel cover plate minimum 1.25 mm thickness .	4	Nos			
6	Providing and fixing 100mm brass locks (best make of approved quality) for aluminium doors including necessary cutting and making good etc. complete.	8.00	each			
7	Providing and fixing aluminium tubular handle bar 32 mm outer dia, 3.0 mm thick & 2100 mm long	10	nos			

	with SS screws etc .complete as per direction of Engineer-in-Charge. Anodized (AC 15) aluminium tubular handle bar .					
8	Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade : New work (two or more coats) over and including water tinnable priming coat with cement primer.	161.82	Sqm			
(b) Refurbishment of Fluid Engineering Research Laboratory.						
1	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/ neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing, paneling and dash fasteners to be paid for separately) : For fixed portion Anodised aluminium (anodised transparent or dyed to required shade according to IS: 1868, Minimum anodic coating of grade AC 15).	429.50	kg			
2	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/ neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing, paneling and dash fasteners to be paid for separately) : For shutters of doors, windows & ventilators including providing and fixing hinges/ pivots and making provision for fixing of fittings wherever required including the cost of EPDM rubber / neoprene gasket required (Fittings shall be paid for separately) Anodised aluminium (anodised transparent or dyed to required shade according to IS: 1868, Minimum anodic coating of grade AC 15) .	223.44	kg			
3	Providing and fixing 12 mm thick prelamined	21.2	Sqm			

	particle board flat pressed three layer or graded wood particle board conforming to IS: 12823 Grade I Type II, in panelling fixed in aluminum doors, windows shutters and partition frames with C.P. brass / stainless steel screws etc. complete as per architectural drawings and directions of engineer-in-charge. Pre-laminated particle board with decorative lamination on both sides.	0				
4	Providing and fixing glazing in aluminium door, window, ventilator shutters and partitions etc. with EPDM rubber / neoprene gasket etc. complete as per the architectural drawings and the directions of engineer-in-charge. (Cost of aluminium snap beading shall be paid in basic item): With float glass panes of 5.50 mm thickness .	44.9 2	Sqm			
5	Providing and fixing double action hydraulic floor spring of approved brand and manufacture conforming to IS : 6315, having brand logo embossed on the body / plate with double spring mechanism and door weight upto 125 kg, for doors, including cost of cutting floors, embedding in floors as required and making good the same matching to the existing floor finishing and cover plates with brass pivot and single piece M.S. sheet outer box with slide plate etc. complete as per the direction of Engineer-in-charge. With stainless steel cover plate minimum 1.25 mm thickness.	4	Nos			
6	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS : 15622, of approved make, in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand), including grouting the joints with white cement and matching pigments etc., complete. Size of Tile 600x600 mm.	86.4 0	Sqm			
7	Providing and fixing 100mm brass locks (best make of approved quality) for aluminium doors including necessary cutting and making good etc. complete.	5	Nos			
8	Providing and fixing anodised aluminium grill (anodised transparent or dyed to required shade according to IS: 1868 with minimum anodic coating of grade AC 15) of approved design/pattern, with approved standard section and fixed to the existing window frame with C.P. brass/ stainless steel screws @ 200 mm centre to centre, including cutting the grill to proper opening size for fixing and operation of handles and fixing approved anodised aluminium standard section around the opening, all complete as per requirement and direction of Engineer-in-charge. (Only weight of grill to be measured for payment).	10	Sqm			
9	Providing and fixing aluminium tubular handle bar 32 mm outer dia, 3.0 mm thick & 2100 mm long	10	Nos			

	with SS screws etc .complete as per direction of Engineer-in-Charge. Anodized (AC 15) aluminium tubular handle bar.					
10	Providing and applying plaster of paris putty of 2 mm thickness over plastered surface to prepare the surface even and smooth complete.	87.4 2	Sqm			
11	Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade : New work (two or more coats) over and including water tinnable priming coat with cement primer	87.4 2	Sqm			
(c) Extension in Fluid Mechanics & Hydraulics lab and Fluids Engineering laboratory.						
1	Excavation work by mechanical means (Hydraulic excavator)/ manual means in foundation trenches or drains (not exceeding 1.5m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, lift upto 1.5 m, including getting out the excavated soil and disposal of surplus excavated soils as directed, within a lead of 50 m. Ordinary rock	17.4 2	Cum			
2	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level : 1:4:8 (1 Cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size)	9.30	Cum			
3	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in foundation and plinth in: Cement mortar 1:6 (1 cement : 6 coarse sand)	8.38	Cum			
4	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level in all shapes and sizes in : Cement mortar 1:6 (1 cement : 6 coarse sand)	20.2 5	Cum			
5	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 12.5 mm nominal size).	5.63	Sqm			
(a)						
(b)	Extra for providing and mixing water proofing material in cement concrete work in doses by weight of cement as per manufacturer's specification.	8.44	kg			
6	12 mm cement plaster of mix : 1:6 (1 cement: 6 fine sand).	112. 42	Sqm			
7	15 mm cement plaster on the rough side of single or half brick wall of mix : 1:6 (1 cement: 6 fine sand).	118. 51	Sqm			
8	Cement concrete flooring 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate) finished with a	64.0 0	Sqm			

	floating coat of neat cement, including cement slurry, but excluding the cost of nosing of steps etc. complete. 40 mm thick with 20 mm nominal size stone aggregate.					
9	Structural steel work riveted, bolted or welded in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete.	950.00	kg			
10	Providing high impact Polypropylene reinforced cement 6 mm thick corrugated sheets (as per IS: 14871) roofing up to any pitch and fixing with polymer coated J, or L hooks, bolts and nuts 8 mm dia. G.I. plain and bitumen washers or with self drilling fastener and EPDM washers etc. complete (excluding the cost of purlins, rafters and trusses), including cutting sheets to size and shape wherever required.	68.80	Sqm			
11	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) non-decorative type, core of block board construction with frame of 1st class hard wood and well matched commercial 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters: 30 mm thick including ISI marked Stainless Steel butt hinges with necessary screws.	6.00	Sqm			
12	Providing and fixing 15 cm wide, 45 cm overall semi-circular plain G.S. sheet gutter with iron brackets 40x3mm size, bolts, nuts and washers etc., including making necessary connections with rain water pipes complete. 0.80 mm thick with zinc coating not less than 275 gm/m ² .	8.00	Rmt			
13	Providing flat iron brackets 50x3 mm size with necessary bolts, nuts and washers etc. for fixing asbestos cement / G.S. sheets gutters with purlins.	50.00	kg			
14	Distemping with oil bound washable distemper of approved brand and manufacture to give an even shade : New work (two or more coats) over and including water tinnable priming coat with cement primer.	115.20	Sqm			
15	Providing and applying plaster of paris putty of 2 mm thickness over plastered surface to prepare the surface even and smooth complete.	115.20	Sqm			
16	Providing and fixing in position collapsible steel shutters with vertical channels 20x10x2 mm and braced with flat iron diagonals 20x5 mm size, with top and bottom rail of T-iron 40x40x6 mm, with 40 mm dia steel pulleys, complete with bolts, nuts, locking arrangement, stoppers, handles, including applying a priming coat of approved steel primer.	6.25	Sqm			
17	Providing valleys of 90 cm wide overall in plain G.S. sheet fixed with polymer coated J, or L hooks, bolts and nuts 8 mm dia G.I. limpet and bitumen washers	45.00	Rmt			

	complete : 1.60 mm thick with zinc coating not less than 350 gm/m ² .					
18	Painting with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade : Two or more coats on new work over an under coat of suitable shade with ordinary paint of approved brand and manufacture.	66.78	Sqm			
19	Providing and fixing on wall face unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A, including jointing with seal ring conforming to IS : 5382, leaving 10 mm gap for thermal expansion, (i) Single socketed pipes. 110 mm diameter.	6.20	Rmt			
20	Providing and fixing T-iron frames for doors, windows and ventilators of mild steel Tee-sections, joints mitred and welded, including fixing of necessary butt hinges and screws and applying a priming coat of approved steel primer. Fixing with carbon steel galvanised dash fastener of required dia and size (to be paid for separately).	2.78	kg			
21	Renewing glass panes, with putty and nails wherever necessary including racking out the old putty: Float glass panes of thickness 4 mm.	2.78	Sqm			
<u>Name of work- Electrical Wiring of Embedded System & Hardware Lab (CESD).</u>						
1	Supply Installation and fixing of 200 Amp TPN MCCB 25 KA with MCCB with compact type trunking/rising mains, testing and commissioning of plug in/tap off box for use on 3 phase 4 wire 415 volts, 50 Hz A.C. Supply with 1.6 mm thick steel sheet encloser duly powder coated with provision of MCCB. Complete in all respect. Make- L&T,Siemens,Legrand, Schneide,C&S,HPL.	2	Nos.			
2	Supply and fixing of 4 way(4+12) double door three pole and neutral, prewired steel sheet, MCB distribution board, 415 volts, duly prewired with suitable size FR PVC insulated copper conductor up to terminal blocks, tinned copper busbar, neutral link, earth bar, din bar, detachable, gland plate, interconnections and powder painted including earthing etc. as required with 100 Amp. 16 KA, 3 Pole MCCB and 12 nos. 20-32 Amp SP MCB C series. Complete in all respect. Make- L&T,Siemens,Legrand, Schneider,C&S,HPL.	3	Nos.			
3	Supply Installation and fixing of 100 Amp TPN MCCB 25 KA with MCCB with compact type trunking/rising mains, testing and commissioning of plug in/tap off box for use on 3 phase 4 wire 415 volts, 50 Hz A.C. Supply with 1.6 mm thick steel sheet encloser duly powder coated with provision of MCCB. Complete in all respect. Make- L&T,Siemens,Legrand, Schneide,C&S,HPL.	1	Nos.			

4	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 amps modular socket outlet and 15/16 amps modular switch, connection etc. as required. Complete in all respect. Make- Anchor Roma, Havells crabtree, C&S, ABB, Legrand. Note- 3 nos. switch and 3 nos. socket on each boards.	95	Nos.			
5	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq mm FRLS PVC insulated copper conductor single core etc. are required. complete in all respect. Make- Anchor Roma, Havells crabtree, C&S. Wire Make- KEI, R.R Kable, Kalinga Premium.	50	Nos.			
6	Supplying and fixing stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required. Complete in all respect. Make- Anchor Roma, Havells crabtree, Philips, C&S.	20	Nos.			
7	Supply and fixing testing of 48" ceiling fan complete with canopy with suitable down rod without regulator complete in all respect. Make- Bajaj, orient PSPO, Crompton, Havells, C&S.	20	Nos.			
8	Supplying & fixing of fan hook with clamp on beam and suitable down rod below false ceiling approx 3 m rod.	20	Nos.			
9	Supplying & fixing of 2x2 LED flat panel which provides soft- light and glare free symmetrical illumination 34 Watt LED Lamp. Complete in all respect. Make- Bajaj, Philips, Havells, C.G.	30	Nos.			
10	Supplying and fixing 20 amps, 240 V, SPN industrial type ,socket outlet, with 2 pole and earth metal enclosed plug top along with 20 amps 'C' series SP MCB, in sheet steel enclosure, on surface or in recess with chained metal cover for the socket outlet and complete with connections, testing and commissioning etc. as required. complete in all respect. Make- L&T, Siemens, Legrand, HPL, Havells, C&S.	12	Nos.			
11	Wiring for following circuit/ submain wiring along with earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required. Complete in all respect. Make- L&T, Havells, KEI, Rallison, Kalinga.					
A.	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	750	Mtr.			
B.	2 X 6 sq. mm + 1 X 6 sq. mm earth wire	270	Mtr.			
C.	4 X 10 sq. mm + 2 X 10 sq. mm earth wire	60	Mtr.			

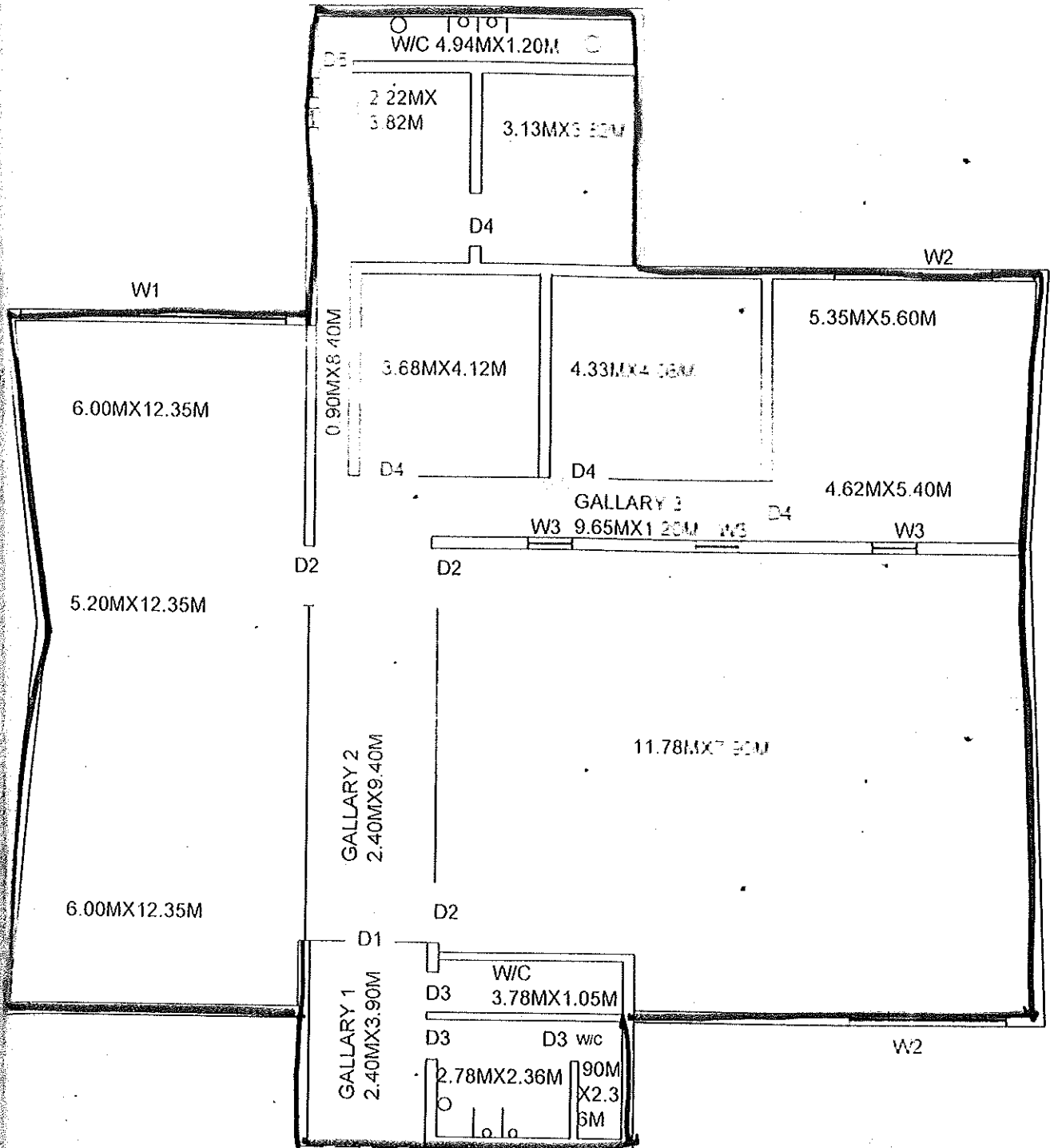
12	Supplying and fixing of following plain or pin type copper pin plated lug to cable lead insulating with tape and making connection. Complete in all respect. Make- L&T, Havells, Legrand.					
A.	1.5 to 6 sq mm	325	Nos.			
B.	10 sq mm	24	Nos.			
C.	35 sq mm	24	Nos.			
13	Supplying & fixing of of brass nickel plated compression gland for PVC insulated & armoured served sheathed, underground cable including rubber ring etc. complete in all respect. The armouring of the cable shall be properly connected with the earth as per direction of Engineer-Incharge.					
A.	35 sq mm 3-1/2 core	6	Nos.			
14	Supplying & laying of 35 sq mm x 3-1/2 core aluminium conductor XLPE armored served aseathed cable 1100 volts grade of following size at suitable depth below ground level over cushion of 75 mm thick sand alround and protected with well burnt bricks on & along the cable & back filling after digging the soil & it back filling/ on wall/ floor the cable run cancealed manner, with cutting and plastering, complete in all respect as per direction of engineering incharge. The armouring of cable shall be properly connected with the earth terminal of the pole panel and as required lugs,, gland etc. Make- Gloster/Kalinga Premium/Rallision/Havells	65	Mtr.			
15	Supplying & fixing of Modular blanking plate. Make- Anchor Roma, Havells Cabtree,	20	Nos.			
16	Supplying and fixing of two number 8 SWG copper wire in 15 mm dia G.I. pipe for earthing, laid in ground or in wall duly concealed including the post of cement, sand, labour, T&P other material required for proper completion of the work with 2 Nos. 8 SWG copper G.I. wire. complete in all respect.	30	mtr.			
17	Supplying and fixing of Internet/Outlet Box with cable termination, cancealed in wall complete in all respect. Make- AMP or equivalent.	87	Nos.			
18	Supplying & fixing of Rack Mount 24 Port switch with 24 RJ 45 10/100 TX Port.	1	Nos.			
19	Supplying & fixing and cable termination of 24 Port Jack Panel.	4	Nos.			
20	Supplying & fixing of Rack wall Mount.	4	Nos.			
21	UTP Patch card 3 feet. Make- AMP or equivalent.	90	Nos.			
22	UTP Patch card 7 feet. Make- AMP or equivalent.	90	Nos.			
23	Supplying & fixing of Internet point with CAT 6 Internet cable in PVC conduit concealed in wall/ casing caping on surface maneer with fixing, termination, ferruling and pulling of cable etc. complete in all respect. Make- AMP or equivalent.	1450	Mtr.			

24	Dismantling of old installation with proper finishing of dismantled portion including cost of material, labour, T&P for proper finishing of work. Complete in all respect.	1	Job			
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Gross Total Cost : Rs.

We agree to execute the works in accordance with the approved drawings and technical specifications at percentage above/ below the estimated rates, i.e., for a total contract price of Rs.(amount in figures) (Rs. amount in words).

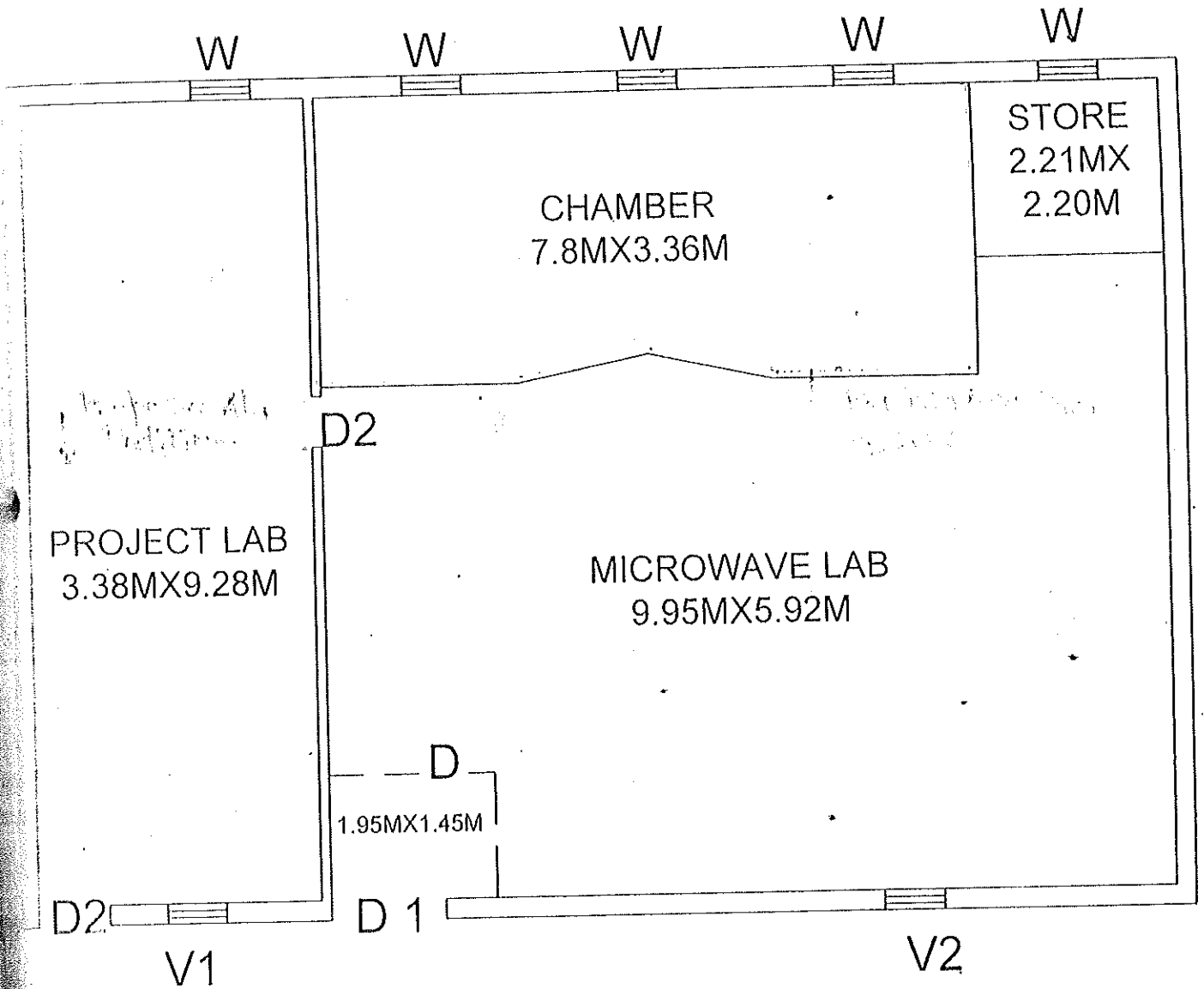
Signature of Contractor



PLAN OF MECHANICAL CAD LAB

Signature

Signature



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D1	-	1.10MX2.40M
D2	-	0.89MX2.40
V1	-	1.18MX0.60M
V2	-	1.78MX0.60M
W	-	1.80MX 2.25M

MICROWAVE LAB

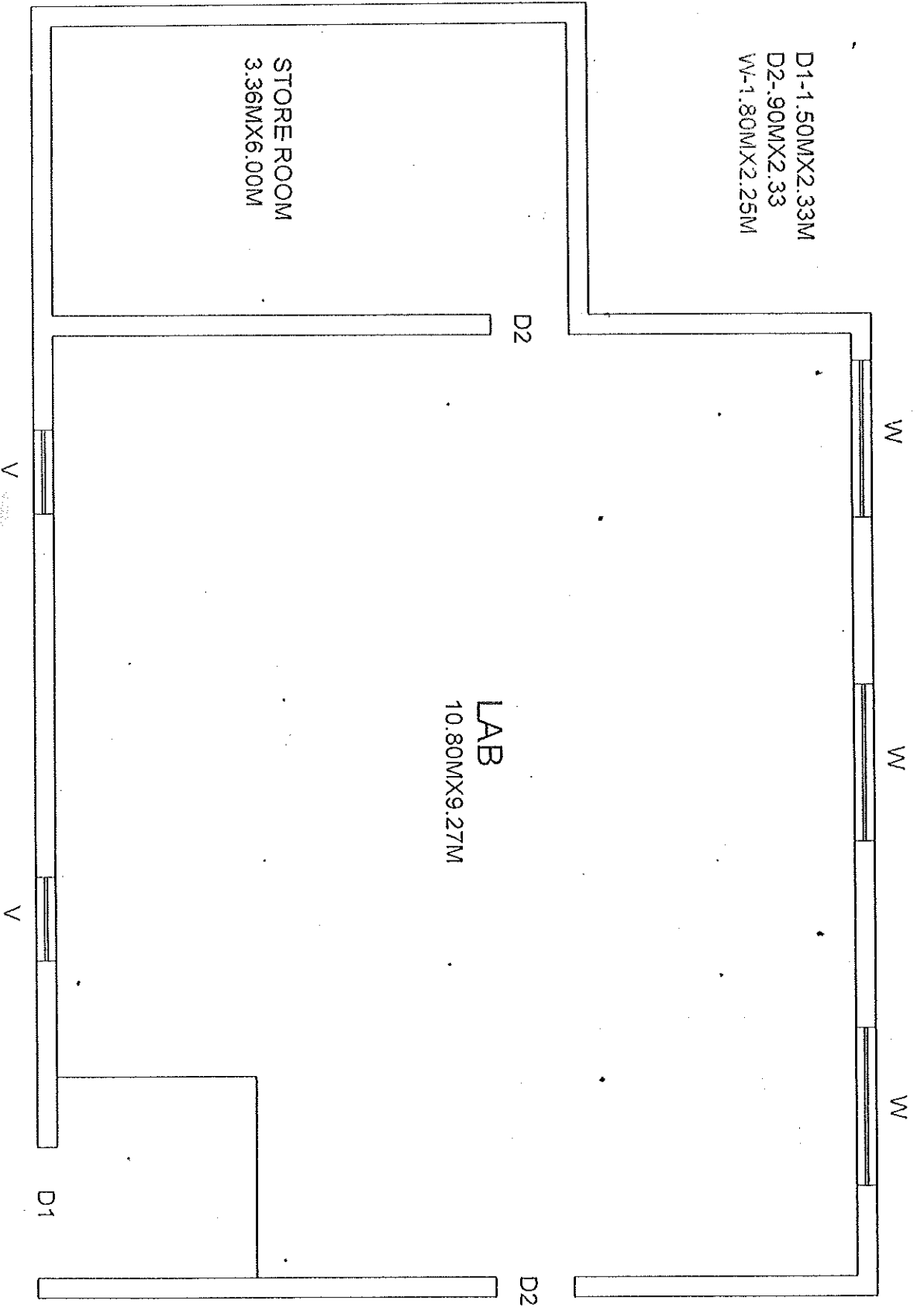
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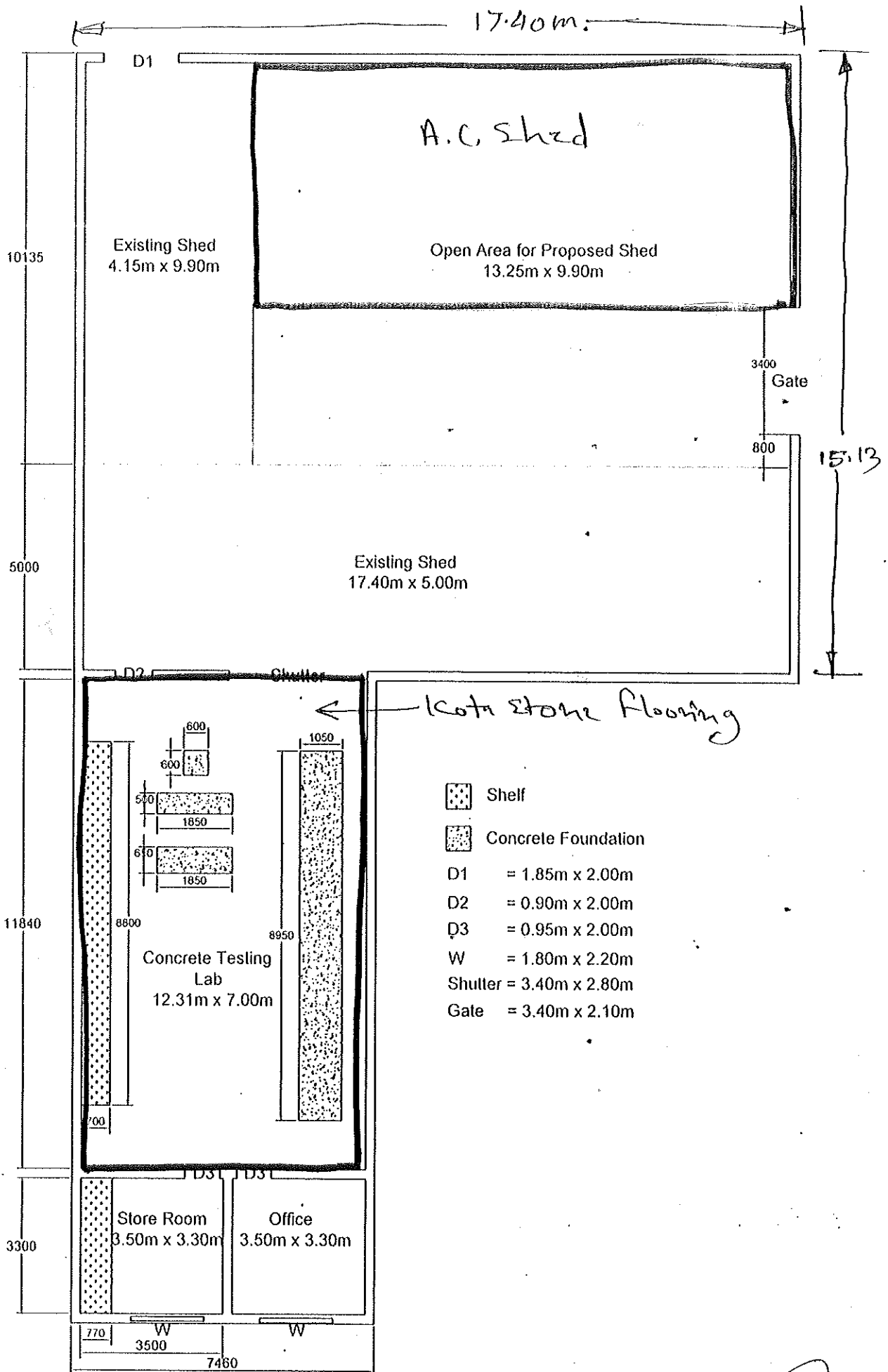
D1-1.50MX2.33M
D2-.90MX2.33
W-1.80MX2.25M

STORE ROOM
3.36MX6.00M

LAB
10.80MX9.27M



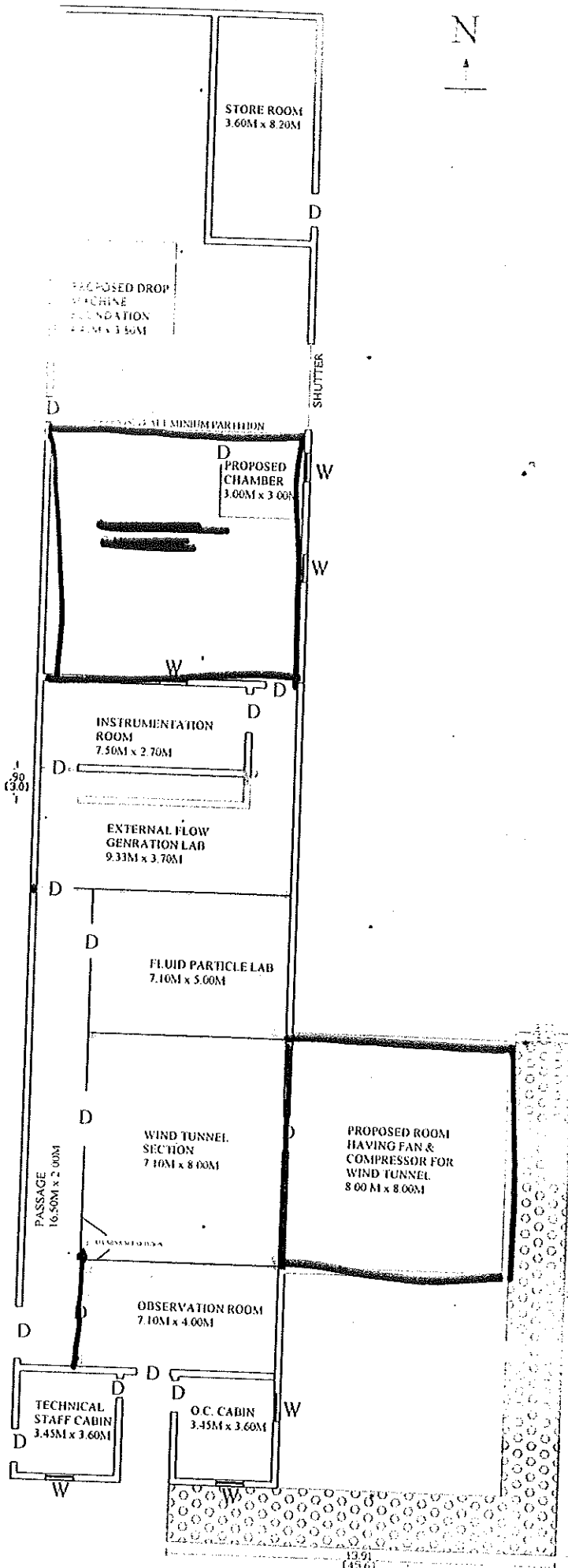
PLAN OF COMPUTER ARCHITECTURE LAB



Manik Chandra
20/9/18

Plan of Concrete Technology Lab
All Dimensions are in MM
DWG By- Manik Chandra

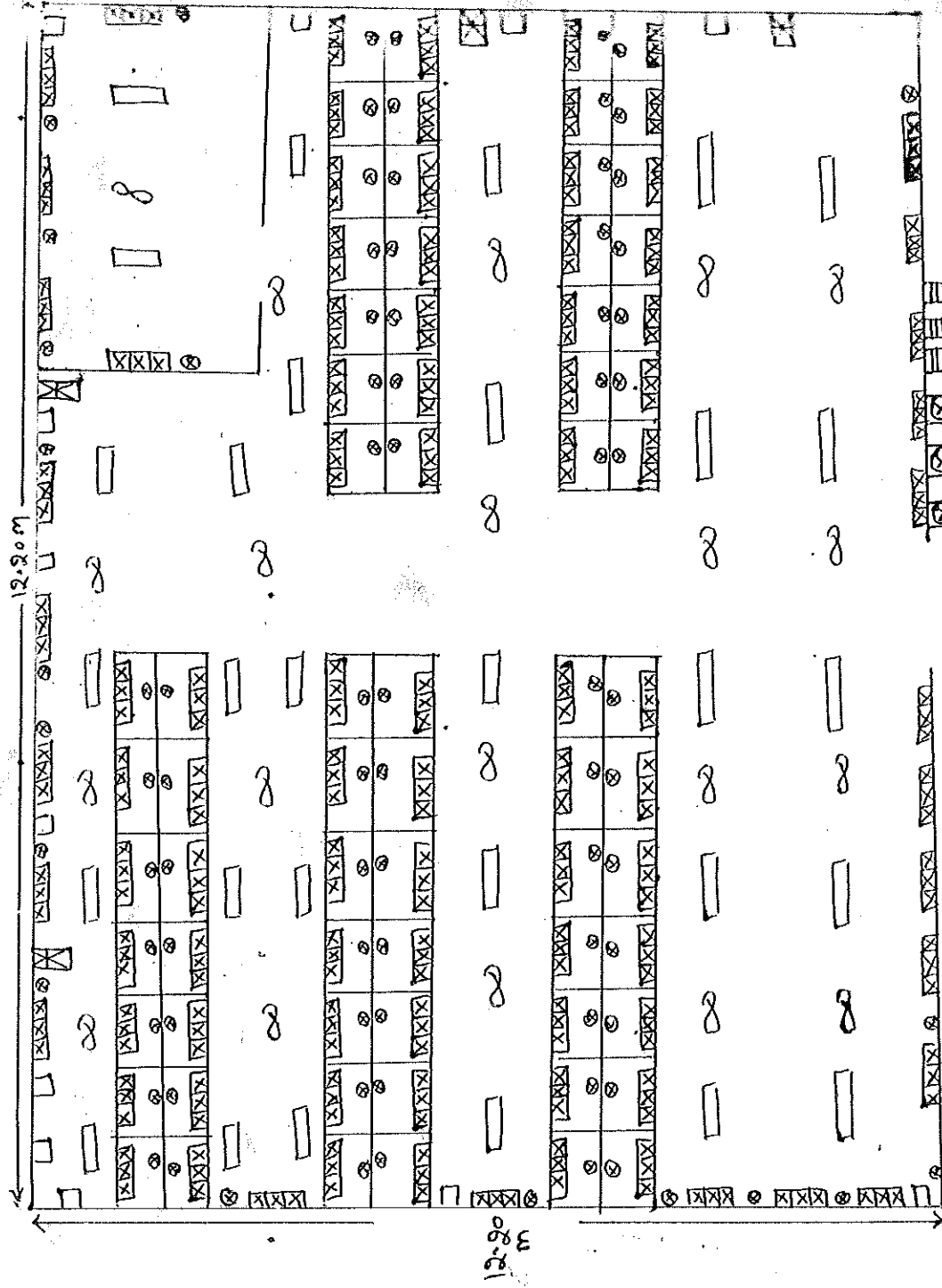
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Singh
20/9/16

PLAN OF HYDRAULICS LAB

Wiring Diagram of Embedded System & Hardware Lab (CSE H)



- 3x 5/15 A socket & switch
- 3x LED 2x2 panel light
- ceiling fan
- Inlet/Outlet Box
- A.C. Point
- Main Distribution panel
- Main Enclosure
- Rack mount 24 Port switch

Practical
21/5/16

21/5/16

Practical

Format of certificate

Certified that the works up to ----- level in respect of construction of ----- at ----- have been executed in accordance with the approved drawing and technical specifications.

Place :
Date :

Signature
Name & Designation
(Official address)

Office seal