

THE INSTITUTE OF COST ACCOUNTANTS OF INDIA (ICAI)

TENDER DOCUMENTS
FOR
PROPOSED CIVIL WORK OF AUDITORIUM AT
THE INSTITUTE OF COST ACCOUNTANTS OF INDIA (ICAI),
12, SUDDER STREET,
KOLKATA – 700 016

CONSULTANT
PARTHA DAS & ASSOCIATES
AE - 377, SECTOR-I, SALT LAKE CITY, KOLKATA- 700 064

SECTION – I
GENERAL INSTRUCTIONS

CIVIL WORK IN AUDITORIUM AT
THE INSTITUTE OF COST ACCOUNTANTS OF INDIA (ICAI),
12, SUDDER STREET, KOLKATA – 700 016

GENERAL INDEX

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THE INSTITUTE OF COST ACCOUNTANTS OF INDIA (ICAI)

12, SUDDER STREET, KOLKATA – 700 016

TENDER NOTICE

Sealed tenders are invited of behalf of the Institute of Cost Accountants of India , 12, Sudder Street, Kolkata – 700 016 in the prescribed form from reputed, bonafide and resourceful contractors for Civil work at Auditorium of Institute of Cost Accountants of India , 12, Sudder Street, Kolkata – 700 016.

Sl. No.	Tender No.	Name of Work	Estimated Cost (Rs.)	Completion time in months	Earnest Money (Rs.)
1.		Civil work at Institute of Cost Accountants of India , 12, Sudder Street, Kolkata – 700 016	64,79,070.00	2	1,29,580.00

Earnest Money will be accepted in the form of Bank Draft drawn in favour of Institute of Cost Accountants of India payable at Kolkata. No interest will be paid in this amount of earnest money deposited by the tenderer.

Tender papers and other details will be available from 11/04/2013 to 23/04/2013.

{Pre-bid discussion will be held at the office of the Architect, AE-377, Sector – 1, (Ground floor), Salt Lake City, Kolkata 700 064 at 11 a.m. – 3 p.m. on 17/04/2013 for clarification, if any, required for quoting the price by the tenderers.}

Tender will have to be submitted in two parts: Cover-I & Cover-II separately sealed and superscribed with the name of work in the Tender Box of the Institute at 12, Sudder Street, Kolkata – 700 016.

Cover-I shall contain Earnest Money, covering letter and conditions, if any, stipulated by the tenderer together with credentials to establish experience of similar works in the last 5 years.

Cover-II shall contain the complete tender document duly filled and signed with stamp in all pages in duplicate. No condition stipulated in Cover-II other than general rebates shall be accepted.

Tenders in Cover-I & Cover-II shall again be put in a separate sealed cover. This will be received upto 3 p.m. on 24/04/2013. Cover-I will be opened at 4.30 p.m in the office of the Institute of Cost Accountants of India , 12, Sudder Street, Kolkata – 700 016 on the same date in presence of the contractors or their authorized representatives who may like to be present. Time and date of opening of Cover-II of tender will be intimated thereafter. The Institute of Cost Accountants of India reserves the right to reject any or all of the tenders received without assigning any reason thereof.

The Institute of Cost Accountants of India retains right to cancel any of the items at a later date after the contract is awarded.

INSTRUCTIONS TO TENDERER

1. Sealed Tenders are hereby invited of behalf of the Institute of Cost Accountants of India , 12, Sudder Street, Kolkata – 700 016 for Civil work at Auditorium of Institute of Cost Accountants of India , 12, Sudder Street, Kolkata – 700 016. Estimated cost of work is Rs. 6479070.00(Rupees sixty four lakh seventy nine thousand seventy only.)
2. Contract documents consisting of the plans, complete specifications, the schedule of quantities of the various classes of works to be done, and the set of conditions of contract may be downloaded from the
3. The site for the work is available to the Contractor in its present conditions. No space other than the above site can be made available to the contractor for site office, labour camps, storage etc.
4. Tender to be submitted on the printed form issued by the authority of the Institute of Cost Accountants of India , 12, Sudder Street, Kolkata – 700 016
5. Sealed tenders on the prescribed form are to be addressed to the Institute of Cost Accountants of India , 12, Sudder Street, Kolkata – 700 016 in two separate sealed covers containing the documents as under:

Cover – I : Earnest money, valid Income Tax and Sales Tax Clearance Certificates and other stipulation, if any together with credentials to establish experience of similar works in the last 5 years.

Cover – II : The priced tender papers along with Conditions of Contract, Technical Specifications (in duplicate). Any condition stipulated in Cover-II (Priced tender paper) will not be accepted.

The Cover I will be opened at about 4.30 P.M. on 24/04/2013 in presence of tenderers. The tenderers shall depute their authorised representative/s to be present at the time of opening. Tender without earnest money in proper form will be rejected.

The Cover II : Time and date of opening of Cover-II of tender will be intimated after opening Cover I.

6. The time allowed for the commence of the work will be within fourteen days after date of written orders.
7. The contractors should quote in figures as well as in words the rate, and amount tendered by them. The amount for each item should be worked out and the total amount for sub section shall be given.
8. All corrections shall be attested by the initials of the tenderers with the seal of the firm. In case any discrepancy/difference is found on checking between rates quoted by the contractor in words and figures or in the amount worked out by him, the following procedure shall be followed:
 - a) The rates quoted in words is final and the corresponding amount will be considered for evaluation.
 - b) The decision of the Institute of Cost Accountants of India in resolving any ambiguity regarding the rates quoted will be final.
 - c) Amendments as mentioned above shall be based on the tender marked “original” only.
9. All writing should be in English and legible.
10. Earnest money, amounting to Rs. 1,29,580.00 in the form of Bank Draft drawn in favour of Institute of Cost Accountants of India payable at Kolkata. No interest will be paid in this amount of earnest money deposited by the tenderer.
11. The acceptance of a tender will rest with the competent authority of Institute of Cost Accountants of India who does not bind themselves to accept the lowest tender, and reserves to themselves the authority to reject any or all of the tenders received without the assignment of a reason. All tenders in which any of the prescribed conditions are not fulfilled or are incomplete in any respect are liable to be rejected.

The Owner reserves the right to accept the tender in full or in part and the tenderer shall have no claim for revision of rates or other conditions if his tender is accepted in parts.

12. Canvassing in connection with tenders is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable to rejection.
13. **Deleted**
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 Owner/Consultant shall be communicated to the Employer.
15. Special care should be taken to write the rates in figures as well as in words and the amounts in figures only. The total amount should be written both in figures and in words. In case of figures, the words 'Rs.' should be written before the figure of rupees and words 'P' after the decimal figures.
16. The owner does not bind itself to accept the lowest or any tender and reserves to itself the right of accepting the whole or any part of the tender and the tenderer shall be bound to perform the same at the rate quoted.
17. Sales tax or any other tax on material or on finished works like work's contract tax, Turnover Tax, etc. in respect of this contract shall be payable by the contractor and the owner will not entertain any claim whatsoever in this respect. All taxes, duties, cess etc. should be included in their rates. Any tax, cess etc. levied during the pendency of the contract, the same shall be borne by the contractor and no claim whatsoever in this regard will be entertained. **Service tax shall be paid separately by the Owner as per prevailing norms during the payment.**
18. **Deleted**
19. The tender for works shall remain open for acceptance for a period of 90 days from the date of opening of tenders. If any tenderer withdraws his tender before the said period, then the owner shall be at liberty to forfeit Earnest Money paid along with the tender.
20. It will be obligatory on the part of the tenderer to tender and sign the tender documents in totality and the successful tenderer will have to enter into an agreement for the tendered work with the competent authority.
21. The appointed contractor must co-operate with other agencies appointed by the owner who will be working at the same site for different work for timely completion of the work.
22. The notification of award of contract will be made in writing to the successful tenderer by the owner.

Convener, Purchase Committee

For Institute of Cost Accountants of India

FORM OF TENDER (To be filled up by the Tenderer)

To,
The Institute of Cost Accountants of India,
12, Sudder Street,
Kolkata – 700 016

Dear Sir,

Re.: Civil work at Auditorium in Institute of Cost Accountants of India,
12, Sudder Street, Kolkata – 700 016

1. I/We refer to the tender notice issued by the Institute of Cost Accountants of India in connection with the above.
2. I/We do hereby offer to perform, provide, execute, complete and maintain the works in conformity with the drawings, conditions of contract, specifications, bill of quantities for the sum of Rs. _____ at the respective rates quoted in the bill of quantities.
3. I/We have satisfied myself/ourselves as to the site conditions, examined the drawings and all aspects of the tender conditions, subject to above, I/We do hereby agree & quote accordingly.
 - a) Abide by and fulfil all the terms and provisions of the said conditions annexed hereto;
 - b) Complete the works within the stipulated time as per the tender provision in two or three shifts if considered necessary by the Employer/Consultant at no extra cost to the Employer.
4. I/We have deposited the earnest money of Rs. 129580.00(Rupees one lakh twenty nine thousand five hundred eighty only) in the form of Bank Draft, I/we note, will not bear any interest and is liable for forfeiture:
 - i) If our offer is withdrawn within the validity period of acceptance.
or
 - ii) If the Contract is not executed within 15 days from the date of receipt of the letter of acceptance.
or
 - iii) If the work is not commenced within 14 days after issue of work order.
5. I/We understand that you are not bound to accept the lowest or any tender you receive.
6. Name of Partners/Directors of our Firm:
 - i)
 - ii)
 - iii)

Yours faithfully

Signature _____

Designation _____

Name of Partner/Director of the firm authorised to sign or Name of person having power of attorney to sign the contract, (Certified true copy of the power of attorney should be attached)

Signature and address of witness :

a) Signature _____
Name _____
Address _____

b) Signature _____
Name _____
Address _____

DRAFT ARTICLES OF AGREEMENT

ARTICLES OF AGREEMENT made the ___ day of _____ Two Thousand and _____ between the Institute of Cost Accountants of Indi , having its Office at Institute of Cost Accountants of India , 12, Sudder Street, Kolkata – 700 016 (hereinafter called “the Owner”) of the one part and _____ (hereinafter called “the Contractor”) of the other part.

WHEREAS the Owner is desirous of executing the Civil work in Auditorium at Institute of Cost Accountants of India , 12, Sudder Street, Kolkata – 700 016 and has caused drawings and specifications describing the works to be prepared by M/s. Partha Das & Associates, AE-377, Sector-I, Salt Lake City, Kolkata – 700 064 .

AND WHEREAS the said DRAWINGS numbered _____ to the Specifications and the Schedule of items and quantities have been signed by and on behalf of the parties hereto.

AND WHEREAS the contractor has agreed to execute upon and subject to the conditions set forth herein and Schedule of Items and quantities, General Conditions of Contract, specifications and all correspondences exchanged by or between the parties from the submission of tender till the award of work, both letters inclusive, (all of which are collectively hereinafter referred to as ‘the said conditions) the works shown upon the said drawings and/or described in the said specification and included in the schedule of items and quantities at the respective rates therein set forth amounting to the sum as therein arrived at or such other sum as shall become payable thereunder (hereinafter referred to as “the said contract amount”).

NOW IT IS HEREBY AGREED AS FOLLOWS:

1. In consideration of the said contract amount to be paid at the times in the manner set forth in the said conditions, the contractor shall upon and subject to the said conditions execute and complete the work shown upon the said drawings and described in the said specifications and the schedule of items and quantities.
2. The Owner shall pay the contractor the said contract amount, or such other sum as shall become payable, at the times and in the manner specified in the said conditions.
3. The project Consultant in the said conditions shall mean the said M/s. Partha Das & Associates, AE-377, Sector-I, Salt Lake City, Kolkata – 700 064 or, in the event of their ceasing to be the Consultant for the purpose of this contract for whatever reason, such other person or persons as shall be nominated for that purpose by the Owner, provided always that no person subsequently appointed to be Consultant under this contract shall be entitled to disregard or over rule any previous decision or approval or direction given or expressed in writing by the Consultant for any time being.
4. The said conditions and Appendices thereto shall be read and considered as forming part of this Agreement, and the parties hereto shall respectively abide by, submit themselves to the said conditions and perform the agreements on their part respectively in the said conditions contained.
5. The plans, agreements and documents mentioned herein shall form the basis of this contract.
6. This contract is neither a fixed Lump Sum contract nor a piece work contract but is a contract to carry out the work in respect of the Civil work in Auditorium at Institute of Cost Accountants of India , 12, Sudder Street, Kolkata – 700 016 as per the scope described and to be paid for according to actual measured quantities at the rates contained in the Schedule of Rates and Probable quantities or as provided in the said conditions.
7. The Owner reserves to itself the right of altering the drawings and nature of the work by adding to or omitting any items of work or having portions of the same carried out without prejudice to this contract.
8. Time shall be considered as the essence of this contract and the contractor hereby agrees to commence the work on the day on which he is instructed to take possession of the site or from fourteenth day after the date of issue of formal work order as provided for in the said conditions whichever is later and to complete the entire work within 1 month subject nevertheless to the provisions for extension of time.
9. All payments by the Owner under this contract will be made only at Kolkata.
10. Any dispute arising under this Agreement shall be referred to arbitration in accordance with the stipulation laid down in the general conditions of contract.
11. That the several parts of this contract have been read by the contractor and fully understood by the contractor.

IN WITNESS WHEREOF the Owner and the Contractor has set their respective hands to these presents and two duplicates hereof the day and year first herein above written.

If the contractor is a Partnership or an Individual.

IN WITNESS WHEREOF the Owner has set Its hands to these presents through its duly authorised official and the contractor has caused its common seal to be affixed hereunto and the said two duplicates/has caused these presents and the said two duplicate hereof to be executed on its behalf, the day and year first hereinabove written.

If the Contractor is a Company.

Signature clause:

SIGNED AND DELIVERED

by the hand of Shri _____

(Name and Designation)

In the presence of

(1) _____

Address _____

(2) _____

Address _____

Witness

SIGNED AND DELIVERED BY _____

_____ in the presence of

(1) _____

Address _____

(2) _____

Address _____

Witness

The COMMON SEAL OF _____

Was hereinto affixed pursuant to the resolutions passed by

Its Board of Directors at the meeting held on

(1) _____

(2) _____

Directors who have signed this presence in token thereof in the presence of

(1) _____

(2) _____

If the party is a partnership firm or an individual should be signed by all or on behalf of all the partners.

If the contractor signs under its common seal, the signature clause should tally with the sealings clause in the Articles of Association

If the contractor is signed by the hand of power of attorney whether a company or individual.

CONDITIONS OF CONTRACT

Except where provided for in the description of the individual items in the schedule of quantities and in the specifications and conditions laid down hereinafter and in the Drawings, the work shall be carried out as per standard specifications and under the direction of Owner/Consultant.

1. INTERPRETATION

In construing these conditions, the specifications the schedule of quantities, tender and Agreement, the following words shall have the meaning herein assigned to them except where the subject context otherwise requires:

- i) “Owner”/ “Employer” / : Shall mean competent authority of Institute of Cost Accountants of India , 12, Sudder Street, Kolkata – 700 016 and shall include their assignees and successors and administrators
- ii) Architect / Consultant : The terms Architect / Consultant shall mean M/s Partha Das & Associates, AE-377, Sector-I, Salt Lake City, Kolkata – 700 064 or in the event of their ceasing to be the Consultant for the purpose of this contract such other person/s as the Owner shall nominate for the purpose.
- iii) “Contractor”: Shall mean Messrs _____ and shall include their assignees and/or successors his/their heirs and administrators.
- iv) Site : The site shall mean the site where the works are to be executed as shown within boundary in border on the site plan including any building and erections thereon allotted by the Owner for the contractor’s use.
- v) “The Contract” : This Contract shall mean the Tender Notices, Instructions to tenders, Conditions of Contract, Special Conditions of Contract, Safety Code, Form of Tender, Technical Specifications, Schedule of Quantities to be supplied by the University, the specification, schedule of quantities and rates and the drawings attached hereto and signed.
- vi) “Notice in Writing” : Or written notice shall mean a notices in written, typed or printed characters sent (unless delivered personally or otherwise proved to have been received) by registered post to the last known business address or registered office of the addressee and shall be deemed to have been received when in the ordinary course of post it would have been delivered.
- vii) “Act of Insolvency” shall mean any act as such as defined by the Presidency Towns Insolvency Act, 1909 or in Provincial Insolvency Act, 1920 or any amendments of the said Acts.
- viii) Drawings : The work is to be carried out in accordance with drawings, specifications, the schedule of quantities. A set of drawings is provided with the tender to give the general idea about the total construction.
All drawings relating work given to the contractor together with a copy of schedule of quantities are to be kept at site and the Owner/Consultant shall be given access to such drawings or schedule of quantities whenever necessary.
In case any detailed Drawings are necessary contractor shall prepare such detailed drawings and/or dimensional sketches there or and have it conformed by the Owner/Consultant prior to taking up such work.
- ix) “The Schedule of Quantities” shall mean the schedule of quantities as specified and forming part of this contract.
- x) “Priced Schedule of Quantities” shall means the schedule of quantities duly priced with the accepted quoted rates of the contractor.

2. **SCOPE**

The work consists of Civil work at Auditorium in Institute of Cost Accountants of India , 12, Sudder Street, Kolkata – 700 016 in accordance with the ‘drawings’ and ‘schedule of quantities’. The General Building, works are within the scope of this tender. It includes furnishing all materials, labour, tools and equipment and management necessary for the incidental to the construction and completion of the work. All works, during its progress and upon completion, shall conform to the lines, elevations and grades as shown on the drawings furnished by the Owner/Consultant. Should any detail essential for efficient completion of the work be omitted from the drawings and specifications it shall be the responsibility of the contractor to inform the Owner/Consultant and to furnish and install such detail with Owner’s/Consultant’s concurrence, so that upon completion of the proposed work the same will be acceptable and ready for use.

Owner/Consultant may in their absolute discretion issue further drawings and/or written instructions, details, directions and explanations, which are, hereafter collectively referred to as “The Owner’s/Consultant’s instructions” in regard 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 specification.
- c) The removal from the site of any defective material brought thereon by the contractor and the substitution of any other material thereof.
- d) The demolition removal and/or re-execution of any work executed by the contractor/s.
- e) The dismissal from the work of any persons employed thereupon.
- f) The opening up for inspection of any work covered up.
- g) The rectification and making good of any defects under clauses hereinafter mentioned and those arising during the maintenance period (retention period).

The contractor shall forthwith comply with and duly execute any work comprised in such Owner’s/Consultant’ instructions, provided always that verbal instructions, directions and explanations given to the contractor’s or his representative upon the works by the Owner/Consultant shall if involving a variation be confirmed in writing to the contractor/s within seven days. No work for which rates are not specifically mentioned in the priced schedule of quantities, shall be taken up without written permission of the Owner/Consultant. Rates of items not mentioned in the priced schedule of quantities shall be fixed by the Owner in consultation with the Consultant.

The contractor shall set up a field laboratory with necessary equipments for day to day testing of materials like grading of coarse and fine aggregates, silt content and bulkage of sand crushing strength of concrete etc.

Regarding all factory made products for which ISI marked products are available, only products bearing ISI marking shall be used in the work. Other products should be supplied as per the brand name mentioned in the Technical Specifications.

3. **DETAILED DRAWINGS AND INSTRUCTIONS**

The Owner through its Consultant shall furnish with reasonable promptness additional instructions by means of drawings or otherwise necessary for the proper execution of the work. All such drawings and instructions shall be consistent with the Contract Documents, true developments thereof, and reasonably inferable therefrom.

The work shall be executed in conformity therewith and the contractor shall not work without proper drawings and instructions.

Immediately after receipt of the work order of the contract the contractor shall prepare a progress schedule and submit the same to the Owner through the Consultant for approval which shall indicate the dates for the starting and completion of the various stages of constructions.

4. **COPIES FURNISHED**

The Contractor on the signing hereof shall be furnished by the Owner through its Consultant free of charge with a copy of the priced schedule of quantities/rates, two copies of each of the said drawings and one copy of specifications and two copies of all further drawings issued during the progress of the work. Any further copies of such drawings required by the Contractor shall be supplied on payment of charges thereof by the Contractor.

5. OWNERSHIP OF DRAWING

All drawings, specifications and copies thereof furnished by the Owner through its Consultant are the property of the Owner. They are not to be used on other work, and with the exception of signed contract set, are to be returned to the Owner on request at the completion of the work.

6. ROYALTIES AND PATENTS

The contractor shall pay all royalties and licence fees. He shall defend all suits for claims for infringement of any patent rights and shall save the Owner harmless from loss on account thereof.

7. Deleted

8. SUPERINTENDENCE SUPERVISION

The Contractor shall give all necessary personal Superintendence during the execution of the work and this obligation and liability will continue until expiration of the 'Maintenance Period' (Retention Period). The contractor shall also during the whole time of work when in progress employ a competent representative who shall be constantly in attention at the site while his men are at work. Any directions, explanations, instructions or notices given by the Owner or the Consultant to such representative shall be deemed to have been given and duly served on the contractor.

9. FAILURE BY CONTRACTORS TO COMPLY WITH OWNER'S/CONSULTANT' INSTRUCTIONS

If the contractor after receipt of written notice from the Owner and/or the Consultant requiring compliance within ten days fails to comply with such further drawings and/or Owner's/Consultant's instructions, the Owner through the Consultant or other person, may employ other person to execute any such work whatsoever that may be necessary to given effect thereto and pay all cost incurred in connection therewith and same shall be recoverable from the contractor by the Owner on the certificate of the Consultant as a debt or shall have right to deduct same from any moneys due or to become due to the contractor.

10. TENDERER SHALL VISIT THE SITE

Intending tenderer shall visit the site and make himself thoroughly acquainted with the local site condition, nature and requirements of the works, facilities of transport condition, effective labour and materials, access and storage for materials and removal of rubbish. The tenderer shall provide in their tender for cost of carriage, freight and other charges as also for any special difficulties and including police restriction for transport etc. for proper execution of work as indicated in the drawings. The successful tenderer will not be entitled to any claim of compensation for difficulties faced or losses incurred on account of any site condition which existed before the commencement of the work or which in the opinion of the Owner/Consultant might be deemed to have reasonably been inferred to be so existing before commencement of work.

11. TENDERS

The entire set of tender paper issued to the tenderer should be submitted fully priced and also signed on the all pages. Initial/signature will indicate the acceptance of the tender papers by the tenderer.

The schedule of quantities shall be filled in as follows:

The tendered amount is to be quoted as percentage above or below the estimated amount

i) When there is difference between the rates in figures and in words, the rate quoted in words prevail.

No modifications, writings or corrections can be made in the tender papers by the tenderer, but may at his option offer his comments or modifications to be given in Cover-I.

The Owner reserves the right to reject the lowest or any tender and also to discharge any or all the tenders for each section or to split up and distribute any item of work to any specialist firm or firms, without assigning any reason.

The works will be paid for as "measured work" on the basis of actual work done.

All items of work described in the schedule of quantities are to be deemed and paid as complete works in all respects and details including preparatory and finishing works involved, directly, related to and reasonably

detectable from the drawings, specifications and schedule of quantities and no further extra charges will be allowed in this connection. In the case of lump sum charges in the tender in respect of any item of works, the payment of such items of work will be made for the actual work done on the basis of lump sum charges as will be assessed to be payable by the Owner/Consultant.

The Owner has power to add to omit from any work as shown in drawings or described in specifications or included in schedule of quantities and intimate the same in writing but no addition, omission or variation shall be made by the contractor without authorisation from the Owner. No variation shall vitiate the contract. The quantity of any item may vary to any extent based on the actual design & site condition. In such cases the rate for the respective items shall remain valid and the contractor has to execute as per instruction.

The tenderer shall note that his tender shall remain open for consideration for a period of ____days from the date of opening of the tender.

12. TIME AND PROGRESS CHART

The contractor shall within 15 (fifteen) days of receipt of intimation that his tender has been accepted, submit to the Consultant/Owner a detailed programme of work so drawn as would enable him to complete the work within the time contemplated. The detailed work programme must indicate dates of starting and completion of respective parts or sections of the work. The detailed work programme would be subjected to the approval of the Owner/Consultant who will have the power of making such modification thereon as found necessary. The actual progress as compared with this chart will be reviewed periodically.

The contractors shall have to prepare their own material in flow according to the final Programme as accepted by Owner. The programme shall have to be updated at regular intervals and modified programme shall be submitted to the Consultant/Owner for approval. In no case the overall date for the completion of important items as indicated in the programme should be changed without prior consent of Consultant/Owner.

13. CO-OPERATION

The contractor will be required to consult and co-operate with other contractors whose work may be affected by the work under this contract.

14. TREASURE TROVE ETC.

Any treasure trove, coin or object antique which may be found on the site shall be the property of the Owner and shall be handed over to the Owner.

15. PERMITS AND LICENCES

Permits and licences for release of materials which are under Government control will be arranged by the contractor. The Owner will render necessary assistance, sign any forms or applications that may be necessary.

16. GOVERNMENT AND LOCAL RULES

The contractor shall conform to the provisions of all local Bye-laws and Acts relating to the work and to the Regulations etc. of the Government and Local Authorities and of any company with whose system the structure is proposed to be connected. The contractor shall give all notices required by said Act, Rules, Regulations and Bye-Laws etc. and pay all fees payable to such authority/authorities for execution of the work involved. The cost, if any, shall be deemed to have been included in his quoted rates, taking into account all liabilities for licences, fees for footpath encroachment and restoration etc. and shall indemnify the Owner against such liabilities and shall defend all actions arising from such claims or liabilities.

17. TAXES AND DUTIES

The tenderers must include in their tender prices quoted for all duties, royalties, cess and sales tax or any other taxes or local charges if applicable. The rates shall also include prevailing sales tax on works contract as per State Government norms. All taxes, duties, cess etc. should be included in their rates. Any tax, cess etc. levied during the pendency of the contract, the same shall be borne by the contractor and no claim whatsoever in this regard will be entertained. Service tax shall be paid by the Owner as per prevailing norms during payment of their bills.

No extra claim on this account will in any case be entertained.

18. POSSESSION PRIOR TO COMPLETION

The Owner shall have the right to take possession of or use any completed or partially completed part of the work. Such possession or use shall not be an acceptance of any work not completed in accordance with the contract Agreement.

19. PROVISIONAL SUMS (P S)

All provisional sums described in the schedule of quantities as P S shall be exclusively allotted to the purchase of materials and not for any handling and fixing to be done by the contractor. Such costs of handling and fixing with profit (including transport charges if required) shall be separately included in the contract price as described in the schedule of quantities. The disposal of the amounts covered under this head will be absolutely at the discretion of the Owner. Contractor is to make payments for these materials to the suppliers on certificate or order issued by the Owner/Consultant and realise them through his bills from the Owner.

20 QUANTITY OF WORK TO BE EXECUTED

The quantities shown in the schedule of quantities are intended to cover the entire new structure indicated in the drawings but the Owner reserves the right to execute only a part or the whole or any excess thereof without assigning any reason therefor.

21. OTHER PERSONS ENGAGED BY THE OWNER

The Owner reserves the right to execute any part of the work included in this contract or any work which is not included in the contract by other Agency or persons and contractor shall allow all reasonable facilities and use of his scaffolding for the execution of such work. The main contractor shall extend all cooperation in this regard.

22. RETENTION MONEY AND SECURITY DEPOSIT

An amount of 10% (including Earnest Money Deposit) of the gross value of each R.A. Bill of the contractor will be deducted as Retention Money. 50% of the Retention Money so deducted will be refunded after virtual completion of work, along with a certification of the Consultant and rest 50% will be refunded after expiry of Defect Liability Period provided that the contractor has satisfactorily carried out all the works, submitted all documents contractually called for and attended to all defects in accordance with the Conditions of Contract and also along with a certification of the Consultant. No interest is allowed on Retention Money.

23. CONTRACTOR TO PROVIDE EVERYTHING NECESSARY

The contractor shall provide everything necessary for the proper execution of the work according to the intent and meaning of the drawings, schedule of quantities and specifications taken together whether the same may or may not be particularly shown or described therein provided that the same can reasonably be inferred therefrom and if the contractor finds any discrepancies therein he shall immediately and in writing, refer the same to the Owner/Consultant whose decision shall be final and binding. The contractor shall provide himself for ground and fresh water for carrying out of the works at his own cost. The Owner shall on no account be responsible for the expenses incurred by the contractor for hired ground or fresh water obtained from elsewhere.

The rates quoted against individual items will be inclusive of everything necessary to complete the said items of work within the contemplation of the contract, and beyond the unit price no extra payment will be allowed for incidental or contingent work, labour and/or materials inclusive of all taxes and duties whatsoever except for specific items, if any, stipulated in the tender documents.

The contractor shall supply, fix and maintain at his own cost, for the execution of any work, all tools, tackles, machineries and equipments and all the necessary centering, scaffolding, staging, planking, timbering, strutting, shoring, pumping, fencing, boarding, watching and lighting by night as well as by day required not only for the proper execution and protection of the said work but also for the protection of the public and safety of any adjacent roads, streets, walls, houses, buildings, all other erections, matters and things and the contractor shall take down and remove any or all such centering, scaffolding, planking, timbering, strutting, shoring etc. as occasion shall be required or when ordered so to do and shall fully reinstate and make good all matters and things disturbed during the execution of works to the satisfaction of the Owner/Consultant.

The contractor shall also provide such temporary road on the site as may be necessary for the proper performance of the contract, and for his own convenience but not otherwise. Upon completion, such roads shall be broken up and levelled where so required by the drawings unless the Owner shall otherwise direct.

The contractor shall at all times give access to workers employed by the Owner or any men employed on the buildings and to provide such parties with proper sufficient and if required, special scaffolding, hoists and ladders and provide them with water and lighting and leave or make any holes, grooves etc. in any work, where directed by the Owner as may be required to enable such workmen to lay or fix pipes, electrical wiring, special fittings etc. The quoted rates of the tenderers shall accordingly include all these above mentioned contingent works.

24. TIME OF COMPLETION EXTENSION OF TIME AND PROGRESS CHART

24.1 Time of Completion : The entire work is to be completed in all respects within the stipulated period. The work shall deemed to be commenced within 2 months from the date of acceptance letter or date of handing over of site, whichever is earlier. Time is the essence of the contract and shall be strictly observed by the contractor.

The work shall not be considered as complete until the Owner/Consultant have certified in writing that this has been completed and the Defects Liability Period shall commence from the date of such certificate.

24.2 Extension of Time: If in the opinion of the Owner/Consultant the works be delayed (a) by reason of any exceptionally inclement weather, or (b) by reason of instructions from the Owner in consequence of proceedings taken or threatened by or disputes, with adjoining or neighbouring owners or (c) by the works, or delay of other contractors or tradesmen engaged or nominated by the Owner and not referred to in the specification or (d) by reason of authorised extra and additions or (e) by reason of any combination of workmen or strikes or lockout affecting any of the building or trades or (f) from other causes which the Owner may consider are beyond the control of the contractor, the Owner at the completion of the time allowed for the contract shall make fair and reasonable extension of time for completion in respect therefor. In the event of the Owner failing to give possession of the site upon the day specified above the time of completion shall be extended suitably.

In case of such strikes or lockouts, as are referred to above, the contractor shall, immediately give the Owner, written notice thereof. Nevertheless, the contractor shall use his best endeavours to prevent delay and shall do all that may be reasonably required, to the satisfaction of the Owner to proceed with the works and on his doing so that it will be ground of consideration by the Owner for an extension of time as above provided. The decision of the Owner as to the period to be allowed for an extension of time for completion hereunder (which decision shall be final and binding on the contractor) shall be promulgated at the conclusion of such strike or lockout and the Owner shall then, in the event of an extension being granted, determine and declare the final completion date. The provision in clause 62 with respect to payment of liquidated damages shall, in such case, be read and construed as if the extended date fixed by the Owner were substituted for and the damage shall be deducted accordingly. The proper evidences/supporting papers/written instruction for any such hindrances shall be maintained by the contractor with due information to the owner/consultant instantly.

24.3 Progress of Work: During the period of construction the contractor shall maintain proportionate progress on the basis of a Programme Chart submitted by the contractor immediately before commencement of work and agreed to by the Owner/Consultant. Contractor should also include planning for procurement of scarce material well in advance and reflect the same in the Programme Chart so that there is no delay in completion of the project.

25. TOOLS, STORAGE OF MATERIALS, PROTECTIVE WORKS AND SITE OFFICE REQUIREMENTS

The contractor shall provide, fix up and maintain in an approved position proper office accommodation for the contractor's representative and staff which offices shall be open at all reasonable hours to receive instruction notices or communications and clear away on completion of the works and make good all work disturbed.

All drawings maintained on the site are to be carefully mounted on boards of appropriate size and covered with a coat of approved varnish. They are to be protected from ravages of termites, ants, and other insects.

The contractor shall provide at his own cost all artificial light required for the work and to enable other contractors and sub-contractors to complete the work within the specified time. The contractor shall provide a suitable temporary hut for the watchmen and clear away the same when no longer required and to provide all necessary attendance, lights etc. required.

The contractor shall arrange for temporary latrines for the use of workers and field staff and keep the same in a clean and sanitary condition to the satisfaction of the Public Health Authorities and shall cause such latrines and soil to be cleared away whenever necessary and shall make good all the works disturbed by these convenience.

Every precaution shall be taken by the contractor to prevent the breeding of mosquitoes on the works during the construction, and all receptacles, cistern, water tanks etc. used for the storage of water must be suitably protected

against breeding of mosquitoes. The contractor shall indemnify the Owner against any breach of rules in respect of anti-malarial measures

The contractor shall not fix or place any placards or advertisement of any description or permit the same to be fixed or placed or upon any boarding gantry, building structure other than those approved by the Owner.

Protective Measures: The contractor from time to time of being placed in possession of the site must make suitable arrangement for watching, lighting and protecting the work, the site and surrounding property by day, by night, on Sundays and other holidays.

Contractor shall indemnify the Owner against any possible damage to the building, roads, or members of the public in course of execution of the work.

The contractor shall provide necessary temporary enclosures, gates, entrances etc. for the protection of the work and material and for altering and adopting the same as may be required and removing on completion of the works and making good all works disturbed.

Storage of Materials: The contractor shall provide and maintain proper sheds for the proper storage and adequate protection of materials etc. and other work that may be executed on the site including the tools and materials of nominated sub-contractors and remove the same on completion.

Cement godown shall be constructed for storing about six weeks requirement of cement and stored as per norms with a stack of 10 bags each and 2 feet opening around with 2 feet passage of each stack. Structure shall be waterproof from all the sides and top. Cement should be stored one feet above the ground level and have pucca raised floor.

So also reinforcement bars are to be stored above the ground level to prevent the same from getting rusted.

Tools: Theodolite, levels, prismatic compass, chain, steel and metallic tapes and all other surveying instruments found necessary on the works shall be provided by the contractor for the due performance of this contract as instructed by the Site Engineer.

All measuring tapes shall be of steel and suitable scaffolding and ladders that may be required for safely taking measurement and shall be supplied by the contractor.

The mistries and the supervisors on the works shall carry with them always a one metre or two metres steel tape, a measuring tape of 30 metres, a spirit level, a plumb bob and a square and shall check the work to see that the work is being done according to the drawing and specifications. The Site Engineer will use any or all measuring instruments, or tools belonging to the contractors as he chooses for checking the works executed or being executed on the contract.

The contractor should cover in his rates for making provisions for all reasonable facilities for the use of his scaffolding, tools and plant etc. by nominated sub-contractors for their work.

26. NOTICE AND PATENTS OF APPROPRIATE AUTHORITY AND OWNER

The contractor shall conform to the provisions of any Acts of the Legislature relating to the work, and to the Regulations and Bye-laws of any authorities, and/or any water, lighting and other companies, and/or authorities with whose systems the structures were proposed to have connection and shall before making any variations from the drawings or specification that may be associated to so conform, give the Owner/Consultant written notices specifying the variation proposed to be made and the reasons for making them and apply for instruction thereon. The Owner/Consultant on receipt of such intimation shall give a decision within a reasonable time.

The contractor/s shall arrange to give all notices required for by the said Acts, Regulations or Bye-laws to be given to any authority and to pay to such authority or to any public officer all fees that may be properly chargeable in respect of the work and lodge the receipts with the Owner.

The contractor shall indemnify the Owner against all claims in respect of patent rights, royalties, damages to buildings, roads or members of public in course of execution of work and shall defend all actions arising from such claims and shall keep the Owner saved harmless and indemnified in all respects from such actions, costs and expenses.

27. CLEARING SITE AND SETTING OUT WORKS

The site shown on the plan shall be cleared of all obstructions, loose stone, and materials rubbish of all kinds. All holes or hollows whether or originally existing or produced by removal or loose stone or materials shall be carefully filled up with earth well rammed and levelled off as directed at his own cost. The expenditure incurred for making the site ready for taking up the work has to be borne by the contractor.

The contractor shall set out the works and shall be responsible for the true and perfect setting out of the work and for the correctness of the positions, levels, dimensions and alignment of all parts thereof. If at any time, any error shall appear during the progress of any part of the work irrespective of the fact that the layout had been approved by the Owner/Consultant, the contractor shall at his own expenses rectify such error, if called upon to the satisfaction of the Owner. The contractor shall further set out the works to the alternative positions at the site until one is finally approved and the rates quoted in his tender should include for this and no extra on this account will be entertained.

28. DATUM

The average ground level will be considered as the crown of the nearest road, which should be taken as "Datum" which is however, subject to final confirmation by the Owner/Consultant. All levels shown in the drawings are to be strictly adhered to.

29. Deleted

30. CONTRACTOR IMMEDIATELY TO REMOVE ALL OFFENSIVE MATTERS

All soil, filth or other matters of any offensive nature taken out of any trench, sewer, drain, cesspool or other place shall not be deposited on the surface but shall be at once carted away by the contractor to place provided by him.

The contractor shall keep the foundations and works free from water and shall provide and maintain at his own expenses electrically or other power driven pumps and other plants to the satisfaction of the Owner for the purpose, until the building is handed over to the Owner. The contractor shall arrange for the disposal of the water so accumulated to the satisfaction of the Owner and local authority and no claims will be entertained afterwards if he does not include in his rates for the purpose.

31. ACCESS

Any authorised representative of the Owner shall at all reasonable times have free access to the works and/or to the workshops, factories or other places where materials are being prepared or constructed for the work and also to any place where the materials are lying or from where they are being obtained, and the contractor shall give every facility to the Owner or their representatives necessary for inspection and examination and test of the materials and workmanship. Except the representatives of the Owner no person shall be allowed at any time without the written permission of the Owner.

32. MATERIALS, WORKMANSHIP, SAMPLES, TESTING OF MATERIALS

All the works specified and provided for in the specifications or which may be required to be done in order to perform and complete any part thereof shall be executed in the best and most workmanlike manner with materials of the best and approved quality of the respective kinds in accordance with the particulars contained in an implied by the specifications and as represented by the drawings or according to such other additional particulars, and instructions as may from time to time be given by the Owner/Consultant during the execution of the work, and to his entire satisfaction.

If required by the Owner/Consultant the contractor shall have to carry out tests on materials and workmanship in approved materials testing laboratories or as prescribed by the Owner/Consultant at his own cost to prove that the materials etc. under test conform to the relevant I.S. Standards or as specified in the specifications. The necessary charges for preparation of mould (in case of concrete cube) transporting, testing etc. shall have to be borne by the contractor. No extra payment on this account should in any case be entertained.

All the materials (except where otherwise described) stores and equipment required for the full performance of the work under the contract must be provided through normal channels and must include charge for import duties, sales tax, octroi and other charges and must be the best of their kind available and the contractor/s must be entirely responsible for the proper and efficient carrying out of the work. The work must be done in the best workmanlike

manner. Samples of all materials to be used must be submitted to the Owner/Consultant when so directed by the Owner/Consultant and written approval from Owner/Consultant must be obtained prior to placement of order.

During the inclement weather the contractor shall suspend concreting and plastering for such time as the Owner/Consultant may direct and shall protect from injury all work when in course of execution. Any damage (during constructions) to any part of the work for any reasons due to rain, storm, or neglect of contractor shall be rectified by the contractor in an approved manner at no extra cost.

Should the work be suspended by reason of rain, strike, lockouts or any other cause, the contractor shall take all precautions necessary for the protection of work and at his own expenses shall make good any damage arising from any of these causes.

The contractor shall cover up and protect from damage, from any cause, all new work and supply all temporary/doors, protection to windows, and any other requisite protection for the execution of the work whether by himself or special tradesmen or nominated sub-contractor and any damage caused must be made good by the contractor at his own expenses.

33. REMOVAL OF IMPROPER WORK

The Owner shall during the progress of the work have power to order in writing from time to time the removal from the work within such reasonable time or times as may be specified in the order of any materials which in the opinion of the Owner/Consultant are not in accordance with specification or instructions, the substitution or proper re-execution of any work executed with materials or workmanship not in accordance with the drawings and specifications or instruction. In case the contractor refuses to comply with the order, the Owner shall have the power to employ and pay other agencies to carry out the work and all expenses consequent thereon or incidental thereto as certified by the Owner/Consultant shall be borne by the contractor or may be deducted from any money due to or that may become due to the contractor. No certificate which may be given by the Consultant shall relieve the contractor from his liability in respect of unsound work or bad materials.

34. SITE ENGINEER

The term "Site Engineer" shall mean the representative of the consultant who shall remain present at site during the progress of work in order to advise the contractor in all technical matters & issue written instructions with information to the owner. The contractor shall provide the Site Engineer every facility and assistance for examining the works and materials and for checking and measuring work and materials.

The Site Engineer shall have power to give notice to the contractor or his foreman, of non-approval of any work or materials and such work shall be suspended or the use of such materials shall be discontinued until the decision of the Owner is obtained. The work will from time to time be examined by the Consultant, Engineer of the Owner and the Site Engineer. But such examination shall not in any way exonerate the contractor from the obligation to remedy any defects which may be found to exist at any stage of the work or after the same is complete. Subject to the limitations of this clause the contractor shall take instructions only from the Consultant/Owner.

35. OFFICE ACCOMMODATION FOR THE SITE ENGINEER

The contractor shall provide, erect, and maintain at his cost a separate simple watertight office accommodation for the Site Engineer. This accommodation shall be well lighted and ventilated and provided with windows, door with a lock. The Site Engineer's office shall be a minimum of 150 sq.ft. and the contractor shall provide a desk, chairs, drawers for keeping drawings, a cupboard having proper lock and a tackboard for displaying drawings. The accommodation shall be demolished when directed.

36. CONTRACTOR'S EMPLOYEES

The contractor shall employ technically qualified and competent supervisors for the work who shall be available (by turn) throughout the working hours to receive and comply with instructions of the Owner/Consultant. The contractor shall engage at least one experienced Engineer as Site Engineer for execution of the work. The contractor shall employ in connection with the work persons having the appropriate skill or ability to perform their job efficiently.

The contractor shall employ local labourers on the work as far as possible.

The employment of labour by the contractor shall be as per the prevailing labour laws.

Any labourer supplied by the contractor to be engaged on the work on day work basis either wholly or partly under the direct order or control of the Owner or his representative shall be deemed to be a person employed by the contractor.

The contractor shall comply with the provisions of all labour legislation including the requirements of :

- a) The Payment of Wages Act.
- b) Owner's Liability Act.
- c) Workmen's Compensation Act.
- d) Contract Labour (Regulation & Abolition) Act, 1970 and Central Rules 1971.
- e) Apprentices Act 1961.
- f) Any other Act or enactment relating thereto and rules framed thereunder from time to time.

The contractor shall keep the Owner saved harmless and indemnified against claims if any of the workmen and all costs and expenses as may be incurred by the Owner in connection with any claim that may be made by any workmen.

The contractor shall comply at his own cost with the order of requirement of any Health Officer of the State or any local authority or of the Owner regarding the maintenance of proper environmental sanitation of the area where the contractor's labourers are housed or accommodated, for the prevention of small pox, cholera, plague, typhoid, malaria and other contagious diseases. The contractor shall provide, maintain and keep in good sanitary condition adequate sanitary accommodation and provide facilities for pure drinking water at all times for the use of men engaged on the works and shall remove and clear away the same on completion of the works. Adequate precautions shall be taken by the contractor, to prevent nuisance of any kind on the works or the lands adjoining the same.

The contractor shall arrange to provide first-aid treatment to the labourers engaged on the works. He shall within 24 hours of the occurrence of any accident at or about the site or in connection with execution of the works, report such accident to the Owner and also to the competent authority where such report is required by law.

37. DISMISSAL OF WORKMEN

The contractor shall on the request of the Owner immediately dismiss from works any person employed thereon by him, who may in the opinion of the Owner be unsuitable or incompetent or who may misconduct himself. Such discharges shall not be the basis of any claim for compensation or damages against the Owner or any of their officer or employees.

38. ASSIGNMENT

The whole of the works included in the contract shall be executed by the contractor and the contractor shall not directly or indirectly transfer, assign or underlet the contract or any part, share or interest therein nor, shall take a new partner, without written consent of the Owner and no subletting shall relieve the contractor from the full and entire responsibility of the contract or from active superintendence of the work during their progress.

39. NOMINATED SUB-CONTRACTOR

All specialists, Merchants, Tradesmen and others executing any work or supply and fixing any goods for which prime cost prices or provisional sums are included in the Schedule of Quantities/Rates and/or specifications who may be nominated or selected by the Owner are hereby declared to be sub-contractors employed by the contractor and are herein referred to as nominated sub-contractors.

No nominated sub-contractor shall be employed on or in connection with the works against whom the contractor shall make reasonable objection or have where the Owner and contractor shall otherwise agree who will not enter into a contract provided:

- a) That the nominated sub-contractor shall indemnify the contractor against the same obligations in respect of the sub-contract as the Contractor is under in respect of this contract.
- b) That the contractor shall indemnify the owner against claims in respect of any negligence by the sub-contractor, his servants or agents or any misuse by him or them of any scaffolding or other plants the property of the contractor or under any workmen's compensation Act in force.

40. DAMAGE TO PERSONS AND PROPERTY INSURANCE ETC.

The contractor shall be responsible for all injury to the work or workmen to persons, animals or things and for all damages to the structural and/or decorative part of property which may arise from the operations or neglect of himself or any sub-contractor or of any of his or a sub-contractor's employees, whether such injury or damage arise from carelessness, accident or any other cause whatsoever in any way connected with the carrying out of this contract. The clause shall be held to include inter-alia, any damage to buildings whether immediately adjacent or otherwise, and any damage to roads, streets, footpaths or ways as well as damages caused to the buildings and the works forming the subject of this contract by rain, wind or other inclemency of the weather. The contractor shall indemnify the Owner and hold harmless in respect of all and any expenses arising from any such injury or damages to persons or property as aforesaid and also in respect of any claim made in respect of injury or damage under any acts of compensation or damages consequent upon such claim.

The contractor shall reinstate all damage of every sort mentioned in this clause, so as to deliver the whole of the contract works complete and perfect in every respect and so as to make good or otherwise satisfy all claims for damages to the property or third parties.

The contractor shall effect the insurance necessary and indemnify the Owner entirely from all responsibility in this respect. The insurance must be placed with a company approved by the Owner and must be effected jointly in the name of the contractor and Owner the name of the latter being placed first in the policy i.e. Netaji Research Bureau. The scope of insurance is to include damage or loss to the contract itself till this is made over in a complete state. Insurance is compulsory and must be effected from the day of starting of the work. The contractor shall also be responsible for anything which may be excluded from damage to any property arising out of incidents, negligence or defective carrying out of this contract i.e. the contractors. All Risk Insurance shall have extension for covering cross liability arising, if any, during execution of work relating to Air Conditioning, Electrification, Erection of Lift etc. The Owner shall be at liberty and is hereby empowered to deduct the amount of any damages, compensations, costs, charges and expenses arising or accruing from or in respect of any such claim or damages from any sums due or to become due to the contractor.

41. INSURANCE

Unless otherwise instructed the contractor shall insure the works and keep them insured until the virtual completion of the contract against loss or damage by fire and/or earthquake, flood. The insurance must be placed with a company approved by the Owner, in the joint names of the Owner and the contractor for such amount and for any further sum if called to do so by the Owner, the premium of such further sum being allowed to the contractor as an authorised extra.

The contractor shall deposit the policy and receipt for premiums paid with the Owner within 21 (twenty one) days from the date of issue of work order unless otherwise instructed. In default of the contractor insuring as provided above, the Owner on his behalf may so insure and may deduct the premiums paid from any money due, or which may become due to the contractor. The contractor shall as soon as the claim under the policy is settled or the work reinstated by the Insurance Company should they elect to do so, proceed with due diligence with the completion of the works in the same manner as though the fire has not occurred and in all respects under the conditions of the contract. The contractor in case of rebuilding or reinstatement after fire shall be entitled to extension of time for completion as the Owner may deem fit.

42. ACCOUNTS RECEIPTS AND VOUCHERS

The contractor shall, upon the request of the Owner furnish them with all the invoices, accounts, receipts and other vouchers that they may require in connection with the works under this contract. If the contractor shall use materials less than what he is required under the contract, the value of the difference in the quantity of the materials he was required to use and that he actually used shall be deducted from his dues. The decision of the Owner shall be final and binding on the contractor as to the amount of materials the contractor is required to use for any work under this contract.

43. MEASUREMENT OF WORKS

The contractor will weekly record and submit measurements for verification and endorsement of Project Management Consultant/ representatives of Consultant and Owner. The Contractor should submit the bill with such endorsement. The joint measured so recorded will be made use for preparation of the bills by the contractor.

The Consultant shall from time to time intimate to the contractor that he requires the works to be measured, and the contractor shall forthwith attend or send a Qualified Agent to assist the Consultant or the Consultant's representative/Owner's representatives in taking such measurements and calculations and to furnish all particulars or to give all assistance required by either of them.

Should the contractor not attend or neglect or omit to send such Agent then the measurement taken by the Consultant or a representative approved by him shall be taken to be the correct measurement of the works, such measurement shall be net quantities for the work produced.

The contractor or his Agents may at the time of measurement take such notes and measurements as he may require. All authorised extra works, omissions and all variations made without the Consultant's knowledge, if subsequently sanctioned by him in writing, with the approval of the Owner shall be included in such measurements. The final measurement should be done within three months from the date of completion of work jointly by the Consultant and/or his representative. If the contractor fails to comply, the measurements taken by the Consultant will be final.

44. PAYMENTS

All bills shall be prepared by the contractor in the form prescribed by the Owner/Consultant after the measurements are endorsed as mentioned in Clause No. 43 (Measurement of Works). The bills in proper forms must be duly accompanied by detailed measurements in support of the quantities of work done and must show deductions for all previous payments, retention money, etc. The bills prepared shall be submitted to the consultant with a copy to the owner. The bill should be complete in all respects with all necessary enclosures. Failure to provide the necessary documents/information with the bill will be treated as incomplete and non submission.

The Consultant shall issue a certificate after due scrutiny of the contractor's bill stating the amount due to the contractor from the Owner within 7 days of the submission. The Owner will have the discretion to amend the certificate of Consultant if considered necessary and the contractor shall be entitled to payment thereof, within the period of honoring certificates named in these documents. The owner will make all endeavour for making the payment in a reasonable time observing all the rules/practices of the University for making payment.

The Owner will deduct retention money as described in Clause 22 of these conditions. The refund of retention money will be made as specified in the said clause.

If the Owner has supplied any materials or goods to the contractor, the cost of any such materials or goods will be progressively deducted from the amount due to the contractor in accordance with the quantities consumed in the work.

FINAL PAYMENT

The final bill shall be accompanied by a certificate of completion from the Owner/Consultant. Payments of final bill shall be made after deduction of Retention Money, which sum shall be refunded after the completion of the Defects Liability Period after receiving the Owner's/Consultant's certificate that the contractor has rectified all defects to the satisfaction of the Owner/Consultant. The acceptance of payment of the final bill by the contractor would indicate that he will have no further claim in respect of the work executed.

45. VARIATION/DEVIATION

The contractor may when authorised and shall, when directed in writing by the Owner/Consultant be bound under this contract to add and or omit, or vary the works shown in the drawings or described in the specifications or included in the priced schedule of quantities. The contractor on his own accord shall make no addition, omission or variation without such authorisation or direction. A verbal authorisation or direction by the Owner/Consultant shall when confirmed correctly by the contractor in writing within 7 days shall be deemed to have been given in writing.

The quantities of individual items may vary to any extent during execution of work which the tenderer has to keep in view while quoting the rates. Any extra claim in this regard will not be entertained.

The price of all such additional items/non-tendered items will be worked out on the basis of rates quoted for similar items in the contract wherever existing or on engineering rate analysis based on prevalent fair price of labour, material and other components as required as per the details hereinafter. The tender rates shall hold good for any increase or decrease in the tendered quantities to any extent.

No claim for an extra shall be allowed unless it shall have been executed by the authorisation of the Owner/Consultant as herein mentioned. Any such extra is herein referred to as an authorised extra. No variations, i.e. additions, omissions or substitutions shall vitiate the contract.

The rates of items not included in the Schedule of quantities shall be settled by the Consultant in accordance with the following rules:

- a) If the rates for the additional, altered or substituted works are specified in the contract for the work, the contractor is bound to carry out the additional, altered and substituted works at the same rates as are specified in the contract for the work.
- b) If the rates for the additional, altered or substituted works are not specifically provided in the contract for the work, the rates will be derived from the rates for a similar class of work as are specified in the contract for the work.
- c) If the rates for the additional, altered or substituted works can not be specified in the sub-clause (a) (b) above, the rates shall be derived on the basis of cost of materials and labour (rates for materials and labour will be as per the prevalent market rates for the same) plus 15% to cover overheads, supervision and profit etc. plus prevalent sales tax on works contract.

46. SUBSTITUTION

Should the contractor desire to substitute any materials and workmanship, he/they must obtain the approval of the Owner/Consultant in writing for any such substitution well in advance. Materials designated in this specification indefinitely by such term as a "Equal" or "Other approved" etc. specific approval of the Owner/Consultant has been obtained in writing.

47. PREPARATION OF BUILDING WORKS FOR OCCUPATION AND USE ON COMPLETION

The whole of the work will be thoroughly inspected by the contractor and deficiencies and defects put right. On completion of such inspection the contractor shall inform the Owner that he has completed the work and it is ready for inspection.

On completion the contractor shall clean all windows and doors including the cleaning and oiling if necessary, of all hardware, inside and outside, all floors staircases, and every part of the building. He will leave the entire building neat and clean and ready for immediate occupation and to the satisfaction of the Owner.

48. CLEARING SITE ON COMPLETION

On completion of the works the contractor shall clear away and remove from the site all constructional plant, surplus materials, rubbish and temporary works of every kind and leave the whole of the site and the works clean and in a workmanlike condition to the satisfaction of the Owner/Consultant.

49. DEFECTS AFTER COMPLETION

The contractor shall make good at his own cost and to the satisfaction of the Owner all defects, shrinkage, settlements or other faults which may appear within 6 months after completion of the work. In default the Owner may employ and pay other persons to amend and make good such damages, losses and expenses consequent thereon or incidental thereto shall be made good and borne by the contractor and such damages, loss and expenses shall be recoverable from him by the Owner or may be deducted by the Owner, in lieu of such amending and making good by the contractor, deduct from any money due to the contractor a sum equivalent to the cost of amending such work and in the event of the amount retained being insufficient, recover that balance from the contractor from the amount retained together with any expenses the Owner may have incurred in connection therewith.

50. CONCEALED WORK

The contractor shall give not less than 5 days notice to the Owner/Consultant whenever any work is to be buried in the earth, concrete or in the bodies of walls or otherwise becoming inaccessible later on, in order that the work may be inspected and correct dimensions taken before such burial. In default thereof the same shall, at the opinion of the Owner/Consultant be either opened up for measurement at the contractor's expense or no payment may be made for such materials. Should any dispute for differences arise after the execution of any work as to measurements etc. or other matters which cannot be conveniently tested or checked, the notes of the Owner/Consultant shall be accepted as correct and binding on the contractor.

51. ESCALATION

There will not be any provision for escalation for the rates quoted in the contract. The rate quoted shall be firm for the tenure of the contract (including extension of time, if any, granted) and will not be subject to any fluctuation due to increase in cost of materials, labour, taxes, octroi, etc..

52. Deleted

53. IDLE LABOUR

Whatever the reasons may be, no claim for idle labour, additional establishment cost of hire and labour charges of tools and plants would be entertained under any circumstances.

54. SUSPENSION

If the contractor except on account of any legal restraint upon the Owner preventing the continuance of the work or in the opinion of the Owner shall neglect or fail to proceed with due diligence in the performance of his part of the contract or if he shall more than once make default, the Owner shall have the power to give notice in writing to the contractor requiring the work be proceeded within a reasonable manner and with reasonable dispatch, such notice purport to be a notice under this clause.

After such notice shall have been given the contractor shall not be at liberty to remove from the site of the works or from any ground contiguous thereto any plant for materials to subsist from the date of such notice being given until the notice shall have been complied with. If the contractor fails even after 7 (seven) days of such notice to proceed with the works as therein prescribed, the Owner may proceed as provided in Clause 55 (Termination of Contract by Owner).

55. TERMINATION OF CONTRACT BY OWNER

If the contractor being a company go into liquidation whether voluntary or compulsory or being a firm shall be dissolved or being an individual shall be adjudicated insolvent or shall make an assignment or a composition for the benefit of the greater part, in number of amount of his creditors or shall enter into a Deed or arrangement with his creditors, or if the Official Assignee in insolvency, or the Receiver of the contractor in insolvency, shall repudiate the contract, or if a Receiver of the contractor's firm appointed by the court shall be unable within fourteen days after notice to him requiring him to do so, to show to the reasonable satisfaction of the Owner that he is able to carry out and fulfil the contract, and if so required by the Owner to give reasonable security therefor, or if the contractor shall suffer execution to be issued, or shall suffer any payment under this contract to be attached by or on behalf of and of the creditors of the contractor, or shall assign, charge or encumber this contract or any payments due or which may become due to the contractor, thereunder, or shall neglect or fail to observe and perform all or any of the acts matters of things by this contract, to be observed and performed by the contractor within three clear days after the notice shall have been given to the contractor in manner hereinafter mentioned requiring the contractor to observe or perform the same or shall use improper materials or workmanship in carrying on the works, or shall in the opinion of the Owner not exercise such diligence and make such due progress as would enable the work to be completed within due time agreed upon and shall fail to proceed to the satisfaction of the Owner after three clear days notice requiring the contractor so to do shall have been given to the contractor as hereinafter mentioned, or shall abandon the contract, then and in any of the said cases, the Owner may notwithstanding previous waiver determine the contract by a notice in writing to the effect as hereinafter mentioned, but without thereby affecting the powers of the Owner of the obligations and liabilities of the contractor the whole of which shall continue in force as fully as if the contract, had not been so determined and as if the works subsequently executed had been executed by or on behalf of the contractor (without thereby creating any trust in favour of the contractor) further the Owner or his agent, or servants, may enter upon and take possession of the work and all plants, tools, scaffoldings, sheds, machinery, steam and other power, utensils and materials lying upon premises or the adjoining lands or roads and sell the same as his own property or may employ the same by means of his own servants and workmen in carrying on the completing the works or by employing any other contractors or other persons or person to complete the works, and the contractor shall not in any way interrupt or do any act, matter or things to prevent or hinder such other contractors or other persons or person employed from completing and finishing or using the materials and plants for the works when the works shall be completed, or as soon thereafter as conveniently may be, the Owner shall give notice in writing to the contractor to remove his surplus materials and plants and should the contractor fail to do so within a period of 14 days after receipt by him the Owner may sell the same by Public Auction and shall give credit to the contractor for the amount so realised. Any expenses or losses incurred by the Owner in getting the works carried out by other contractors shall be adjusted against the amount payable to the contractor by way of selling his tools and plants or

due on account of work carried out by the contractor prior to engaging other contractors.

56. WATER SUPPLY

The rates quoted by the contractor shall include all expenditure for providing water for the full contract period required for the works, including that for the work people and all staff on the site. He shall make his own arrangement for the supply of good quality water suitable for use in the works and the work people. He shall obtain municipal connection and all charges for connection and consumption shall be borne by him. If municipal water is not available, or inadequate, he shall make other arrangements like sinking tubewells, or making borewells, or transport from outside by tanker, or any other suitable means entirely at his cost, and no separate payment for the same will be made. In any case, there should not be any deficiency of water for the work in view of quality.

57. POWER

The contractor shall at his own cost arrange for necessary power for construction and lighting for the entire period of contract. If however, sparable power is available in the premises, the contractor shall make his own arrangement to obtain necessary connection, maintain an efficient service of electric lights and power and shall pay for all the requisite charges for the same as stipulated by the Institute of Cost Accountants of India.

The Owner, as well as the Consultant shall give all the recommendations necessary to obtain power and water connections from the concerned authorities, but the responsibility for obtaining the same shall rest with the contractor.

If any other contractor, appointed by the Owner, is required to use water and power, he shall be allowed to use the same and make temporary connections from the supply arranged by the main contractor at rates and terms that may be mutually agreed upon by both, failing which, at rates, terms and conditions that may be decided by the Consultant.

58. LAND FOR CONTRACTOR'S ESTABLISHMENT

For the purpose of construction of contractor's storeyard, godowns, site office, etc., the contractor may utilize with the permission of the Consultant, portion of the land belonging to the Owner if available at such location as would not interfere with the execution of the works. The contractor shall for this purpose submit to the Consultant for his approval a plan or plans of the proposed layouts for the site facilities. The Consultant reserves the right to alter and modify the contractors' proposal as he may deem fit.

59. METHOD OF MEASUREMENT

Unless otherwise mentioned elsewhere in the tender measurement will be on the net quantities of work produced in accordance with upto date rules laid down by the relevant IS specifications. In the event of any dispute with regard to the measurement of the work executed, the decision of the Consultant/Owner shall be final and binding on the contractor.

60. ACTION WHERE NO SPECIFICATION

In the case of any class of work for which there is no such specification in Technical Specification, such work shall be carried out in accordance with the I.S. Specification and in the event of there being no I.S. specification, then in such case the work shall be carried out in all respect in accordance with the instructions and requirements of the Consultant/Owner.

61. CONTRACTOR NOT TO DEPOSIT MATERIALS IN A MANNER THAT MAY INCONVENIENCE TO THE PUBLIC

The contractor(s) shall not deposit materials on any site which will seriously inconvenience the public. The Consultant may require the contractor to remove any materials, which are considered by him to be a danger or inconvenience to the public or cause them to be removed at the contractor's cost.

62. LIQUIDATED DEMAGES

The time allowed for carrying out the work as envisaged in the tender shall be strictly observed by the contractor and shall be reckoned from the 14th day from the date of issue of work order or the date on which possession of site is given to the contractor whichever is earlier. The work shall throughout the stipulated period of the contract be proceeded with, with all the due diligence (time being deemed to be of the essence of the contract, on the part of the contractor) and the contractor shall pay to the Owner, without prejudice to other right of the Owner as

Liquidated Damages and not as penalty at 0.5% of the value of work for every week after the date stipulated "Time of Completion" or the extended date subject to a maximum of 5% of contract value. The Owner may deduct such sum from the contractor's security deposit and/or any sum payable to the contractor at that time or later. The 'Liquidated Damages' as stipulated shall be considered as a genuine pre-estimate of the loss/damage suffered by the Owner due to non-completion of the work in time. Decision of Owner in this respect shall be final and binding to the contractor.

63. ACTION WHEN WHOLE OF SECURITY DEPOSIT IS FORFEITED

In any case in which under any clause or clauses of this contract, the contractor shall have rendered himself liable to pay liquidated damages amounting to the whole or his security deposit (whether paid in one sum or deducted by installments) the Owner/Consultant shall have power to adopt any of the following courses as they may deem best suited to the interest of the Owner:-

- a) To rescind the contract (of which rescission notice in writing to the contractor under hand of the Owner/Consultant shall be conclusive evidence), and in which case the security deposit of the contractor shall stand forfeited and be absolutely at the disposal of the Owner.
- b) To employ labour paid by the Owner and to supply materials to carry out the work, or any part of the work, debiting the contractor with the cost of the labour and price of material (of the amount of which cost and price of a certificate of the Consultant/Owner shall be final and conclusive against the contractor) and crediting him with the value of the work done, in all respects in the same manner and at the same rates as if it had been carried out by the contractor under the terms of this contract the certificate of Consultant/Owner as to the value of the work done, shall be final and conclusive against the contractor.
- c) To measure up the work of the contractor, and to take such part thereof as shall be unexecuted, out of his hands, and to give it to another contractor to complete in which case any expenses which may be incurred in excess of the sum which would have been paid to the original contractor, if the whole work had been executed by him (of the amount of which excess the certificates in writing of the Consultant/Owner shall be final and conclusive) shall be borne and paid by the original contractor and may be deducted from any money due to him by the Owner under the contract or otherwise, or from his security deposit or the proceeds of sale thereof, or a sufficient part thereof.

In the event of any of above courses being adopted by the Owner/Consultant 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 make any advances on account of, or with a view to the execution of the work or the performance of the contract. And in case the contractor shall be rescind under the provision aforesaid, the contractor shall not be entitled to recover or be paid any sum or any work thereto for actually performed under this contract, unless, and until the Owner/Consultant will have 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.

64. GUARANTEE FOR THE SPECIALISED WORKS

Wherever provision for submission of a guarantee has been advised the same shall be submitted from the specialised agency along with a counter guarantee by the main contractor engaged for the work. The guarantee shall be furnished on a non-judicial stamp paper of appropriate value. If the contractor is required to submit guarantee/guarantees for any item/items for a period of more than 12 months, the guarantee/guarantees in case of those items shall remain valid even after expiry of the defect liability period of 6 months as stipulated in the contract.

65. TESTS/RESULTS/SITE REGISTERS ETC.

The contractor will be required to maintain the following registers at site of work and should produce the same for inspection of the Owner/Consultant whenever desired by them.
Typical proforma are enclosed (Refer Table I to XIV)

- i) Table - I Proforma of Cement/Plant/Lead/Cico
- ii) Table - II Proforma of Materials at Site Account.
- iii) Table - III Proforma of Sieve analysis of fine aggregate.
- iv) Table - IV Proforma of Sieve analysis of coarse aggregate.
- v) Table - V Proforma of Hindrance to work.

vi)	Table	-	VI	Proforma of Running Account Bill.
vii)	Table	-	VII	Proforma of Memorandum for payment.
viii)	Table	-	VIII	Proforma of Cement Consumption Chart.

Contractor will have to submit their Running Account Bills in printed form shown in Table VI to VIII.

66. INCOME TAX/SALES TAX ON WORKS CONTRACT

Statutory deduction of Income Tax/Sales Tax on works contract shall be made from all interim and final payments as per extend statute.

67. AGREEMENT

The successful contractor will be required to enter into an agreement in accordance with the Draft Agreement form enclosed and the schedule of conditions within 15 days from the date of the contractor is advised by the Owner/Consultant that his tender has been accepted and he shall pay for all stamps and legal expenses incidental thereto. However, the written acceptance by the Owner of a tender will constitute a binding contract between the Owner and the person who so tendering whether such formal agreement is or is not subsequently executed.

68. NO COMPENSATION FOR ALTERATION IN, OR RESTRICTION OF WORK TO BE CARRIED OUT

It at any time after the commencement of the work, the Owner/Consultant shall for any reason whatsoever not require the whole work thereof as specified in the tender to be carried out the Consultant/Owner shall give notice in writing of the fact to the contractor who shall have no claim to any payment or compensation whatsoever on account of any profit or advantage with which he might have derived from the execution of the work in full, but which he did not derive in consequence of the full amount of the work not having been carried out; neither shall he has any claim for compensation by reason of any alterations having been made in the original specification, drawing, designs and instructions which shall involve any curtailment of the work as originally contemplated.

69. ARBITRATION

All disputes or difference of any kind whatsoever which shall at any time arise between the parties hereto touching or concerning the works or the execution or maintenance thereof of this contract or the rights touching or concerning the works or the execution or maintenance thereof of this contract or the construction remaining in operation or effect thereof or to the rights or liabilities of the parties arising out of or in relation thereto whether during or after determination, foreclosure or breach of the contract (other than those in respect of which the decision of any person or persons is by the contract expressed to be final and binding) shall after written notice by either party to the contract to the other of them and to the Appointing Authority who shall be appointed for this purpose by the Owner be referred for adjudication to a sole Arbitrator to be appointed as hereinafter provided.

For the purpose of appointing the sole Arbitrator referred to above, the Appointing Authority will send within thirty days of receipt by him of the written notice aforesaid to the contractor a panel of three names of persons who shall be presently unconnected with the organisation for which the work is executed from the following categories of Arbitrators:-

1. Retired High Court/Supreme Court Judges, who have experience in handling Arbitration cases.
2. Member of the Council of Arbitration.
3. Fellow of the Institution of Engineers (India)
4. Eminent Retired Chief Engineers from State/Central P.W.D./Public Sector Undertakings of good reputation and integrity.
5. Fellow of The Indian Institute of Architects.

The contractor shall on receipt by him of the names of aforesaid, select any one of the persons named to be appointed as a sole Arbitrator and communicate his name to the Appointing Authority within thirty days of receipt by him of the names. The Appointing Authority shall thereupon without any delay appoint the said person as the sole Arbitrator. If the contractor fails to communicate such selection as provided above within the period specified, the Appointing Authority shall make the selection and appoint the selected person as the Sole Arbitrator.

If the Appointing Authority fails to send to the contractor the panel of three names as aforesaid within the period specified, the contractor shall send to the Appointing Authority a panel of three names of persons out of the above mentioned 5 categories of Arbitrators who shall be unconnected with either party. The appointing authority shall on receipt by him of the names of aforesaid select any one of the persons named and appoint him as the sole Arbitrator. If the appointing authority fails to select the person and appoint him as the Sole Arbitrator within 30 days of receipt by him of the panel and inform the contractor accordingly, the contractor shall be entitled to

appoint one of the persons from the panel as the Sole Arbitrator and communicate his name to the Appointing Authority.

If the Arbitrator so appointed is unable or unwilling to act or resigns from his appointment or vacates his office due to any reason whatsoever another sole Arbitrator shall be appointed as aforesaid.

The work under the contract shall, however, continue during the arbitration proceedings and no payment due or payable to the contractor shall be withheld on account of such proceedings.

The Arbitrator shall be deemed to have entered on the reference on the date he issues notice to both the parties fixing the date of the first hearing.

The Arbitrator may from time to time, with the consent of the parties, enlarge the time for making and publishing the award.

The Arbitrator shall give a separate award in respect of each dispute or difference referred to him. The Arbitrator shall decide each dispute in accordance with the terms of the contract. The venue of 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 who may direct to and by whom, and in what manner, such costs or any part thereof shall be paid and may fix or settle the amount of costs to be so paid.

The award of the Arbitrator shall be final and binding on both the parties.

In all cases where the amount of the claim is in dispute is Rs.75,000.00 (Rupees seventy five thousand only) and above, the Arbitrator shall give reasons for the award.

It is also a term of the contract that if contractor(s) do/does not make any demand for arbitration in respect of any claim(s) within 90 days of receiving intimation from Owner/Consultant that the bill after due verification is passed for payment of a lesser amount, or otherwise the contractor's right under this agreement to refer to arbitration shall be deemed to have been forfeited and Owner/Consultant shall be relieved and discharged of their liability under this agreement in respect of such claims(s). Further it is agreed that for the purpose of this clause, such notice is deemed to have been received by the contractor(s) within 2 days of posting of the letter by Owner/Consultant or when delivered by hand immediately after receipt thereof by the contractor(s), whichever is earlier. Further a letter signed by the officials of Owner/Consultant that the letter was so posted to the contractor(s) shall be conclusive.

Subject to aforesaid the provisions of the Arbitration Act 1940 or any statutory modification or re-enactment thereof and the rules made thereunder, and for the time being in force, shall apply to the Arbitration proceeding under this clause.

70. DECLARATION

I/We have inspected the site of works and have made me/us fully acquainted with the local conditions in and around the sites of works. I/We hereby declare that I/We have gone through the conditions laid down in the Notice Inviting Tender, General Conditions of Contract, Technical Specifications and understood the same I/We quoted our rates in the schedule of quantities attached with the tender documents.

I/We shall also uniformly maintain such progress with the work, as may be directed by the Owner/Consultant to ensure completion of same within the target date as mentioned in the tender document.

Witness:

Signature of Tenderer

Address _____

Date

SPECIAL CONDITIONS OF CONTRACT

1.0 Errors, Omissions and Discrepancies

In case of errors, omissions and/or disagreement between written and scaled dimensions on the drawings or between the drawings and specifications etc. the following order shall apply:

- i) Between scaled and written dimension (or description) on a drawing, the latter shall be adopted.
- ii) Between the written or shown description or dimensions in the drawings and the corresponding one in the specification the former shall be taken as correct.
- iii) Between written description of the item in the specifications and descriptions in bill of quantities of the same item, the latter shall be adopted.
- iv) In case of difference between rates written in figures and words, the rate in words shall prevail.
- v) Between the duplicate/subsequent copies of the tender shall be taken as correct.

2.0 Ownership of drawings

All drawings, specifications and copies thereof furnished by the Institute of Cost Accountants of India, through its Consultant are the properties of the Institute of Cost Accountants of India. They are not to be used on other work.

3.0 Remedy on Contractor's failure to insure

If the contractor fails to effect and keep in force the insurance referred to above or any other insurance which he may be required to effect under the terms of contract, then and in any such case Institute of Cost Accountants of India, may effect and keep in force any such insurance and any such premium or premiums as may be necessary for that purpose and from time to time deduct the amount so paid by the Institute of Cost Accountants of India, as aforesaid from any amount due or which may become due to the contractor, or recover the same as debt from the contractor.

Without prejudice to the other rights of the Institute of Cost Accountants of India, against contractors, in respect of such default, the employer shall be entitled to deduct from any sums payable to the contractor the amount of any damages, costs, charges, and other expenses paid by the Institute of Cost Accountants of India, and which are payable by the contractors under this clause. The contractor shall upon settlement by the insurer of any claim made against the insurer pursuant to a policy taken under this clause, proceed with the diligence to rebuild or repair the works destroyed or damaged. In this event all the monies received from the insurer in respect of such damage shall be paid to the contractor and the contractor shall not be entitled to any further payment in respect of the expenditure incurred for rebuilding or repairing of the materials or goods destroyed or damaged.

4.0 Time for completion

Time is the essence of the contract and shall be strictly observed by the contractor. The entire work shall be completed within a period 2 months from the date of commencement. If required in the contract or as directed by the Consultant/ Owner, the contractor shall complete certain portions of work before completion of the entire work. However the completion date shall be reckoned as the date by which the whole work is completed as per the terms of the contract. Contractor shall submit a detail bar chart of work programme keeping the stipulated time of completion of work as mentioned above for approval of Owner /Consultant showing the supply and installation of various activities of the work. The contractor shall proceed with work as per approved bar chart.

5.0 Maintenance of Registers

The contractor shall maintain the following registers as per the enclosed proforma at site work and should produce the same for inspection of Owner /Consultant whenever desired by them. The contractor shall also maintain the records/registers as required by the local authorities/Govt. from time to time.

- i) Register for Cement / Paint / Lead / Specific Materials
- ii) Register for Material at Site Account
- iii) Register for Sieve Analysis for Fine Aggregate
- iv) Register for Sieve Analysis for Coarse Aggregate
- v) Register for Hindrance to Work
- vi) Register for Running Account Bill
- vii) Register for Memorandum of Payment
- viii) Register for Consumption of Cement

6.0 Accidents

The contractor shall immediately on occurrence of any accident at or about the site or in connection with the execution of the work report such accident to the Owner /Consultant. The contractor shall also report immediately to the competent authority whenever such report is required to be lodged by the law and take appropriate actions thereof.

7.0 Site Order Book

A site order book shall be maintained at site for the purpose of quick communication between the Owner /Consultant. Any communication relating to the works may be conveyed through records in the site order book and signed by the Owner /Consultant/Site Engineer. Such a communication from one party to the other shall be deemed to have been adequately served in terms of contract. Each site order book shall have machine numbered pages in triplicate and shall be carefully maintained and preserved by the contractor and shall be made available to the Owner /Consultant as and when demanded. Any instruction which the Owner /Consultant may like to issue to the contractor or the contractor may like to bring to the Owner /Consultants two copies of such instructions shall be taken from the site order book and one copy will be handed over to the party against proper acknowledgement and the second copy will be retained for their record.

8.0 Site Meetings

Site meetings will be held to review the progress and quality evaluation. The contractor shall depute a senior representative along with the site representative and other staff of approved sub-contractors and suppliers as required to the site meetings and ensure all follow up actions. Any additional review meetings shall be held if required by the Consultant/ Owner

9.0 Excise Duty, Taxes, Levies etc.

The contractor shall pay and be responsible for payment of all taxes, including VAT as applicable, duties, levies, royalties, fees, cess or charges in respect of the works including but not limited to sales tax, VAT, works contract tax, excise duty, and octroi, payable in respect of materials, equipment, plant and other things required for the contractor. All of the aforesaid taxes, duties, levies, fees and charges shall be to the contractor's account and the Institute of Cost Accountants of India shall not be required to pay any additional or extra amount on this account. Variation of taxes, duties, fees, levies etc. if any, till completion of work shall be deemed to be included in the quoted rates and no extra amount on this account will in any case be entertained. If a new tax or duty or levy or cess or royalty or octroi is imposed under as statue or law during the currency of contract the same shall be borne by the contractor.

10.0 Idle Labour

Whatever the reasons may be, no claim for idle labour, additional establishment cost of hire and labour charges of tools and plants would be entertained under any circumstances.

Contractor or his authorized sub-contractors for electrical and sanitary & plumbing works should have valid license (if applicable) for carrying out such works from the concerned statutory/local bodies/authorities.

Witness:

Signature of Tenderer

Address

Address

Date

Date

A chart showing the recommended time and quantity scheduled for conducting test on various building materials is given. Please ensure that tests are carried out according to the above guidelines. Contractor's rate should include the necessary expenditure for testing of samples of following materials.

Sl. No.	Material	Test	Test Procedure	Minimum Quantity	Frequency
1.	Sand	a) Silt Content	Field	20 Cum.	20 Cum. Or part thereof
		b) Bulking	Field	20 Cum.	- do -
		c) Particle size distribution.	Field	40 Cum.	Every 40 Cum. required for RCC work.
2.	Cement concrete or R.C.C.	1. Slump	Field		Once a day or as desired
		2. Cube Strength	Field/ Laboratory	20 Cum. slab beam and connected columns. 5 Cum. in column.	Every 20 Cum. of a day of concrete. Every 5 Cum. in column Concrete.
3.	Bricks	Dimensions Water absorption Efflorescence Compressive Strength		Designation 100 75) 50) 1,00,000 35) - do - 100-50,000 75) 50) 1,00,000 35)	Every 50,000 or part thereof. Every 100,000 or part thereof. One test for source of 50,000 or part thereof. Two tests for 1 st lot of 1,00,000 and one test for every 2,00,000 and part thereof. test latter for every 2,00,000 and part thereof.

PROFORMA OF CEMENT/PAINT/LEAD/CICO REGISTER

Name work :

Name of Contractor :

Agreement No. :

Date of Receipt	Source of receipt with ref. to S.O./ Indent	Qty received	Progressive Total	Date of issued	Quantity issued	Item of work for which issued with approx quantity of work done in case of paint only	Qty return- ed at the end of the day	Total issued	Delay balan- ce at hand	Con- tract- tor's ini- tials	Site Engi- neer's ini- tials	Signa- ture Own- er's/ Archi- tect's
1	2	3	4	5	6	7	8	9	10	11	12	13

A register for Bitumen should also be maintained. The format will be similar that the Cement

PROFORMA FOR REGISTER OF MATERIAL AT SITE ACCOUNT

Name work : Name of Article :

Name of Contractor : Estimated Requirement:

Agreement No. : Issue Rate:

Sl. No.	Date of Receipt	Received from/ Issued to (with Ref. to SO/Indent)	Receipt	Issue	Balance	Initials of Contractor	Initial of Owner's/ Consultant's Representative.	Remarks
1	2	3	4	5	6	7	8	7

TABLE-III

PROFORMA FOR SIEVE ANALYSIS OF FINE AGGREGATE REGISTER

Sl. No	Date of Test	Wt. of materials To be tested	Sieve as per I.S. designation	Wt. of sand retained in Sieve	% retained in each Sieve successively	Cumulative % retained in each Sieve	F.M.	Signature of Site Engineer	Signature of Contractor	Signature of Owner's/ Consultant's Representative (Periodical)
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TABLE-IV

PROFORMA OF SIEVE ANALYSIS OF COARSE AGGREGATE REGISTER

Sl. No.	Date of testing	Wt. of materials to be tested	Nominal size of Aggregate	I.S. Sieve designation	Standard % passing for graded Aggregate of nominal size	Test Results	% obtained passing	Signature of Site Engineer	Signature of Contractor	Signature of Owner's/Consultant's Representative & Remarks (Periodical)
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PROFORMA FOR HINDRANCE TO WORK

Name work : Date of Start of work:

Name of Contractor : Period of completion:

Agreement No. : Date of completion of work:

Sl. No.	Name of hindrance	Date of occurrence of hindrance	Date of on which hindrance was removed	Period for which hindrance existed	Signature of Site Engineer	Signature of Owner's /Consultant's representative.
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I. Running A/c. Bill

- i) Name of Contractor/Agency :
 ii) Name of work :
 iii) Sl. No. of this bill :
 iv) No. and date of previous bill :
 v) Reference to Agreement No. :
 vi) Date of written order to commence :
 vii) Date of completion as per agreement :

Sl. No.	Item Description	Unit	Rate (Rs.)	<u>As per Tender</u>		<u>Upto Previous R/A Bill</u>		<u>Upto Date(Gross)</u>		<u>Present Bill</u>		Remarks
				Qty.	Amount (Rs.)	Qty.	Amount (Rs.)	Qty.	Amount (Rs.)	Qty.	Amount (Rs.)	
1	2	3	4	5	6	7	8	9				

Note: 1. If part rate is allowed for any item, it should be indicated with reasons for allowing such rate.

2. If adhoc payment is made it should be mentioned specifically.

Net value since previous bill

CERTIFICATE

The measurements on the basis of which the above entries for the Running Bill No. _____ were made have been taken jointly over _____ and are recorded at pages _____ to _____ of measurement book No. _____.

Signature and date of contractor

Signature and date of Consultant's Representative (Seal)

Signature and date of Site Engineer.

The work recorded in the above mentioned measurements has been done at the site satisfactorily as per tender drawings, conditions and specifications.

Consultant

Site Engineer/Owner's Engineer

III. MEMORANDUM FOR PAYMENT

R/a Bill No. _____

1.	Total amount due since previous Bill (D) = (A + B)		Rs.
2.	PVA on account of declaration in price of steel, cement and other materials and labour as detailed in separate statements enclosed.	(C) (+)	Rs.
3.	Total amount due to the Contractor (D + C)		Rs. (E)

DEDUCTIONS

i)	Secured advance paid in the previous R/A bill		Rs.
ii)	Retention money on value of works as per accepted tenders upto date amount		Rs.
	Less already recovered (-)		Rs.
	Balance to be recovered		Rs.
iii)	Mobilisation Advance if any		
a)	Outstanding amount (principal + interest) as on date		Rs.
b)	To be covered in this bill		Rs.
			Rs.
iv)	Any other Departmental materials cost to be recovered as per contract if any		Rs.
v)	Any other Departmental Service Charges to be recovered if any, As per contract (water, power Etc.) enclose statement		Rs.
	Total deduction as per contract (E)	(-)	Rs.(F)
	Net amount payable as per (E – F)		Rs.(G)
	(Rupees) in words		

The bill amount to Rs. (both figures and words) has been scrutinized by me after due test checking of the measurements of works as required and is recommended for payment.

Dated signature of Owner's Engineer
in charge of the Project.

Consultant's Signature

STATUTORY DEDUCTIONS:

1.	Total amount due (E)	Rs.
2.	Less : I.T. Payable	Rs.
	Net Payable	_____ Rs.

The figures given in the Memorandum for payable has been verified and the bill passed for payment
..... (words in figures)

Date

Signature of the Owner

CHART FOR CONSUMPTION OF CEMENT

Consumption of cement in the corresponding contract items of work shall be computed on the basis of the quantities shown in this Table subject to a variation of plus/minus five percent.

Cement - 1 Metric Ton = 0.7 Cum.

Sl. No.	Description of Item		Unit	Quantity of Cement required (Cum.)
1.	10 mm. cement plaster	2:1	100 Sqm.	0.54
2.	-Do-	3:1	100 Sqm.	0.40
3.	-Do-	4:1	100 Sqm.	0.30
4.	-Do-	6:1	100 Sqm.	0.20
5.	15 mm. cement plaster.	2:1	100 Sqm.	0.80
6.	-Do-	3:1	100 Sqm.	0.60
7.	-Do-	4:1	100 Sqm.	0.46
8.	-Do-	6:1	100 Sqm.	0.30
9.	20 mm. cement plaster	3:1	100 Sqm.	0.80
10.	-Do-	4:1	100 Sqm.	0.60
11.	-Do-	6:1	100 Sqm.	0.40
12.	25 mm. cement plaster	3:1	100 Sqm.	0.884
13.	-Do-	4:1	100 Sqm.	0.71
14.	-Do-	6:1	100 Sqm.	0.472
15.	Cement flush pointing	3:1	100 Sqm.	0.122
16.	-Do-	4:1	100 Sqm.	0.092
17.	Rulled Pointing.	3:1	100 Sqm.	0.122
18.	Neat Cement Punning	-	100 Sqm.	0.152
19.	Brick work in cement mortar	2:1	100 Sqm.	0.15
20.	-Do-	3:1	100 Sqm.	0.107
21.	Brick work in cement mortar	4:1	Cum.	0.083

Sl. No.	Description of Item		Unit	Quantity of Cement required (Cum.)
22.	-Do-	5:1	Cum.	0.066
23.	-Do-	6:1	Cum.	0.055
24.	12.5 cm. thick brick wall	3:1	100 Sqm.	1.22
25.	-Do-	4:1	100 Sqm.	0.914
26.	7.5 cm. thick brick wall	3:1	100 Sqm.	0.762
27.	Cement concrete with jhama chips	4:2:1	Cum.	0.225
28.	-Do-	5:2 ½:1	Cum.	0.186
29.	-Do-	6:3:1	Cum.	0.16
30.	-Do-	8:4:1	Cum.	0.122
31.	Cement concrete with stone chips	4:2:1	Cum.	0.22
32.	-Do-	3:1 ½:1	Cum.	0.28
33.	-Do-	5:2 ½:1	Cum.	0.18
34.	-Do-	6:3:1	Cum.	0.156
35.	-Do-	8:4:1	Cum.	0.12
36.	25 mm. artificial stone floor (4:2:1) with jhama chips which includes 3 mm. thick neat cement finish.		100 Sqm.	0.872
37.	20 mm. -Do-	4:2:1	100 Sqm.	0.73
38.	40 mm. -Do-	4:2:1	100 Sqm.	1.17
39.	25 mm. -Do- with stone chips - do -	4:2:1	100 Sqm.	0.855
40.	20 mm. -Do-	4:2:1	100 Sqm.	0.70
41.	40 mm. -Do-	4:2:1	100 Sqm.	1.14

Note: For items not available in the above consumption chart CPWD/PWD Schedule shall be guidance factor.

APPENDIX

Name of Work	:	Civil work in Auditorium
Location	:	Institute of Cost Accountants of India, 12, Sudder Street, Kolkata – 700 016
Scope of work	:	As above and further detailed in the General Conditions of Contact.
Defect Liability Period	:	6 months.
Date of Commencement	:	14 days from the date of issue of work order or the date on which the contractor is instructed to take possession of the site, whichever is earlier.
Date/time of completion	:	2 months
Liquidated Damages	:	0.5% of the accepted tender amount per week of delay subject to a ceiling 5% of the accepted contracted sum.
Earnest Money Deposit (EMD)	:	Rs. 1,29,580.00 0 in the form of Bank Draft drawn in favour of Institute of Cost Accountants of India payable at Kolkata
Total Retention Money	:	Not to exceed 10% of the value of work (including EMD)
Release of Retention Money	:	50% after virtual completion and balance 50% after expiry of the defects liability period.
Period for honouring Certificates	:	15 days for Interim Certificates and three weeks for the final certificate from the date of certification.
Interest for delayed payment	:	Nil

TECHNICAL SPECIFICATION FOR CIVIL WORK

TECHNICAL SPECIFICATIONS

1. CONCRETE

1.1 GENERAL

A.1 Supervision:

A competent person approved by the Employer/Architects shall be employed by the contractor whose first duty will be to supervise all stages in the preparation and placing of the concrete. All cubes should be made and necessary site tests carried out under his direct supervision in the presence of Employer/Architects.

A.2 Approval of concreting arrangement etc.

Before commencement of construction the contractor shall submit detailed arrangements for concreting, system of form work and all other devices which he proposes to use for the construction of structural frame work for approval of Employer/Architects.

A.3 Sample and Tests

Every facility shall be provided by contractor at site to enable the Employer/ Architects to select samples, get contractor to collect samples and carry out tests on the materials and construction. At least 10% of the cube tests should be carried out in Laboratory/Institution approved by the Employer/Architects. If those tests shows that strength of cubes do not comply with the acceptance criteria of specifications, the contractor will be responsible for replacement of the defective construction. The necessary cost of all such sampling and testing has to be borne by the contractor.

A.4 Rejected materials:

All materials which have been damaged, contaminated or have deteriorated or do not comply in any way with the requirements of this specification, shall be rejected and shall be removed immediately from the site at the Contractor's own expense.

A.5 Loading of floor slabs:

No materials shall be stored or stacked on suspended floors and roofs without the Employer's/Architects' prior approval.

A.6 Co-ordination:

The Contractor shall be responsible for the co-ordination with sub-contractors or other contractors for incorporating any inserts, electrical conduit pipes, fixing blocks, chases, holes etc. in concrete members brick works as required. The contractor shall ensure that these requirements have been approved by the Employer/Architects before the operations are put in hand. All bricks, chases, inserts, holders etc. to be left in the concrete shall be of the sizes specified and be accurately set out and placed before pouring concrete.

The Contractor's rates quoted for concrete items shall include all these factors. No holes and chases shall be cut in concrete without prior approval of the Employer/Architects.

A.7 Inserts to concrete:

The contractor should note that he shall provide necessary wooden plugs, m.s. inserts, sleeves etc. required for the works for which no extra payment will be made. He will have to provide if so directed, any inserts, wooden plugs sleeves for other contractors, such as Electrical Contractor, Fire Fighting Contractor, Contractor for Lifts etc. for which he will be entitled for payment but in case the other contractors provide such inserts, then he will have to take proper measures (at his expense) and care not to disturb their work while laying concrete.

A.8 Equipment:

The contractor shall keep at work site testing equipment for aggregate and concrete, viz. Test sieves, balance, slump cones, cube moulds concrete cube testing machine etc. all items required conforming to relevant I.S. specification. Dial gauge of cube testing machine should have been calibrated recently from a Govt. approved laboratory.

3.B Materials:

All materials shall be of approved quality as per relevant I.S. specifications/or as specified in the contract.

B.1 Cement:

- a) Ordinary Portland cement and Portland Slag Cement shall conform to the I.S. specification I.S. 269 and IS 455 of latest edition.
- b) Cement at site shall be stored in dry weatherproof godowns (or shed) built at the cost of the contractor. Cement must not be stacked in more than 10 bags height. Sufficient space shall be provided for circulation and rotation of bags in order to minimise the length of storage of any of the bags. The floor of the godown shall consist of wooden planks resting on base prepared of dry bricks laid on edge.
- c) The contractor shall be fully responsible for the quality of cement brought by him at the work site. The contractor shall ensure that the cement brought to the work site conforms to the requirements of IS 269 or IS 455 and shall procure manufacturer's certificate to this effect, in his own interest. In case the contractor has any doubt regarding the quality of cement brought on work site by him, it is upto him to have it tested at his own expenses and make sure that cement is of right quality.
- d) Employer/Architects can order on the contractor to have the cement tested or they can take samples in the presence of contractor from cement bags stored at work site and forward them to a approved laboratory for testing and the contractor shall be responsible for the cost of testing including transporting of samples to the laboratory. Daily record of cement received and consumed shall be maintained by the Contractor in cement register at site and submitted to Architects if called for. Theoretical consumption vis-à-vis materials brought at site by the Contractor shall also be submitted with proper documents with every bill for verification. A chart showing the consumption of cement for different items of work is annexed. Consumption of cement in the corresponding items of work under the contract shall be computed on the basis of the quantities shown in the table subject to a variation of plus/minus three percent (the weight of 1 cum of cement shall be taken as 1,440 kg). For the items not available in the enclosed cement consumption chart, C.P.W.D. schedule shall be followed.
- e) Cement of doubtful quality shall not be used until satisfactory result is obtained after testing. All cement not conforming to specifications and cement that has deteriorated, damaged or set shall not be allowed to be used. All such cement shall be immediately removed from work site by the contractor. The cost of all such cement shall be borne by the contractor.

B.2 Aggregate:

Aggregate shall conform to IS 383 of latest edition.

B.3 Fine Aggregate : Sand

- a) The fine aggregate – sand shall be hard, strong, dense, durable clean with uncoated grains. The maximum size of the particles shall be 4.75 mm. (3/16 in) and shall be graded down. The sand shall not contain any harmful materials such as iron, Pyrites, coal, mica, silt, clay, alkali, sea shells organic impurities, loam etc. or in case of reinforced concrete work, any materials which might attack the reinforcement or detrimental to concrete. Aggregate, which are chemically reactive with the alkalies of the cement, shall not be used. The maximum quantity of deleterious materials shall not exceed the limit specified in the relevant I.S. Specifications. The silt content shall be within 8%.

b) Grading:

The natural sand used for work shall have a grading conforming to grading zones of I and II of I.S. 383 of latest edition.

B.4 Coarse Aggregate:

- a) Coarse aggregate shall consist of hard, dense, durable uncoated crushed rock. Gravel aggregate shall be allowed to be used only if specially specified in the bill of quantities. Otherwise it shall be taken that only crushed rock shall be permitted as coarse aggregate.
- b) The aggregate shall be free from soft, friable thin or long laminated pieces. Aggregate shall be free from injurious amounts of alkali, organic matter and other deleterious materials. Flaky or weathered stones shall not be used. The maximum percentage of deleterious materials shall not exceed those specified in the relevant I.S. specification.
- c) The contractor shall arrange to supply coarse aggregate of nominal size conform to the grading in the limits specified in I.S. 383 of latest edition.
- d) Size of Aggregate:
 - i) Generally for reinforced concrete work, nominal maximum size of aggregate be 20 mm. graded suitably.
 - e) In selecting the aggregate, the contractor shall satisfy himself that the source is suitable for regular supply and a watch shall be maintained that the particles shape and grading remain reasonably uniform throughout the progress of work.
 - f) Where so directed by the Employer/Architects aggregate shall be washed by approved methods at contractor's expenses.

B.5 Water

Water used for both mixing and curing shall be clean and free from injurious amounts of deleterious materials which are likely to affect the strength or durability of concrete. Water containing any sugar shall not be allowed for use. Water is to be tested in accordance with I.S. 456 of latest edition. The PH values of water shall generally be not less than 6.

1.C Mixing and placing of concrete:

C.1 Cement:

Cement shall be batched by weight even though aggregates are batched by volume. Where the weight of the cement is determined by accepting the maker's weight per bag, a number of bags as directed by the Employer/Architects shall be weighed separately to check the nett weight. Where the cement is weighed on the site and not in bags, it should be weighed separately from Aggregate.

C.2 Aggregate

The aggregate shall be batched by volume, the form as used shall be of the correct sizes to be certified by the Employer/Architects before use. Heaping of aggregate on the form is prohibited and aggregates shall be filled level in form and struck off with a horizontal timber or steel rule. Where sand is measured by volume, bulkgage allowance as determined by the Employer/Architects shall be accounted for while measuring sand.

C.3 Water:

Water shall be measured either by volume in celebrated tanks/vessels having conical shape narrower at top of water shall be weighed. Water shall not be measured using ordinary buckets which are wider at top and narrower at the base. The measurement of water to control and maintain a constant water cement ratio is of utmost importance and adequate attention to this end by the contractor to the satisfaction of the Employer/Architects shall be made so as to produce concrete of adequate workability as required.

C.4 Mixing of concrete:

a) Machine mixing:

Concrete shall be mixed in Mechanical Mixer. Mixing shall be continued until there is uniform distribution of materials and the mass is uniform in colour and consistency. The mixing time from the time of adding water shall be in accordance with I.S. 1791 of latest edition but in no case mixing shall be done for less than two minutes.

b) Hand mixing

Hand mixing shall not be permitted except for unimportant structural members and purely at the discretion of the Employer/Architects. When hand mixing is permitted it shall be taken to ensure that the mixing is continued until the mass is uniform in colour and consistency. If hand mixing is permitted by the Employer/Architects, the contractor shall use 10% extra cement for hand mixing for which no extra payment will be made.

C.5 Transporting, placing, compaction and curing of concrete:

C.6 Transporting:

Concrete shall be handled from the place of mixing to the place of final deposit as rapidly as practicable, by method which will prevent the segregation or loss of any of the ingredients. If segregation occurs during transport, the concrete shall be remixed before use. The concrete shall be placed in position and compacted before the initial set of cement has commenced and shall not be subsequently disturbed. During hot or cold weather concrete shall be transported in deep container to reduce loss of water by evaporation during hot weather and loss of heat during cold weather. Deep containers are specified on account of their lower ratio of surface area to mass.

C.7 Dropping of Concrete:

Concrete shall not be dropped into position from a height greater than 1.0 metre unless directed otherwise by the Employer/Architects.

C.8 Debris etc. removed:

All debris, saw dust etc. shall be removed from the shuttering before any concrete is placed. Care shall be taken to see that the shuttering is watertight and has been properly treated with approved composition to prevent absorption of water.

C.9 Protection and placing in layers:

Concrete shall be placed into the forms in layers not exceeding 300 mm. (approx.) in thickness. Concrete after placing and finishing shall be protected by use of covering as approved by the Employer/Architects during first stage for hardening against high winds, heat, rain, surface water etc. No shock or vibration shall be allowed to be imparted to forms supporting fresh finished concrete.

C.10 Compaction:

Concrete shall be thoroughly compacted during operation of placing by the use of Mechanical Vibrators. Sufficient number of vibrators (including stand by) of adequate capacities shall be used for compaction of concrete. Vibration shall be carried out by trained men and in the presence of a qualified supervisor trained in the use of vibrators and vibrated concrete. In certain portions where vibration is not effective, careful rodding and taping shall be carried out and sufficient men employed to ensure that thorough consolidation takes place. Where manual compaction becomes necessary, the work ability of the mix should be controlled to strength requirement.

C.11 Continuous concreting:

Concreting shall be carried out continuously upto predetermined positions of construction joints. The position and arrangement, for construction joints shall be approved by the Employer/Architects. Rest pauses for meals etc. shall be subject to the Employer's/Architects' approval.

C.12 Packing round reinforcement:

In the case of reinforced concrete work, the concrete shall be carefully consolidated and packed round the reinforcement and care shall be taken to ensure that reinforcement is not displaced during the placing and compaction of concrete. If reinforcement moves out of its place, it must be brought back in position immediately.

C.13 Curing:

All concrete work shall be water cured for a minimum period of 7 days after concreting or as directed by the Employer/Architects. Horizontal surfaces shall be kept covered with water ponded by means of bunds and vertical surfaces like those of column, fins etc. by barlaps kept constantly wet with water sprays. Mere sprinkling of water on vertical surface without sacks will not be allowed. In respect of concrete made out of pozzalana cement, curing shall be continued for another 8 days.

C.14 Trained Supervisor:

It is essential that the contractor's supervisor who is in charge of the construction of all concrete work whether reinforced or not, shall be skilled in this class of work and shall superintend personally the whole construction and pay special attention to :-

- a) the quality, testing, proportioning and mixing of the materials and particularly control of water cement ratio
- b) Laying of materials in place and thorough consolidation of the concrete to ensure solidity and freedom from voids.
- c) Position of reinforcements.

1.D Construction joints

D.1 General

a) Location

The position of all construction joints shall be approved by the Employer/Architects. The contractor shall submit details of the location where he proposes to provide construction joints for the approval of the Employer/Architects.

b) Stop Boards:

All vertical construction joints shall be formed with proper wooden stop board at the joints. Where directed, the joint shall be rebated or joggled and of approved shape.

c) Water bar and water sealer:

Wherever shown in the drawing or whenever instructed by the Employer/Architects water bar or water sealer of approved quality shall be used in construction joints for R.C. works. It is necessary to ensure that water bars form continuous diaphragms. The water bars shall be made out of special chemically treated rubber materials for retaining the flexibility indefinitely. Unless otherwise instructed by the Employer/Architects the water bars shall be “Centre Bulb type” corrugated and with end grip of approved quality. These shall be of any width as mentioned in the Schedule of Quantities and 10 mm. thickness or other sizes and thickness approved by the Employer/Architects. The rate for supplying and fixing water bar in construction joints shall also include all appliances necessary for fixing the same in position as well as the extra cost for all necessary inter-section pieces.

D.2 Construction joints in basement:

a) Location and formation:

The contractor shall prepare a drawing showing the proposed construction joints and submit for approval of the Employer/Architects.

Stop board shall be placed well in advance at approved position and concreting shall be carried out right upto the stop boards. Under no circumstances departure from this procedure to determine the position of construction joints as day work joint shall be allowed.

Special care shall be taken is to form and treat construction joints in basement to ensure water-tightness for which the contractor shall be responsible.

b) Joints in base slabs:

Joints in base slabs and beams of a basement shall be located so that the joint is parallel to the principal reinforcement, where it is unavoidable and is at right angle to the principal reinforcement, the joints shall be in the middle of the span of the slab or beams.

c) Formation vertical joints:

Vertical construction joints in base slab and walls of basement shall be formed by using vertical stop boards in predetermined approved positions.

d) Formation Horizontal joints:

Horizontal joints in wall, shall be rebated and care shall be taken to establish a proper and good bond between the hardened concrete and freshly laid concrete to produce a water tight joints which shall be contractor’s responsibility.

e) Wall slab junctions:

Each layer must be compacted before placing the next layer. Concrete in the splays at the junction of wall and the slab shall be placed without joint at the time of concreting the slab.

D.3 Treatment of construction joints in basement:

a) When work is resumed on the surface which has hardened such surface shall be roughened. It shall be thoroughly cleaned and wetted and covered with a 12 mm. layer of mortar composed of cement and sand in the same ratio as cement and sand in the concrete mix. This 12 mm. layer of mortar shall be freshly mixed and placed immediately before the placing of the concrete.

b) Where the surface has not fully hardened the latiance shall be removed by scrubbing the wet surface with wire bristle brush, care being taken to avoid dislodgment of aggregates. The surface shall be thoroughly wetted and all free water removed. The surface shall then be coated with neat cement grout.

- c) Care shall be taken to obtain good bond between the hardened and freshly placed concrete. Ramming and moulding of concrete around water bar shall be carefully carried out. Labour and materials for treatment of concrete joints are to be included in the rate of respective items.

D.4 Construction joints in superstructures:

a) Column:

Joints shall be formed horizontally above top of foundation and 75 mm. below the lowest soffit of the beams meeting at the head of the column. Concrete in the head of a column where one or more beams meet shall be placed at the same time that in the beam or beams without any joint.

b) Beams:

Concrete in the beams shall be placed throughout without a joint but if the provision of joint is unavoidable the joint shall be vertical and at positions approved by the Employer/Architects.

c) Slab:

Where the joint is unavoidable it shall be vertical and parallel to the principal reinforcement. However, if joints are required to be provided at right angles to the principal reinforcements it shall be vertical and at 1/3rd to 1/4th position of span/at positions approved by the Employer/Architects.

d) Treatment of construction joint:

When work is resumed on the surface which has hardened such surface shall be roughened. It shall be thoroughly cleaned and wetted and covered with a 12 mm. layer of mortar composed of cement and sand in the same ratio as cement and sand in the concrete mix. This 12 mm. layer of mortar shall be freshly mixed and placed immediately before the placing of the concrete.

Where the surface has not fully hardened the laitance shall be removed by scrubbing the wet surface with wire bristle brush, care being taken to avoid dislodgment of aggregates. The surface shall be thoroughly wetted and all free water removed. The surface shall then be coated with neat cement grout.

Care shall be taken to obtain good bond between the hardened and freshly placed concrete. Ramming and moulding of concrete around water bar shall be carefully carried out. Labour and materials for treatment of concrete joints are to be included in the rate of respective items.

1.E Expansion Joints:

- a) Expansion joints shall be provided as shown in the drawings.
- b) Expansion joints are meant to provide discontinuity in the structure. Care shall be taken to ensure this discontinuity by having clear joints throughout the length and height of the expansion joints. There shall be no connection between two sides of an expansion joint except with the materials used to form the expansion joints like fillers, water bar and other materials indicated in the drawings.
- c) Unless otherwise specified, the filler materials for Expansion joints shall be shalitek joint filler as manufactured by M/s. Shalimar of appropriate thickness. The filler materials shall extend to the entire depth of the joint except for a distance of 25 mm. from the exposed faces as shown in the drawings.
- d) Expansion joints shall be leakproof and the contractor shall be responsible for any leakages and resulting damages.

1.F Tests for Concrete:

Tests shall be conducted in accordance with I.S. : 516 of latest edition.

Test cubes:

- a) Works tests cubes shall represent quality of concrete incorporated in the work and taken out in sets of a cubes. The concrete for preparation of one set of 6 cubes shall be taken from one batch of mixed concrete discharged from mixer. The cubes shall be moulded in accordance with Indian Standard Code of Practice.
- b) A minimum of one set of 6 cubes shall be taken for every 20 cum. Or part thereof in case of beam, slabs and connected columns; one set for 5 cum. or part thereof of concrete poured for columns and they shall be considered as representative for said quantity. This is an average figure, and may be increased to cater for special conditions at the discretion of the Employer/Architects.
- c) The cubes shall be cured as per IS Code of Practice. The entire operation of casting, arranging and despatch of cubes to Laboratory will be carried out by the Contractor under the supervision of the Bank's Site Engineer/Architect. Out of 6 cubes, 3 cubes shall be tested at an age of 7 days and balance at an age of 28 days in an approved Laboratory.
- d) The cubes shall be initialed, numbered, dated jointly by the contractor's representatives and the Site Engineer of Employer/Architects representative with a piece of wire or nail so that an indentation of the initials is left on the cubes.
- e) The contractor shall arrange to transport the cubes to the approved laboratory and arrange to have the test results forwarded (in duplicate) directly from the laboratory to the Employer/Architects. The contractor shall bear all expenses in connection with the preparation of test cubes, i.e. provision of moulds, cost of concrete, labour and transportation charges to the approved laboratory, laboratory testing charges etc. and his rates for concrete items should be quoted accordingly.
- f) A Register shall be maintained at site by the Contractor with following details entered and initialed by the Contractor and the Site Engineer/Architect.
 - i) Reference to specific structural members receiving the batch of concrete from which the cubes were cast.
 - ii) Mark on cubes.
 - iii) The mix of concrete.
 - iv) Date and time of casting.
 - v) Slump
 - vi) Crushing strengths as obtained at the end of 7 days for 3 cubes out of a set of a 6 and at the end of 28 days for the other 3 cubes.
 - vii) Laboratory in which tested and reference to test certificate.
 - viii) Any other information directed by the Employer/Architects.
- g) A record of the quality of concrete incorporated in the work that is represented by the quality of concrete of the set of cubes along with the description of the structural members where concrete has been deposited shall be mentioned.

1.G Vibration of concrete:

- a) Water cement ratio:

The water cement ratio (by weight) for all vibrated concrete (except controlled concrete) shall generally conform to relevant I.S. provision and it shall not be varied unless otherwise directed. In respect of "Design Mix" the water cement ratio shall be as determined in the laboratory mix design suitable for vibrated concrete.

b) Placing:

Concrete shall be placed in layers not over 45 to 60 cm. (10 to 24 inches) deep and each layer shall be vibrated into places by methods which will not permit the ingredients to separate. Surfaces shall be smooth and free from voids caused by stone pickets, where necessary vibration shall be supplemented by hand spading to secure these results.

c) Number and size of vibrators:

Vibrators shall be of sturdy construction, adequately powered. The vibration shall be sufficiently tense to cause the concrete to flow or settle readily into place and visibly affect the concrete over a radius of at least 450 mm. (18") when used in concrete having slump of one inch. A sufficient number of vibrators (at least one vibrator for a rate of concreting of 1.5 cum. (50 cft.) per hour shall be employed so that at the required rate of placement, vibration throughout the entire volume of each layer of concrete and complete compaction are secured.

d) Manipulation of vibrators:

Internal vibrators shall be kept constantly moving in the concrete and shall be applied at points uniformly placed not further apart than the radius over which the vibrator is visibly effective. The vibrator shall not be held in one location long enough to draw a pool of grout from surrounding concrete. The vibration shall be such that the concrete become uniformly plastic and there shall be at least 200 seconds of vibration per square metre (20 second of vibration per Sq.ft.) of surface of each layers of concrete, computed on the basis of visibly affected radius and taking overlap into consideration.

1.H a) Grade of concrete:

The concrete shall be of grades designated as M-15, M-20, M-25, M-30 of cube crushing strengths as specified in I.S. Code 456 of latest edition.

Note : The designation of concrete mix : Letter M refers to the mix and the number to the characteristic compressive strength of 15 cm. cube of 28 days, expressed in N/sq.mm.

b) i) Ordinary concrete:

Concrete made without preliminary tests but by adopting volumetric concrete mix, shall be called "ORDINARY CONCRETE" unless otherwise mentioned in the bill of quantities all R.C. concrete shall be ordinary concrete as per Table 3 I.S. 456 of latest edition.

ii) Nominal volumetric mixes:

If in the bill of quantities concrete is specified in volumetric proportions such as 1:4:8, 1:3:6, 1:2:4, 1:1-1/2:3, 1:1:2 etc. it shall be taken to mean that the proportions by volume of cement; sand and coarse aggregate shall be in the order in which the mix is specified.

Minimum cement content for different volumetric mix of concrete are as under :

Cement : Fine Aggregate : Course Stone Aggregate

Minimum cement content
Kg./Cum.

1:1-1/2:3	-	412
1:2:4	-	317
1:3:6	-	235
1:4:8	-	180

c) Strength requirements of concrete:

Where ordinary portland cement is used, the compressive strength requirements for various grades of concrete shall be as given in Table 2 of I.S. 456 of latest edition. It shall be the contractor's responsibility to obtain specified strengths for the various grades of concrete. Where rapid hardening Portland cement is used, 28 days compressive strength requirements specified shall be met at 7 days.

d) Design mix concrete:

Concrete made with preliminary tests by designing concrete mix in a laboratory shall be called "DESIGN MIX CONCRETE" and shall be designated as M-20, M-25 and M-30.

e) Concrete mix for various grades of design mix concrete:

Concrete mixes shall be designed for various grades of concrete (M-20, M-25, M-30) by the contractor to achieve the respective strength, durability and workability necessary for the job by the most economical use of various ingredients. The design should be made conforming to the relevant IS specifications (IS-456, 516 of latest edition) in respect of proportioning of fine aggregate to coarse aggregate, maximum quantity of dry aggregates and water cement ratio, the minimum cement content as mentioned in the Schedule of Quantities. The contractor will arrange for the testing of various trial mixes of sufficient number (as per direction of the Employer/Architects) at his own cost in laboratory approved by the Employer/Architects for the preliminary test for different grades of concrete. The Employer/Architects will adopt the concrete mixes for the respective concrete grades from the test results of the said trial mixes, conducted and certified by the approved laboratory and the contractor will accordingly proceed with the concreting at work site. Constant check on grading and mix proportion shall be done by the contractor who will always be responsible to produce quality concrete of required grades as per the acceptance criteria of IS 456 of latest edition. If there is any change in the quality of aggregate (both coarse and fine), necessary alteration to the mix proportion should further be approved by the Employer/Architects before the same are used at work site. The Architects will always have the unquestionable right to revise the minimum cement content as decided above, if in his opinion, there is any chance of deterioration of quality of aggregate or other reason.

1.I Classification of concrete of lower or higher strength than specified:

Where the strength of concrete mix (for ordinary concrete or design mix concrete) as indicated by tests, lies in between the strengths of any of two grades, such concrete shall be classified as a grade belonging to the lower of the two grades between which its strength lies. In case the cube test strength show higher strengths than those specified for the particular grade, the concrete shall not be placed in any higher grade nor shall contractor as entitled for any extra payment on such account.

1.J Watertight concrete:

Concrete in all underground works such as water tanks and the like where concrete of mix 1:1-1/2:3 grades or richer is specified, will be considered as water-tight concrete even if not specifically mentioned in the Schedule of Quantities. In respect of such concrete it shall be contractor's responsibility to ensure that the resulting construction is watertight, failing which, the contractor shall carry out at his own cost, all necessary remedial measures as per direction of Employer/Architects.

J.1 Sample size and acceptance criteria:

All tests shall be carried out in accordance with I.S. 516 of latest edition. The criteria for acceptance of a concrete of a specific grade shall be in accordance with recommendation of IS-456 of latest edition.

J.2 Cement concrete mudmat:

Concrete for the purpose shall be in the proportion of (1:3:6) 1 part of cement, 3 parts of sand and 6 parts of stone chips and 1:4:8 (1 cement, 4 parts of sand and 8 parts of stone chips/jhama khos) may be mixed by volumetric batching as mentioned in the Schedule of Quantities.

J.3 Waterproof of concrete:

Excepting internal R.C. columns and R.C. walls all structural concrete of basement slab and retaining walls, Ramp wall and slab, water tanks and underground tanks shall be cast with admixture of waterproofing compound as advised by the specialist waterproof agency. The waterproofing compound for the purpose shall be of approved manufacturers and shall be mixed as per manufacturer's specification. The resulting concrete shall be perfectly waterproof. The work of waterproofing concrete by the admixture of waterproofing compound shall be done under direct supervision of a senior representative of the approved manufacturers. The contractor shall give a guarantee for 10 years on non-judicial stamp paper of appropriate value as per the proforma enclosed against water leakage through the resulting concrete work and shall rectify all defects during the guarantee period without any extra charges. The waterproofing compound for this purpose shall be paid in a separate item if not otherwise mentioned in the Schedule of Quantities. Full payment against this item of work shall be made after testing and satisfactory result and submission of guarantee at an approved proforma.

1.K Form Work:

K.1 Materials and Design:

- a) The form work shall be of approved dressed timber of not less than 3.5 cms. Thick except where otherwise stated. As an alternative sufficiently rigid steel/ply board shuttering of approved design may be used. Joints of the shuttering must not allow loss of liquid from concrete. In timber shuttering the joints shall therefore be either tongued or grooved or the joints must be perfectly closed and lined with craft paper or other types of approved materials. In case of steel shuttering also the joints are to be similarly lined. If any particular material or materials be specified in the Schedule of Quantities for formwork such particularly specified material or materials shall be used in work. The formwork shall be constructed as to remain sufficiently rigid during placing of the concrete. All shuttering and framing must be adequately stayed and braced to the satisfaction of the Employer/Architects for properly supporting the concrete during the period of hardening. The forms shall be sufficient strength and rigidity to hold concrete and withstand the pressure of ramming and vibration without deflection from the prescribed lines and levels. The surface of all forms in contact with concrete shall be clean, rigid, watertight and smooth. Suitable devices shall be used to hold corners, adjacent ends and edges of panels of other forms together in accurate alignment.
- b) The form work shall conform to the shape, lines and dimensions to suit the R.C.C. members as shown on drawing. Form work shall be adequately designed to support the full weight of workers, fresh placed concrete without yielding to settlement or deflection and to ensure good and true aligned concrete finish in accordance with the construction drawings. A camber in all direction of 6 mm. for every 5 metre span in all slab and beam centering shall be given to allow for unavoidable sagging due to compression or other causes.
- c) The form work shall be so designed that the sides of the beams shall be first struck leaving the soffit of beams and supporting props in position. Props shall be designed to allow accurate adjustment and to permit of their being struck without jarring the concrete.
- d) Temporary openings shall be provided at the base of columns forms and at other points where necessary for facilities of cleaning and observations immediately before concrete is deposited.
- e) Vertical shuttering:

The vertical shuttering shall be carried down to such solid surface as is sufficiently strong to afford adequate support and shall remain in position until the newly constructed work is able to support itself. Props shall be securely braced against lateral deflection. Steel props of approved quality shall be used. In case timber props and bullies are allowed to use these shall be of minimum 10 cm. diameter and shall be straight and adequately strong. Bamboo props shall not be used. The spacing of such struts shall be designed to carry loads imposed on it without undue deflection of the members supported by the props and shall be approved by the Employer/Architects.

Any alterations suggested by them shall be carried out at contractor's expenses. Bracing shall be provided as directed without extra cost. The contractor shall allow in his rates for providing props and struts for any height shown in the working drawings issued to the contractor from time to time.

K.2 Water tightness:

The contractor shall ensure that the forms are checked for water tightness just before concreting operation starts and shall make good any deficiencies. If instructed by the Employer/Architects building paper or any other approved materials will have to be used without any extra charge for the same.

K.3 Cleaning and treatment of forms:

All rubbish, particularly wood chippings, shavings and saw dust, shall be removed from the interior of the forms before the concrete is placed and the form work in contact with the concrete shall be cleaned and thoroughly wetted or treated with an approved composition. Care shall be taken that such approved composition is kept out of contact with the reinforcements. Interior of all moulds and boxes must be thoroughly washed out with hose pipe or otherwise so as to be perfectly cleaned and free from all extraneous matter before deposition of concrete. Prior approval of the form work should be taken from Architects before placing reinforcement on the form work.

K.4 Stripping:

Form shall be left in place until their removal is authorised by the Employer/Architects and shall then be removed with care so as to avoid injury to concrete. Under no circumstances shall form be struck until the concrete reaches a strength of at least twice the stress to which the concrete may be subjected at the time of striking. The strength referred to shall be that of concrete using the same cement and aggregate with the same proportion, and cured under conditions of temperature and moisture similar to these existing on the work. Where possible, the form work should be left longer as it would assist the curing.

K.5 Stripping time:

In normal circumstances (generally where temperatures are above 20 degree C and where ordinary cement is used) forms shall be struck after expiry of the following periods unless otherwise directed at site by the Employer/Architects.

Location	Striking time in days. Ordinary Portland Cement	Pozzalana Cement
a) Vertical sides of walls slabs, beams and columns.	2	4
b) Bottom of slabs upto 4.5 M span.	7	14
c) Bottom of slabs above 4.5 M. span. Bottoms of	14	21

beams upto 6.0 M. span.

- d) Bottoms of beams over 21 30

For rapid hardening cement, 3/7 of the above periods will be sufficient in all cases except vertical sides of walls, slabs, beams and columns which should be retained for a minimum period of 24 hours.

K.6 Formwork in Lifts for continuous surface:

Where forms for continuous surface are placed in successive units, (as for example in columns or walls) the forms shall fit tightly over the completed surface so as to prevent leakage of mortar from the concrete and to maintain accurate alignment of the surface.

K.7 Procedure while removing the formwork:

All formwork shall be removed without such shock or vibration as would damage the reinforced concrete. Before the soffit and struts are removed the concrete surface shall be exposed where necessary in order to ascertain that the concrete has sufficiently hardened. Proper precautions shall be taken to allow for the decrease in the rate of hardening that occurs with all cement in the cold weather.

K.8 Tolerance:

The following shall be the maximum permissible tolerance.

- a) In general, setting out dimension upto 4 M. in length a tolerance upto 3 mm. will be allowed.
- b) On lengths of more than 4 M. tolerance of not more than 5 5 mm. will be allowed.
- c) On the cross sectional dimensions of columns, beams, slabs, facias, chajja, mullions, fins, louvers, and such other members, tolerance of more than 3 mm. will not be allowed.
- d) The top surface of concrete floor slab will be within 6 mm. of the level and line shown on the drawings.
- e) Columns and walls and other vertical members shall not be more than 3 mm. out of plumb in their storey height and not more than 6 mm. out of plumb in their full height.
- f) If work is not carried out within the tolerance set out above in (a) to (e), the cost of all rectification measures of dismantling and reconstructing as decided by the Employer/Architects shall be borne by the contractor. In case of work dismantled the same not to be measured and paid for.

1.L Defective or poor concrete – Procedure for dealing with

L.1 General:

If in the Employer/Architects opinion there is doubt as to the strength of the structure due to the works test cube failing to attain specified strength due to poor workmanship like honeycombing etc. or any reason attributable to negligence on the part of the contractor then the Employer's/Architect's decision regarding dismantling, of such concrete or rectification if concrete is allowed to be retained in its place shall be final and binding on the contractor.

L.2 Where concrete in structure is allowed to be retained:

In the case of concrete showing the result of the tests strength less than those specified, the quantities in cubic metre certified by the Employer/Architects as so deficit may be allowed to remain in such a case subject to deduction for such sums as are or may become due under the contract not exceeding Rs. 50.00 per cum of the quantity so certified in case where deficiency does not exceed five percent and Rs.100.00 per cum of the said quantity where the deficiency exceeds five percent. The Employer/Architects shall have full power in their absolute discretion to fix the actual rate of deduction subject only to that the rate so fixed shall not exceed the maximum as provided above.

L.3 Concrete ordered to be dismantled:

If the deficiency exceeds standard Deviations arrived as per IS 456 of latest edition, the Employer/Architects may at their discretion direct the portion of concrete certified by them so as deficient in strength to be dismantled from the structure and replaced by concrete of specified strength and the contractor shall in that case have to carry out that direction at his own cost irrespective of the amount of loss, inconvenience and difficulties involved. Concrete thus dismantled will not be measured and paid for.

L.4 Concrete retained with rectification:

Where the Employer/Architects consider that defective concrete be strengthened, the contractor shall carry out all rectification work as per direction of Employer/Architects at contractor's expense. The concrete of lower strength thus accepted shall, however, be paid for concrete as mentioned above after necessary strengthening.

L.5 Quality of defective concrete represented by cubes:

In all cases of defective concrete as revealed by work test cubes strength falling below the specified strength, the quantity of concrete thus affected and represented by the cubes will be decided by the Employer/Architects whose decision shall be final and binding on the contractor.

L.6 Honeycombing:

- a) Where honeycombed surface are noticed in the concrete, the contractor shall not patch up the same until examined by the Employer/Architects and decision given regarding the acceptance with rectification or rejection of the same. If the contractor patches up such defects without the knowledge of the Employer/Architects, the Employer/Architects will be at liberty to order demolition of the concerned concrete members to the extent they consider necessary. In such case, the contractor at his expense, shall demolish and reconstruct defective work. The demolished work shall not be measured and paid for.
- b) If in the opinion of the Employer/Architects the honeycombing is harmful to the structure and where so directed by the Employer/Architects the full structural members affected by honeycombing as decided by the Employer/Architects shall be dismantled and reconstructed to Employer's/Architects' approval at the contractor's expense. The demolished concrete will not be measured and paid for.
- c) Where in the opinion of the Employer/Architects the Structural members containing honeycombing can be allowed to be retained with rectification, the rectification shall be carried out as directed by the Employer/Architects by gunniting (with cement mortar 1:3 proportion) the areas concerned at the contractor's expense.
- d) If such honeycombed areas are not severe in the opinion of the Employer/Architects and where so directed shall be patched up with cement mortar consisting of 1 part of cement and 3 parts of sand after removing defective concrete up to sound concrete surface to the satisfaction of Employer/Architects all at the expense of the contractor.

L.7 Load testing:

The Employer/Architects reserve the right to reject proposal of any load testing on structure and proceed to deal with defective concrete as stated in the paragraph. However, purely at their discretion, they may instruct the contractor to make a loading test on the work part thereof. The nature of the test and the loading shall be left to the discretion of the Employer/Architects. The contractor shall bear the cost of the test and the cost of dismantling and

reconstruction or concreting the defects by rectification in accordance with their instructions. Where such structure is allowed to remain in the work the concrete shall be accepted as belonging to the next lower grade and payment shall be made accordingly to the contractor.

L.8 Other defects:

Any other defects in concrete shall be made good as directed by the Employer/Architects at the contractor's expenses.

L.9 Contractor's rates to include:

The rates of the contractor for providing and laying cement concrete in various grades or proportion in the schedule of quantities shall, apart from any other factors specified elsewhere in the tender documents, include for the following:

- a) For all factors and method of work described in this specification and relevant Indian Standards.
- b) For all materials, labours, tools and plants, scaffolding, staging etc. mixing conveying and placing concrete in position, ramming, vibrating, trawling, curing, and removing scaffolding after the work is complete.
- c) Unless otherwise specified in the Schedule of Quantities the cost for concrete items shall include for providing, stays, struts, bolts, nuts and every item necessary to keep the forms rigid, smoothing the surface to receive concrete as per detailed drawing, striking and stripping formwork after the concrete is cured or as specified, hacking the concrete surfaces required to receive plaster etc. where shuttering is described as a separate item in the schedule of quantities, rate for shuttering shall be inclusive of all the works mentioned in this para apart from other factors mentioned in specification for formwork and also elsewhere in this contract. Shuttering to curve structure will be measured and paid as detailed in Schedule of Quantities.
- d) The reinforcement in case of reinforced concrete work will be paid for separately unless otherwise stated in the particular items, but rate shall include for pouring concrete and packing around reinforcement.
- e) The measurement of concrete will be as per detailed drawing, shapes and size based on net structural sizes as per drawing i.e. exclusive of plaster.
- f) Rates for concrete items shall cover for any shape of structural members like columns, beams, fascia, fins, louvers etc. and for cantilever beams, slab, etc. including curve structures.
- g) Formation and treatment of construction joints, and expansion joints where water bars of approved materials or joint fillers like "Shalitex" are specified such materials shall be paid as per separate rates.
- h) Design of mixes, if required by specification, testing in an approved laboratory, tests of materials and work required in the opinion of the Architect and described in these specification.
- i) Fixing all inserts like pipe, plugs, forming holes etc. as described.
- j) Weigh-batching using a Mechanical Weigh Batcher of a batching plant or where so specified for volumetric batching.
- k) For taking out dowel bars, fan hooks, etc. through shuttering.
- l) For forming drip moulds in chajja, sills etc. as shown in the the drawings of as described.
- m) For work at all levels.
- n) In cases where at the junctions of beams, column and slab the composition of concrete mix of specified strength be different for columns, beams and slab then in such cases only the richer concrete among those specified for in all these members shall be used at the junctions and rate quoted for columns, beams and slabs or any members entering such junctions shall allow for the same. Rate shall also cover for spill over

of rich concrete in beams to natural angle of repose of wet concrete required from practical consideration while concreting the junctions.

2. **MORTAR**

Unless otherwise specified, mortar for brick work shall be composed of 1 part of cement to 6 parts of approved sand for walls of one brick thick (25 cm.) and over and one part of cement to 4 parts of approved sand for half brick thick and brick on edge walls.

2.1 **Construction details:**

a) **Soaking:**

All brick shall be immersed in water for 24 hours before being put into work so that they will be saturated and will not absorb water from the mortar.

b) **Bats:**

No bats or cut bricks shall be used in the work unless absolutely necessary around irregular openings or for adjusting the dimensions of different course and for closures, in which case, full bricks shall be laid at corners, the bats being placed on the middle of the courses.

c) **Laying:**

The bricks shall be laid in mortar to line, level and shapes shown on the plan, slightly pressed and thoroughly bedded in mortar and all joints shall be properly flushed and packed with mortar so that they will be completely filled with mortar and no hollows left any where. Bricks shall be handled carefully so as not to damage their edges. They should not also be thrown from any height to the ground but should be put down gently. All courses shall be laid truly horizontal and all vertical joints made truly vertical. Vertical joints on one course and the next below should not come over one another and shall not normally be nearer than quarter of a brick length. For battered faces beading shall be at right angles to the face. Fixtures, plugs, frames etc. if any, shall be built in at place shown in the plans while laying the courses only and not later by removal of bricks already laid. The top layer of bricks of one or more thick wall coming in contact with R.C.C. beam, slab and at window sill level etc. shall be laid on edge as per direction.

Care shall be taken during construction to see that edges of bricks at quoins, sills, head etc. are not damaged.

The verticality of the walls and horizontality of the courses shall be checked very often with plumb bob and spirit level respectively.

All external wall should have fair face on exterior surface.

d) **Bond:**

Unless otherwise specified, brick work shall be done in English Bond. All walls, coming in contact with reinforced concrete columns, beams etc. should be properly bonded by inserting reinforcements. Extra labour shall be included in the rates (reinforcements will be measured and paid separately) against reinforcement item provided in the Schedule of Quantities.

e) **Joints:**

Joints shall not exceed 10 mm. (about 3/8") in thickness and this thickness shall be uniform through out. The joints shall be raked out not less than 10 mm. (about 3/8") deep when the mortar is green where

pointing is to be done. When the brick surface are to be plastered, the joints shall be raked to a depth of 5 mm. when the mortar is green, so as to provide good key to plaster.

f) Uniform Raising:

Brick work shall be carried up regularly in all cases where the nature of work will admit, not leaving any part 60 mm. lower than another. But where building at different levels is necessary, the bricks shall be stepped so as to give later at uniform level and effective bond. Horizontal courses should be to line and level, and face plumb or to later as shown on the plan. The rate of laying masonry may be upto a height of 80 cm. (about 32") per day if cement mortar is used, and 45 cm. (about 18") if lime mortar is used.

2.2 Scaffolding:

The scaffolding must be of approved type strong and rigid stiffened with necessary cross bearers and safe to prevent injury to persons or materials. The contractor shall have to allow other trades to make reasonable use of his scaffolding as directed by the Employer/Architects. If for the interest of work the contractor have to erect scaffolding in the other properties including local bodies or Corporation, the arrangement for the same including the cost of licensing fees etc. shall have to be borne by the contractor and the Employer should be kept free from any liability on this account.

Put log holes shall be made good by bricks to match the face work when put logs are removed after ensuring that the holes behind are solidly filled in with 1:4:8 cement concrete.

2.3 Curing:

All brick works shall be kept well watered for 14 days after laying. While pozzalana cement is used for mortar the curing shall be extended by one week at contractors expense.

2.4 Exposed Brick Work:

Where exposed brick work is specified the usual specification for 'Brick Work' as mentioned above will be applicable for 'Exposed Brick Work', but in addition specially selected brick shall be used for facing, ensuring, regular and clean faces of uniform colour. No bricks which are broken chipped, wrinkled or which have irregular edges or corners shall be used. Depending on the quality of bricks and if instructed by the Employer/Architects the exposed faces of every brick shall be rubbed before laying without extra charge. Wooden fillets 10 mm. wide shall be placed at the edge of joints so that the mortar comes on the surface of the bricks and a regular thickness of joints is maintained. The surface shall be rubbed down with brush on bricks if necessary, and thoroughly washed. No mortar shall be allowed to stick to the surface, which shall be left clean to the Employer's/Architect's satisfaction with all joints even and true to straight line. Double scaffolding shall be used for exposed brick work, if necessary.

2.5 Half brick/brick on edge work:

Half brick thick and brick on edge walls, shall be provided H.B. wire netting of approved quality of reinforcements. For half brick thick wall and brick on edge wall H.B. netting reinforcements of approved quality shall be provided at every third course and in alternate course respectively according to standard practice.

2.6 Rates to include:

Apart from other factors mentioned elsewhere in this contract, the rates for items of brick work shall include for the following:

- a) All labour, materials, use of tools, equipment and other items incidental to the satisfactory completion of brick masonry of all heights and levels.
- b) Erecting and removing of all scaffolding, ladders and plant required for the execution of the work to the height and depth and shapes as shown on the plan or as ordered by the Employer/Architects including

extra labour and materials for using cut bricks in the construction of wall of varying thickness other than one brick, one and half brick, half brick and brick on edge walls as per drawings.

- 2.7 Constructing brick work to lines, levels, batters, pillars, curve, projection, cutting, tothing etc. in strict conformity with the drawings and to any position or shape, to any heights or levels including raking out joints and housing frames, fixtures etc.
- 2.8 Necessary charges of outside scaffolding work for construction of external brickwork from outside to have fair face on external surface.
- 2.9 Curing brick work.
- 2.10 Extra labour for bonding brick work to R.C. works as specified.
- 2.11 Removing of all stains and adhering mortar lumps on the brick work surface.
- 2.12 Cost of reinforcement in half brick walls and brick on edge walls.
- 2.13 Raking out joints for receiving plaster as specified.
- 2.14 Measurements:
- 2.15 Half brick thick and brick on edge walls shall be measured in sq.m. unless otherwise mentioned.
- a) One brick wall and thicker walls shall be measured in cum. Brick walls upto and including 3 bricks in thickness should be measured in multiples of half bricks which shall be deemed to be inclusive of mortar joints. Widths of more than three bricks in walls will be measured actually and limited to the width specified.
- 2.16 No deduction or addition shall be made on any account for :-
- 2.17 End of dissimilar materials (i.e. joists, beams, lintels, posts, girders, rafters, purlins, trusses, corbels steps etc.) upto 0.1 sqm. in section.
- 2.18 For details of measurements not mentioned elsewhere in the contract, the method of measurement should be as per relevant I.S. Code.
- 2.19 Brick flat soling:

For soling the bricks shall be of approved, quality and round, hard, tough, durable, dense, clean, free from soft spots, cracks decay and other defects. Brick bats shall not be used. All the fillings shall be watered and compacted to get maximum consolidation. All necessary trimming or filling for laying of the soling in line and required grade shall be done.

The sub-grade shall be marked by stacks and strings for required depth for laying of soling. In line and required grade shall be done.

The bricks shall be laid on flat (unless otherwise specified) touching each other. Brick shall be laid in parallel rows breaking bond or in herring bone pattern as directed and firmly embedded true to line and filled with local sand. Measurement shall be in sqm.

3. ARTIFICIAL STONE FLOORING:

- a) Preparation of Subgrade:

The surface of the structural slab shall be struck of reasonably true and at a level average 40 mm. below the level of finished floor. All water, laitance or dirt on the surface of the structural slab shall be removed

before the base course is laid. The slope required should be provided in the concrete of the structural slab to obtain uniform thickness of artificial stone towards the predetermined positions of outlet.

b) Base Course:

The mix for the base of the artificial stone shall be 1 part of portland cement, 2 parts of fine aggregate and 4 parts of coarse aggregate by volume. The stone chips for the base course should be 6 mm. and own and should be properly screened and washed before use. Not more than 27.1/2 litres (5.1/2 gallons) of mixing water including the moisture in the aggregate shall be used for each bag of portland cement in the mixture. The concrete shall be of the driest consistency possible to work with a sawing motion of the strike off board or straight edge. Changes in consistency shall be obtained by adjusting the proportions of aggregate and cement. In no case, shall be the specified amount of water exceeded.

c) Sectors:

Artificial stone flooring shall be laid in sections not exceeding 1.5 sqm. with a maximum length of 1.5 M. as directed. Flooring of the panels laying diagonally shall be completed first. The edges of the panels to be concreted shall be bounded by about 50 mm. wide oiled wooden battens of the finished floor thickness. Immediately before the placing of the concrete the sub-base will be given a coat of neat cement grouting.

d) Top Layer:

After striking off the base course to the required slope, it shall be compacted with a wood flat. The surface shall be tested with a straight edge to direct high and low spots which shall be eliminated, before the concrete of the base course has hardened, the topping shall then be floated with a wooden flat to render the surface even. After the surface is slightly hardened it shall be trowelled three times at intervals,

so as to produce a uniform and hard surface. Excessive trowelling in the earlier stage shall be avoided. Trowelling of rich mix of dry cement and fine aggregate on to the surface shall not be permitted.

The whole thing left undisturbed for 10 to 12 hours. After this period the whole floor should be left flooded with water for a minimum period of 14 days.

e) When working on alternate bay principle of the ponding of flooring should be deferred till the whole floor is complete. But the portions already completed should be occasionally damped with water by moist sand till the whole floor is complete. After this the whole floor will be flooded with water. For coloured finishes a suitable colour mixture shall be added to top cement finishing coat. The quality of colouring matter to be added to cement should be in the proportion of one part of pigment to three parts of Portland cement mixed thoroughly and screened before making to paste. The pigment shall be of approved manufacturer and tints shall be uniform. Any cracks, rust, disfiguration or discolouring of surfaces shall have to be made good without any extra charges to the satisfaction of the Employer/Architects.

f) Rate to include:

Apart from other factors mentioned elsewhere in this contract the rate quoted for Artificial Stone Flooring shall include for the following:

- i) All labour, materials and equipment, cleaning the sub-grade, laying base course and top layer to have finished 40 mm. thick flooring as per above specifications.
- ii) Curing.
- iii) Cleaning the floor from all stains etc.

Mode of Measurement:

The measurement shall be square metre for the actual flooring provided.

tes for item of kota stone flooring shall include for the following:

- a) All labour, materials and equipment, cleaning the sub-base, laying mortar bed and cement grout and fixing kota stone slabs as specified above and making up the joints, pigments, white cement etc.
- b) Any cutting and waste if required.
- c) Curing.
- d) Machine polishing and cleaning the floor from all stains etc.

Mode of Measurement:

The measurement shall be in square metre for the actual kota stone flooring provided.

4. Wood work and Joinery:

4.1 Timber:

- i) Unless otherwise specified, all timber for frames and shutters for doors, windows, ventilators, etc. shall be of approved quality and shall be free from knots, shakes, fissures, flaws, sub-cracks and other defects. The planed surface shall be smooth and free from blemishes and discolourations.
- ii) All timber for carpentry and joinery in touch with masonry or concrete shall be creosoted before fixing.
- iii) All full fabricated timber shall be air seasoned at site of work for a period of not less than two months to allow for any shrinkage that may take place. The preparation of timber for joinery is to commence simultaneously with the beginning of the project work generally and should proceed continuously until all the wood work is prepared and fixed/stacked on or near the site as the case may be.

4.2 Holdfasts:

Three holdfasts shall be fixed to each post of the door frame. The M.S. holdfasts shall be of the size as mentioned in the Schedule of Quantities and shall be fixed to the frames by means of screws and not nails. The other end of the holdfasts shall be fixed into jambs with 1:2:4 R.C.C. of dimensions as directed. Ends of holdfasts will be fish tailed.

Whenever the frames are abutting to concrete surface approved metal expansion fastener as directed shall be provided for frame, hangers, rough grounds etc.

The rates quoted for wood work and joinery shall exclude the cost for all types of holdfasts or Rawl Plugs or other approved fasteners.

The items of holdfast, metal fasteners etc. shall be paid as a separate item as described in Schedule of Quantities. The rate for holdfast shall include for cement grouting and fixing to frame work with screws etc. The rate for metal fasteners shall include for nuts etc. as required.

4.3 Workmanship and Constructions:

- a) The workmanship shall be first class and to the approval of the Employer/Architects. Scantlings and board shall be accurately sawn and shall be of required width and thickness. All carpenter's work shall be wrought except where otherwise described. The workmanship and joinery shall be accurately set out in strict conformity according to the drawings and shall be framed together and securely fixed in approved manner and with properly made joints. All work is to be properly tenoned shouldered, wedged, pinned, braced etc. and properly glued with approved quality glue to the satisfaction of the Employer/Architects.
- b) Screws:

Unless otherwise specified all screws to be used in woodwork and joinery shall be of cadmium plated and of approved quality. The size (diameter and length) should conform to those specified in hardware schedule.

c) Tolerance:

1.5 mm. (1/16") will be allowed for each wrought face of sizes specified except where described as finished in which case they shall hold to the full dimensions.

d) Protection:

All edges of timber frames etc. shall be protected from being damaged during construction by providing rough timber casting securely fixed and other adequate protective measures.

e) If it is decided by the Employer to provide antitermite treatment, the building contractor shall co-ordinate his work suitable as directed by the Employer/Architects.

f) Door/Window frames shall have cut rebate. Planted rebates shall not be permitted.

g) Where door frames are fixed flush with plaster to wall, teak wood cover mould 40 mm. x 12 mm. as per drawings shall be provided all round and shall be painted or polish finished to match with finished shutters. This will be paid as a separate item as described in Schedule of Quantities.

4.4 Wooden panelled shutter:

Solid wood panels for shutters shall be of pattern and size as specified. Wherever possible each panel shall be in a single width piece. But where two pieces are used, width of each piece should not be less than 12.5 cm. When made from more than one piece, the pieces shall be jointed with a continuous gongued and grooved joint and glued together and reinforced with metal dowels. Such joints are to be got approved by the Employer/Architects before actual manufacture is taken up. The grains of solid panel shall be framed into grooves to the full depth of the groove leaving and air space of 1.6 mm. on the faces shall be closely fitted to the sides of the grooves. Mouldings to the edges of panel openings shall be scribed at the joints. An approved sample shall be kept in the office of the Employer/Architects at site for reference.

4.5 Wooden glazed shutter:

The general specifications for glazed shutter shall be similar to that for panelled shutters described. Styles and rails in the glazed shutters shall be rebated 5/8" x 1/2" (16 mm. x 12 mm.) to receive the glass unless otherwise specified. Sash bars shall be of full thickness of the shutter and of width as shown in the drawings. These shall be moulded and rebated mitre on side to receive the glass as per drawing unless otherwise specified glass panels shall be fixed by means of moulded teak beads and suitable G.I. screws. Finished thickness of the shutter shall be as mentioned in the Schedule of Quantities. The rate shall be for the completed work fitted and fixed in position. An approved sample should be kept in the office of the Employer/Architects at the site for reference. The glass shall conform to specification to describe under head glazing. The thickness of glass shall mentioned in the Schedule of Quantities.

4.6 Factory made panelled shutters:

Shutters shall manufactured from Kiln Seasoned and chemically treated commercial hardwood of approved quality. Thickness and sizes of styles, rails etc. shall be as specified in the Schedule of Quantities and or drawings. Panel shall be of phenol bonded plywood (BWP) conforming to I.S. 303 and I.S.710 of latest edition of thickness as specified in the Schedule of Quantities. Panel shall be in a single width piece. Shutters shall be manufactured conforming to the relevant I.S. specification and an approved sample shall be kept in the site office of the Employer/Architects.

4.7 Hardware fittings:

All hardware fittings for doors shall be either oxidised iron, iron, brass, anodised aluminium as specified in the Schedule of Quantities. These hardware fittings shall be obtained from approved manufacturers and shall bear ISI mark wherever available. The samples for the fittings shall be submitted to the Employer/Architects for the approval. Hardware fittings for door shutters shall be paid as separate item as given in Schedule of Quantities. The rate for hardware fittings shall include for supplying, fitting and fixing the fittings with necessary cadmium plated screws, washers bolts, nuts etc. as required. All locks shall be provided with keys in duplicate and rate shall include for the same.

Approved samples of hardware fittings shall be deposited with Employer/Architects for reference.

4.8 Rates to include:

Apart from other factors mentioned elsewhere in this contract the rate for item of wood work and joinery shall include for the following:

A. Items of scantling:

i) All labour, materials and equipments for fixing frame work as per drawing excluding the cost of holfasts, Rawl plugs, or other fasteners etc.

B. Items of shutters:

i) All labour, materials and equipments for carrying out the work as per drawing.

ii) Labour for fitting the shutters in position (excluding the cost of fittings) as per drawing.

4.9 Mode of Measurement:

All measurements shall be as per relevant section of I.S. 1200 of latest edition.

i) Scantling shall be measured in cum. The sectional area shall be the area of the least square, or rectangles from which the scantling may be cut. The length shall be actual length of timber required for the purposes including the extra portion required for jointing.

ii) Shuttering shall be measured in square metre for closed door shutters area i.e. rebate to rebate without extra measurement for rebates and/or splayed meeting styles of door.

5. **CEMENT PLASTER (INTERNAL):**

a) Preparation of surface:

The walls to be plastered to have all joints raked out to a depth of 10 mm. if not already done. R.C.C. surface shall be properly hacked to get good key to the plaster. All dust and oily matter, if any, shall be brushed and cleaned and surface to be plastered shall be kept wet for 6 hours before plastering is commenced.

b) Proportion of Mortar:

The plaster in walls, lintels, columns, ceiling, ceiling beams, projected slabs, rails, chajja, marquise, domes etc. shall be done with sand cement mortar in the proportion as described in the Schedule of Quantities. No more cement mortar shall be prepared than that can be used within half an hour.

c) Application of Plaster:

The mortar shall be applied evenly with force on the surface to be plastered. The mortar surface shall be finished at once by being rubbed over with a trowel till the cement appears on the surface. All corners, angles and junctions shall be truly vertical and horizontal as the case may be carefully and neatly finished. Rounding of corners and junctions where required shall be done without extra charge. The mortar shall adhere to the surface intimately when set and there should be no hollow sound when struck.

- d) When neat cement finish is specified over the plaster surface. A coat of pure portland cement slurry, 1.5 mm. thick shall be applied and well rubbed to the plaster surface while the plaster surface is still fresh.
- e) When no finish is specified, the plastered surface shall be rubbed well to an even plane with a wooden flat for external surface and finished smooth with a steel trowel for internal surface.

f) Rates to include:

Apart from other factors mentioned elsewhere in this contract rates for the item of plaster shall include the following:-

- i) Erecting, dismantling and removing the scaffolding.
- ii) Preparing the surface to receive the plaster.
- iii) Providing cement plaster of the specified average thickness.
- iv) All labour, materials, use of tools and equipment to complete the plastering as per specification.
- v) Curing for 7 days.
- vi) Any moulding work if shown on the drawings or as specified unless separately provided in the tender.
- vii) Labour for plastering the surface in two operations when thickness of plaster is more than 12 mm. thick.
- viii) Plaster work in bends, arises, rounded angles, fair edges, narrow returns, quirks 'V' joints, splays, drip mouldings, making good to metal frame junctions with skirtings of dados narrow width and small quantities, making good round pipes, conduits, timbers, sills, brackets, railings, etc. and making good after all the sub-contractors or nominated sub-contractors have done their work.
- ix) Neat cement finish when specified in the item.

g) Mode of Measurement:

Plaster shall be measured in square metre.

Walls:

The measurement of wall plastering shall be taken between the walls or partitions (the dimensions before plastering shall be taken) for the length, and from the top of floor or skirting depending upon the situation to the ceiling for the height.

Deductions:

For jambs soffits, sills, etc. for openings not exceeding 0.5 sq.m. each in area, ends of joists, beams, posts, girders, steps etc. not exceeding 0.5 sqm. each in area, and openings not exceeding 3 sqm. each, deductions and additions shall be made in the following manners:

- a) No deductions shall be made for ends of joists, beams, posts, etc. and openings not exceeding 0.5 sqm. and no additions shall be made for reveals, jambs, soffits sills etc. of these openings or for finishing the plaster around ends of joists, beams, posts, etc.
- b) Deductions for openings exceeding 0.5 sqm. but not exceeding three sqm. each shall be made as follows and no addition shall be made for reveals, jambs, soffits, sills etc. of these openings:-
 - i) When both faces of wall are plastered with the same type of plaster, deduction shall be made for one face only.

- ii) When two faces of wall are plastered with different type of plasters or if one face is plastered and other pointed, deductions shall be made in the plaster or pointing on the side on which the width of reveals is less than that on the other side but no deduction shall be made from plaster or pointing on the other side. Where widths of reveals on both faces of wall are equal, deduction of 50 per cent of area of opening on each face shall be made from areas of plastering and/or pointing as the case may be.
- iii) When width of door frame is equal to thickness of wall or is projecting beyond thickness of wall, full deduction for opening shall be made from each plastered/pointed face of the wall.
- iv) In case of openings of area above 3 sqm. each deductions shall be made for the openings but jambs, soffits and sills shall be measured.

10. Rule Pointing:

The external brick work to be pointed, as shown on drawings is to be executed with specially selected bricks uniform in size and colour and with true and undamaged faces and arises. The joints are to be raked out at least 12 mm. (1/2") deep and pointed with line gauge in cement. No cutting of bricks or facing up with coloured plaster will be allowed.

11. Plaster of Paris Punning:

If the plastered surface is to be finished with plaster of Paris punning, the surface shall be combed slightly with the wire brushed or nails before it is completely set to form key for plaster of paris punning. The surface shall be only damped but not soaked before the application of plaster of Paris punning. The gypsum for preparing punning shall be approved quality. It shall be dry and free from lumps and shall be suitably packed in water tight bags or containers. Paste shall be prepared by adding required quantum of water and sand shall be used before it sets. No dropping paste shall be used in the work. Punning shall be applied to the prepared surface with steel trowel to a thickness required to make the surface produce perfectly smooth and even surface, working from top to bottom. The finished surface shall not show any sign of disintegration topping or piling. The surface shall be protected from injury and damage.

11.1 Rates to include:

Apart from other factors mentioned elsewhere in this contract, rates for the item of plaster of paris punning shall include the following:

- i) Erecting, dismantling and removing the scaffolding.
- ii) Preparing the surface to receive the said finish.
- iii) Providing plaster of paris punning of the required thickness to make the surface perfect smooth and even including cost of materials.
- iv) Any moulding work if shown in the drawings or as specified.
- v) Finishing in bends, arises, rounded angles, fair edges, narrow returns, quirk, 'V' joints, splays, drip mouldings, making good to metal frames, junctions with skirting or dados, narrow widths and small quantities, making good round pipes, conduits, timbers, sills, brackets, railings etc. and making good after all the sub-contractors or nominated sub-contractors have done their works.

11.2 Mode of Measurements:

The measurement shall be in square metre. The mode of measurement shall be as applicable to that for plaster.

6. BRICKS:

- a) The bricks shall be locally available kiln burnt bricks of generally regular and uniform size, shape and colour, uniformly well burn but not over burnt. The bricks shall be free from cracks, chips, flaws, stones or lumps of any kind and the rating of efflorescence shall not be more than “moderate”, when treated as per I.S. 3495 of latest edition. They shall not have any part unburnt. They shall not break even after being dropped on the ground on their flat face in a standard condition from a height of 60 cms.
- b) The size of brick shall normally 250 mm. x 125 m. x 75 mm. or 230 mm. x 115 mm. x 65 mm. Bricks of one standard size shall be used on one work unless specially permitted by the Employer/Consultants.
- c) After immersion in water, absorption by weight shall not be exceed 20% of dry weight of the brick when tested according to I.S. 1077 of latest edition. Unless otherwise specified the load to crush the brick when tested according to IS 1077 of latest edition shall not be less than 75 Kg./Sq.cm.
- d) Prior approval of Employer/Consultants shall be obtained for the brands of bricks to be used in the work after compliance with the above specifications/tests.

Mortar

Unless otherwise specified, mortar for brick work shall be composed of 1 part of cement to 6 parts of approved sand for walls of one brick thick (25 cm.) and over and one part of cement to 4 parts of approved sand for half brick thick and brick on edge walls.

Construction details:

a) Soaking:

All brick shall be immersed in water for 24 hours before being put into work so that they will be saturated and will not absorb water from the mortar.

b) Bats:

No bats or cut bricks shall be used in the work unless absolutely necessary around irregular openings or for adjusting the dimensions of different course and for closures, in which case, full bricks shall be laid at corners, the bats being placed on the middle of the courses.

c) Laying:

The bricks shall be laid in mortar to line, level and shapes shown on the plan, slightly pressed and thoroughly bedded in mortar and all joints shall be properly flushed and packed with mortar so that they will be completely filled with mortar and no hollows left any where. Bricks shall be handled carefully so as not to damage their edges. They should not also be thrown from any height to the ground but should be put down gently. All courses shall be laid truly horizontal and all vertical joints made truly vertical. Vertical joints on one course and the next below should not come over one another and shall not normally be nearer than quarter of a brick length. For battered faces beading shall be at right angles to the face. Fixtures, plugs, frames etc. if any, shall be built in at place shown in the plans while laying the courses only and not later by removal of bricks already laid. The top layer of bricks of one or more thick wall coming in contact with R.C.C. beam, slab and at window sill level etc. shall be laid on edge as per direction.

Care shall be taken during construction to see that edges of bricks at quoins, sills, head etc. are not damaged.

The verticality of the walls and horizontally of the courses shall be checked very often with plumb bot and spirit level respectively.

All external wall should have fair face on exterior surface.

d) Bond:

Unless otherwise specified, brick work shall be done in English Bond. All walls, coming in contact with reinforced concrete columns, beams etc. should be properly bonded by inserting reinforcements. Extra labour shall be included in the rates (reinforcements will be measured and paid separately) against reinforcement item provided in the Schedule of Quantities.

e) Joints:

Joints shall not exceed 10 mm. (about 3/8") in thickness and this thickness shall be uniform through out. The joints shall be raked out not less than 10 mm. (about 3/18") deep when the mortar is green where pointing is to be done. When the brick surface are to be plastered, the joints shall be raked to a depth of 5 mm. when the mortar is green, so as to provide good key to plaster.

f) Uniform Raising:

Brick work shall be carried up regularly in all cases where the nature of work will admit, not leaving any part 60 mm. lower than another. But where building at different levels is necessary, the bricks shall be stepped so as to give later at uniform level and effective bond. Horizontal courses should be to line and level, and face plumb or to later as shown on the plan. The rate of laying masonry may be upto a height of 80 cm. (about 32") per day if cement mortar is used, and 45 cm. (about 8") if lime mortar is used.

Scaffolding:

The scaffolding must be of approved type strong and rigid stiffened with necessary cross bearers and safe to prevent injury to persons or materials. The contractor shall have to allow other trades to make reasonable use of his scaffolding as directed by the Employer/Consultants. If for the interest of work the contractor have to erect scaffolding in the other properties including local bodies or Corporation, the arrangement for the same including the cost of licensing fees etc. shall have to be borne by the contractor and the Employer should be kept free from any liability on this account.

Put log holes shall be made good by bricks to match the face work when put logs are removed after ensuring that the holes behind are solidly filled in with 1:4:8 cement concrete.

Curing:

All brick works shall be kept well watered for 14 days after laying. While pozzalana cement is used for mortar the curing shall be extended by one week at contractors expense.

Half brick/brick on edge work:

Half brick thick and brick on edge walls, shall be provided H.B. wire netting of approved quality of reinforcements. For half brick thick wall and brick on edge wall H.B. netting reinforcements of approved quality shall be provided at every third course and in alternate course respectively according to standard practice.

Rates to include:

Apart from other factors mentioned elsewhere in this contract, the rates for items of brick work shall include for the following:

- a) All labour, materials, use of tools, equipment and other items incidental to the satisfactory completion of brick masonry of all heights and levels.
- b) Erecting and removing of all scaffolding, ladders and plant required for the execution of the work to the height and depth and shapes as shown on the plan or as ordered by the Employer/Consultants including extra labour and materials for using cut bricks in the construction of wall of varying thickness other than one brick, one and half brick, half brick and brick on edge walls as per drawings.

- c) Constructing brick work to lines, levels, batters, pillars, curve, projection, cutting, tooting etc. in strict conformity with the drawings and to any position or shape, to any heights or levels including raking out joints and housing frames, fixtures etc.
- d) Necessary charges of outside scaffolding work for construction of external brickwork from outside to have fair face on external surface.
- e) Curing brick work.
- f) Extra labour for bonding brick work to R.C. works as specified.
- g) Removing of all stains and adhering mortar lumps on the brick work surface.
- h) Cost of reinforcement in half brick walls and brick on edge walls.
- i) Raking out joints for receiving plaster as specified.

Measurements:

- a) Half brick thick and brick on edge walls shall be measured in sq.m. unless otherwise mentioned.
- b) One brick wall and thicker walls shall be measured in cum. Brick walls upto and including 3 bricks in thickness should be measured in multiples of half bricks which shall be deemed to be inclusive of mortar joints. Widths of more than three bricks in walls will be measured actually and limited to the width specified.
- c) No deduction or addition shall be made on any account for :-
 - i) End of dissimilar materials (i.e. joists, beams, lintels, posts, girders, rafters, purlins, trusses, corbels steps etc.) upto 0.1 Sqm. in section.
- d) For details of measurements not mentioned elsewhere in the contract, the method of measurement should be as per relevant I.S. Code.

7. ACOUSTICAL WALL PANELS WITH WALL MOUNTING ON SURFACE IMPALERS

- a) 25mm thick Fibre Glass Substrate Acoustical wall panel having a square edge with an acoustically transparent and fire resistant fabric covering on the front, having 95%RH and NRCof 0.9.

Panels of size 600mm x 1200mm

- b) Installation:

These panels need to be mounted on to the metallic surface impallers of size 4" x3" duly fixed to the plastered wall with self tapping screws and construction adhesives as per the instructions laid down by the manufacturer. These impellers to be placed at least 4" away from the panel edge. Armstrong wall panel impalers of adequate quantity as specified by the manufacturer shall be fixed to the wall surface using self tapping screws. Silica based construction adhesive shall be dabbed on to the projecting elements (spikes) of the impalers. Wall panels shall be pierced through the spikes of the impalers ensuring the line and level of the panels are maintained.

8. EDGE TILES WITH 24 MM EXPOSED GRID" SYSTEM

- a) The tiles should have Humidity Resistance (RH) of 95%, NRC 0.90, Light Reflectance >88%, Thermal Conductivity $k = 0.032$ w/m K, Colour Black, Fire Performance Class 0/Class1 (BS476 Pt:6&7) in module size of 600 X 600 X 15 mm / 20 mm, suitable for Green Building application, with Recycled content of 60% (FG) & 54% (RW).

- b) The grid should be 24mm wide T - section flanges colour black having rotary stitching on all T sections i.e. the Main Runner, 1200 mm & 600 mm Cross Tees with a web height of 43, 35 and 30mm and a load carrying capacity of 23.78 Kgs/M2. The T Sections have a Galvanizing of 120 grams per M2 & passed through 500 hrs of Salt test.
- c) Installation:
To comprise main runner spaced at 1200mm centres securely fixed to the structural soffit using Armstrong suspension system (specifications below) at 1200mm maximum centre. The First/Last Armstrong suspension system at the end of each main runner should not be greater than 450mm from the adjacent wall.

Flush fitting 1200mm long cross tees to be interlocked between main runners at 600mm centre to form 1200 x 600 mm module. Cut cross tees longer than 600mm require independent support. 600 x 600mm module to be formed by fitting 600mm long flush fitting cross tees centrally between the 1200 mm cross tees.

Perimeter trim to be Armstrong wall angles of size 3000x19x19mm, secured to walls at 450 mm maximum centres.

Suspension system

The system consisting of M6 Anchor Fasteners with Vertical Hangers made of Galvanised steel of size 26 x 26 x 25 x 1.2mm with a Galvanised Thickness of 80gsm, A pre Straightened Hanger wire of dia – 2.68 mm of 1.83 m length., thickness of 80gsm and a tensile strength of 344-413 MPa, along with Adjustable hook clips of 0.8mm thick, galvanised spring steel for 2.68 mm with a minimum pull strength of 110 kg. The adjustable clip also consists of a 3.5 mm aquiline wire to be used with the main runner.

9. STANDARD SPECIFICATIONS:

Unless otherwise specified elsewhere in this contract, all work under this contract shall be carried out in accordance with the technical specification and the latest issue of the Indian Standard Specification applicable to the particular class of work. If Indian Standards are not formulated for any particular material or method of execution of work, the relevant British Standard Specification shall apply. Relevant issue of I.S. specifications applicable to the particular work have been described along with the specification for the respective works. In case of any confusion or dispute regarding meaning and interpretation of any specification for the respective works, the decision of the Employer/Architects shall be final and binding on the contractor.

**Estimated cost of construction of civil work for Auditorium at Ground Floor at
12, Sadar Street, Kolkata-700 016 for The Institute of Cost Accountants of India.**

Sl. No.	Description of works	Unit	Quantity	Rate	Amount Rs. P.
1	Brick work with 1st class bricks in cement mortar (1:6) (a) In superstructure, ground floor (PWD, P-69, Item - 22 [b]) (Grade : Crushing strength = 75 kg. / Sq.cm.)	Cum.	7	5,404.35	37,830.45
2	Removal of existing doors and windows from brick wall. 1.80 x 1.450, 2.8 x 1.550 (NSI)	Each	8	250.00	2,000.00
3	Removal of rubbish from the working site and the disposal of the same beyond the compound inconformity with the municipal/corporation rules for such disposal, loading into truck and cleaning the site in all respect as per direction. (PWD, P-29, Item 13)	Cum.	10	143.99	1,439.90
4	Plaster (to wall, floor, ceiling) with sand and cement mortar including rounding off or chamfering corners as directed and raking out joints or roughening of concrete surface including throating, nosing and drip course where necessary. (PWD, P-319, Item - 2 [i] [c]). With 1:6 cement mortar a) 15 mm. thick plaster	Sqm.	80	116.29	9,303.20
5	Rendering the surface of walls and ceiling with white cement based wall putty of approved make and brand (1.5 mm. thick). (PWD, P-341, Item 5 [b])	Sqm.	80	77.34	6,187.20
6	Ordinary cement concrete (mix 1:2:4) with graded stone chips (20 mm. nominal size) excluding shuttering and reinforcement, if any, in ground floor as per relevant IS codes. (PWD, P-33, item 5[a]). a) Pakur Variety.	Cum.	105	5,251.34	551,390.70
7	Hire and labour charges for shuttering with centering and necessary staging upto 4 M. / 4.5 M. using approved stout props and thick ply board of approved thickness with required bracing for concrete slabs, beams, columns, lintels, chajjas etc. curved or straight including fitting, fixing and striking out after completion of works.				
	C.O.				608,151.45

Sl. No.	Description of works	Unit	Quantity	Rate	Amount Rs. P.
				B.F.	608,151.45
	a) 9 mm. to 12 mm. approved quality ply board/steel shuttering in any concrete work. (PWD, P-61, Item 12 (c)).	Sqm.	90	335.68	30,211.20
8	Single brick flat soling of picked jhama bricks including ramming and dressing bed to proper level and filling joints with local sand. (PWD, P-33, Item - 1) (Grade : Crushing strength = 75 kg. / Sq.cm.)	Sqm.	50	340.00	17,000.00
9	Artificial stone in floor, dado, staircase etc. with cement concrete (4:2:1) with stone chips, laid in panel as directed with topping made with ordinary (as necessary) and marble dust in proportion (2:1) including smooth finishing and rounding off corners and including application of cement slurry before flooring works, using cement @ 1.75 kg. per Sqm. all complete including all materials and labour. (PWD, P-91, Item 3 [iii]). 3 mm. thick topping (high polishing grinding on this them is not permitted) with ordinary cement. i) 35 mm. thick	Sqm.	90	293.19	26,387.10
10	Providing and fixing nylon loop pile non-wooven carpet to the floor of the auditorium with adhesive and hardware as per approved shade, make all complete. (Birla, Heritage or equivalent)	Sqm.	90	1,291.20	116,208.00
11	25 mm. wooden planking, tongued and grooved in flooring, including fixing with iron screws complete with: i) Second class teak wood (CPWD, P-192, item 11.33.1	Sqm.	50	3,049.05	152,452.50
12	Dismantling all types of masonry excepting cement concrete plain or reinforced, stacking serviceable materials at site and removing rubbish as directed within a lead of 75 m. (PWD, P-21, Item - 1[a]) a) In ground floor including roof.	Cum.	2	318.14	636.28
13	Dismantling all type of plain cement concrete works, stacking serviceable materials at site and removing rubbish as directed within a lead of 75 m. (PWD, P-21, Item - 2[a]) In ground floor including roof. a) Upto 150 mm. thick.	Cum.	6	669.48	4,016.88
					955,063.41

Sl. No.	Description of works	Unit	Quantity	Rate	Amount Rs. P.
				B.F.	955,063.41
14	125 mm. thick brick work with 1st class bricks in cement mortar (1:4). (PWD, P-73, Item - 29). (Grade : Crushing strength = 75 kg. / Sq.cm.)	Sqm.	12	710.85	8,530.20
15	Providing and fixing of Armstrong Mineral Fibre Acoustical Suspended Ceiling System with OPTRA (BOARD) Edge tiles with Armstrong 24mm exposed grid. The tiles of Rh 95%, NRC 0.9, light reflectance >88%, Thermal conductivity k=0.032 w/m K, colour black, Fire performance class 0/class 1 (BS476 Pt: 6&7) in module size of 600X600X15mm. the grid system of Armstrong make with 24mm wide T-section flanges colour black having rotary stitching on all T sections i.e., main runner the Main Runner, 1200 mm & 600 mm Cross Tees with a web height of 43, 35 and 30mm and a load carrying capacity of 23.78 Kgs/M2. The T Sections have a Galvanizing of 120 grams per M2 & passed through 500 hrs of Salt test. (NSI)	Sqm.	290	2,044.40	592,876.00
16	Providing and fixing 25mm thick Fibre Glass Substrate-Armstrong Optra acoustic wall panels having 95% RH and NRC of 0.9 of size 600 mm. x 1200 mm . (NSI)	Sqm.	210	6,456.00	1,355,760.00
17	Wood work in door frame fitted and fixed complete including a protective coat of painting at the contact surface of the frame in all floors at any height. (PWD, P-179, Item 1 [c]). First class best Sal wood.	Cum.	0.2189	106,134.00	23,232.73
18	Dismantling of wooden wall panel. (NSI)			L.S.	3,000.00
19	Supplying solid flush type doors of commercial quality, the timber frame consisting of top and bottom rails and side styles of well seasoned timber 65mm. wide each and the entire frame fitted with 37.5mm. wide battens places both ways in order to make the door of solid core and internal lipping with Garjan or similar wood veneers using phenol formaldehyde as glue etc. complete, including fitting, fixing shutters in position but excluding the cost of hinges and other fittings. (PWD, P-259, Item 101 [a]). i) 35 mm. thick shutters (single leaf)	Sqm.	12.5	3,882.64	48,533.00
	C.O.				2,986,995.34

Sl. No.	Description of works	Unit	Quantity	Rate	Amount	
					Rs.	P.
				B.F.	2,986,995.34	
20	Supplying, fitting, fixing decorative lamination conforming to IS: 2046: 1995 as per approved make, brand, finish and thickness with fitting, fixing the same on Particle/MDF/Ply Boards with recommended / approved adhesive with proper clipping the sides for better attachment as per direction of Engineer-in-charge. The rate includes the cost of labour, adhesive and all incidental charges thereof. (PWD, P-273, item 121 [ii] In Ground Floor I) Thickness of laminate 1 mm.	Sqm.	25	1,285.68	32,142.00	
21	Painting with best quality synthetic enamel paint of approved make and brand including smoothing surface by sand papering etc. including using of approved putty on the surface if necessary. a) On timber or plastered surface (PWD, P-343, Item 8 [A] [a] [iv] i) Two coats (any shade except white)	Sqm.	10	67.63	676.30	
22	Priming one coat on timber, plastered or other metal surface with synthetic enamel / oil bound primer of approved quality including smoothing surfaces by sand papering etc. (PWD, P-343, Item 7 [a]).	Sqm.	10	30.65	306.50	
23	Door fittings: i) Brass butt hinges. ii) Brass tower bolt 250mm. x 10mm. iii) Brass mortice latch and lock 100 x 65 mm. with 6 levers and a pair of brass lever handles. iv) Brass Handle v) Brass casement stray vi) Hydraulic door closer tubular type aluminium section body.	Nos. Nos. Nos. Nos. Nos. Nos.	21 4 4 4 4 4	350.00 350.00 1,200.00 2,000.00 150.00 1,200.00	7,350.00 1,400.00 4,800.00 8,000.00 600.00 4,800.00	
24	Providing and fixing auditorium chairs with push back tilt mechanism to the floor finished with fire retardant fabre of approved make and shade all complete as per instruction.	Nos.	429	8,000.00	3,432,000.00	
Total					6,479,070.14	
Say					6,479,070.00	

THE INSTITUTE OF COST ACCOUNTANTS OF INDIA (ICAI)

12, Sudder Street, Kolkata- 700 016

General summary

Item No.	Description of work	Amount	
		Rs.	P.
1.	Civil work in Auditorium	64,79,070.00	

Rupees sixty four lakh seventy nine thousand seventy only.

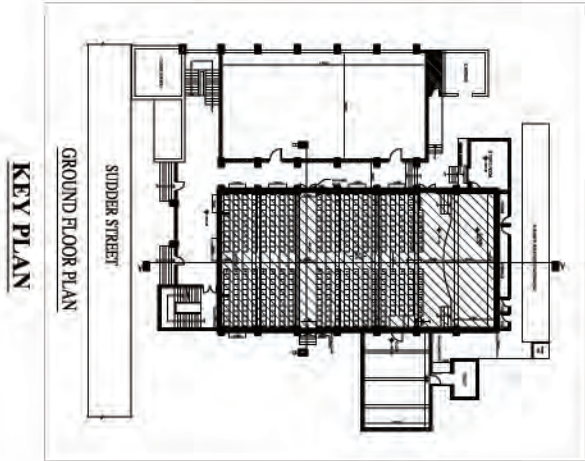
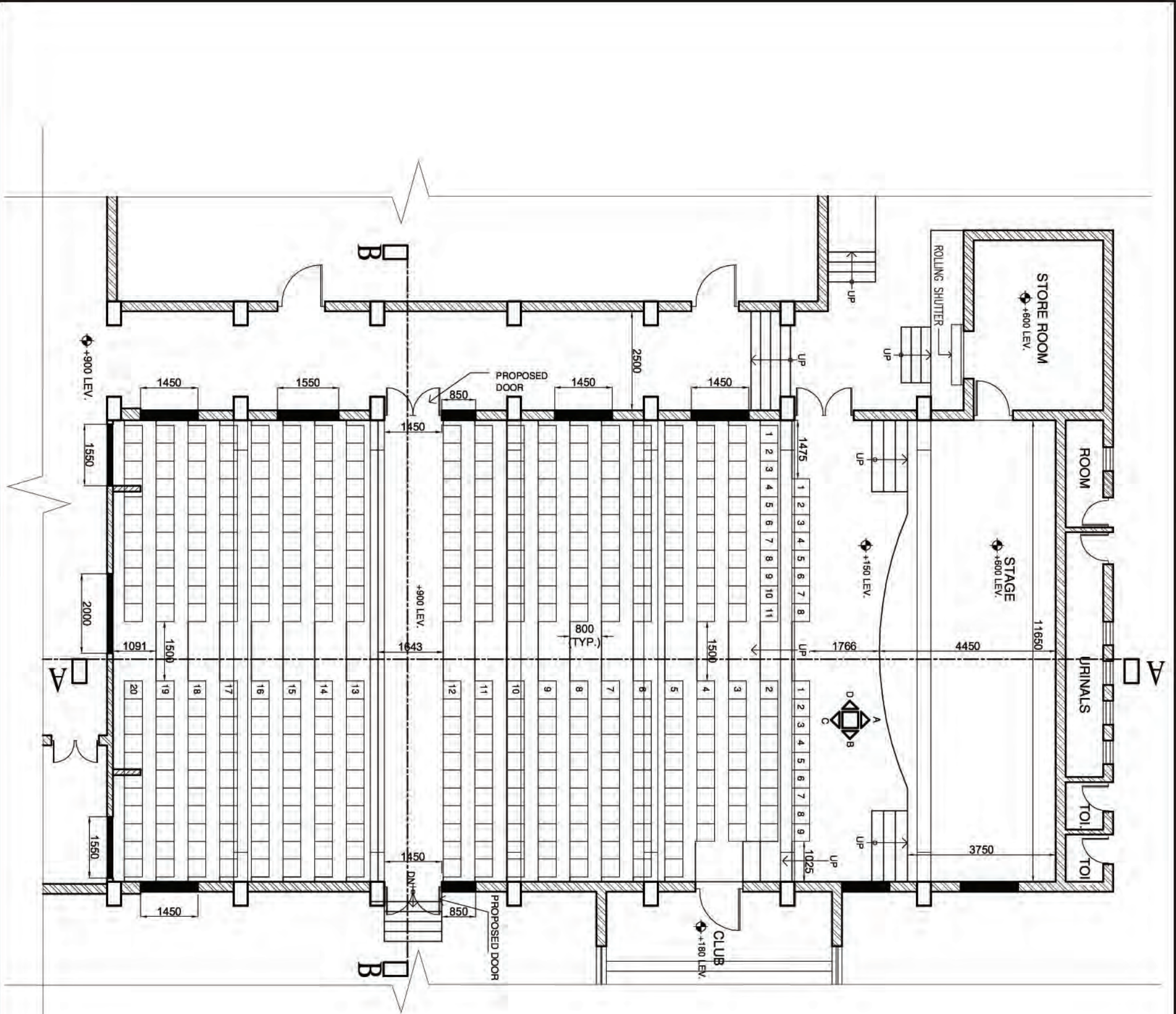
TENDER - PRICE BID

I / We agree to carry out the work mentioned in the tender at par* / _____%
(_____percent) above* / _____% (_____percent) below* the rates
shown in the specified price schedule of probable items with approximate quantities.

Signature of the Tenderer with Seal and Date

Signature of the Tender accepting Authority




* Please strike out whichever is not applicable



NOTES
 1. ALL DIMENSIONS ARE IN MILLIMETRES
 2. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED

AREA ATATEMENT :
 AREA OF AUDITORIUM = 272.52 SQM

LEGEND :

-  - EXISTING
-  - EXISTING DOORS AND WINDOWS PROPOSED TO BE FILLED UP WITH BRICKWORK
-  - TO BE DEMOLISED

PROJECT:
 PROPOSED CIVIL WORKS IN AUDITORIUM OF INSTITUTE OF COST ACCOUNTANTS OF INDIA, KOLKATA

CLIENT:
 INSTITUTE OF COST ACCOUNTANTS OF INDIA (ICAI), KOLKATA

DRAWING TITLE:
 PROPOSED LAYOUT OF AUDITORIUM IN GROUND FLOOR

PARTHA DAS & ASSOCIATES
 ARCHITECTURE, URBAN DESIGN, LANDSCAPE, INTERIORS
 A-5/7, SECTOR-4, SALT LAKE CITY, CALCUTTA-700084

ISSUED FOR TENDER PURPOSE ONLY




DATE - 4/04/2013	DESIGN - PARTHA DAS
SCALE - 1:100 @A3	CHK. BY - PARTHA DAS
DRAWN BY - SOHINI	DWG. NO. - PDA/CA/CI/INT/DAR/1

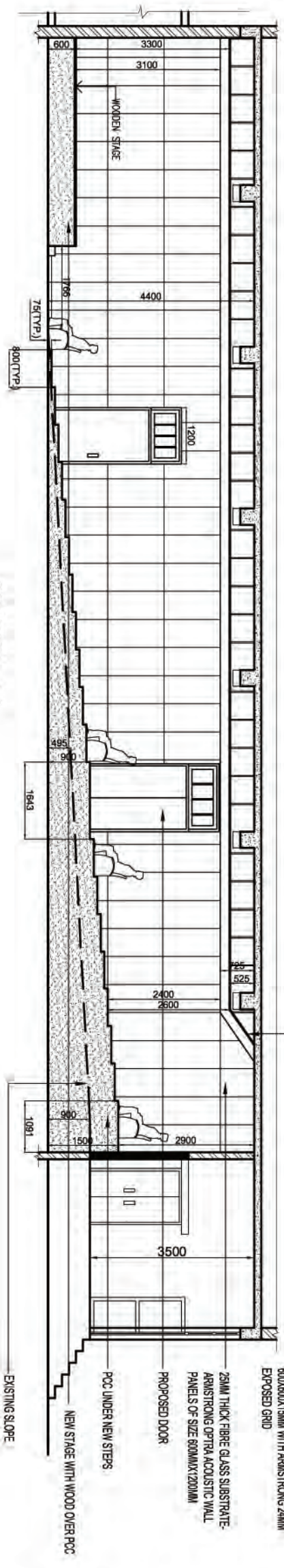
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NOTES
 1. ALL DIMENSIONS ARE IN MILLIMETRES.
 2. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED

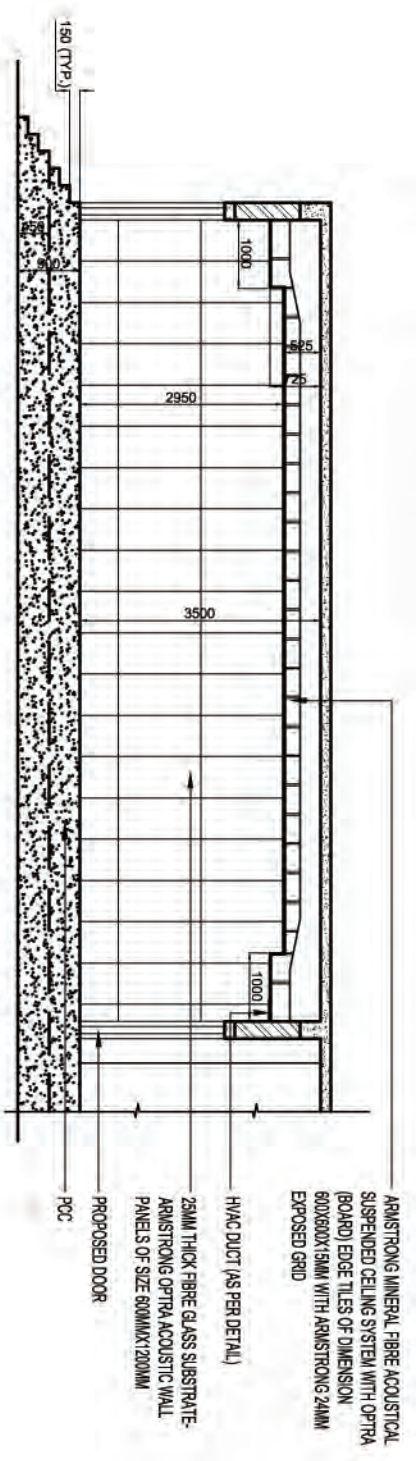
AREA STATEMENT :
 AREA OF AUDITORIUM = 272.52 SQM

LEGEND :

-  - EXISTING
-  - EXISTING DOORS AND WINDOWS PROPOSED TO BE FILLED UP WITH BRICKWORK
-  - TO BE DEMOLISHED



SECTION AA



SECTION BB

PROJECT:
 PROPOSED CIVIL WORKS IN AUDITORIUM OF INSTITUTE OF COST ACCOUNTANTS OF INDIA, KOLKATA

CLIENT:
 INSTITUTE OF COST ACCOUNTANTS OF INDIA (ICAI), KOLKATA

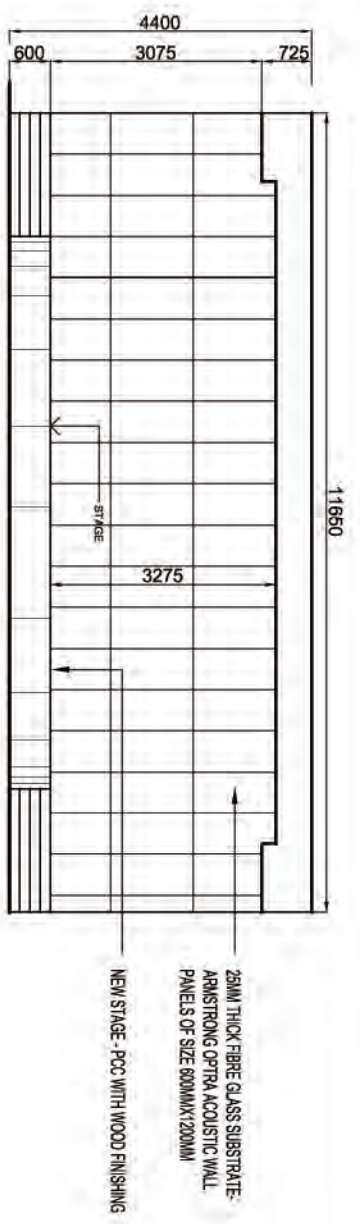
DRAWING TITLE:
 SECTIONS OF AUDITORIUM IN GROUND FLOOR

PARTHA DAS & ASSOCIATES
 ARCHITECTURE, URBAN DESIGN, LANDSCAPE, INTERIORS
 AS/77, SECTOR/1, SALT LAKE CITY, CALCUTTA-700084

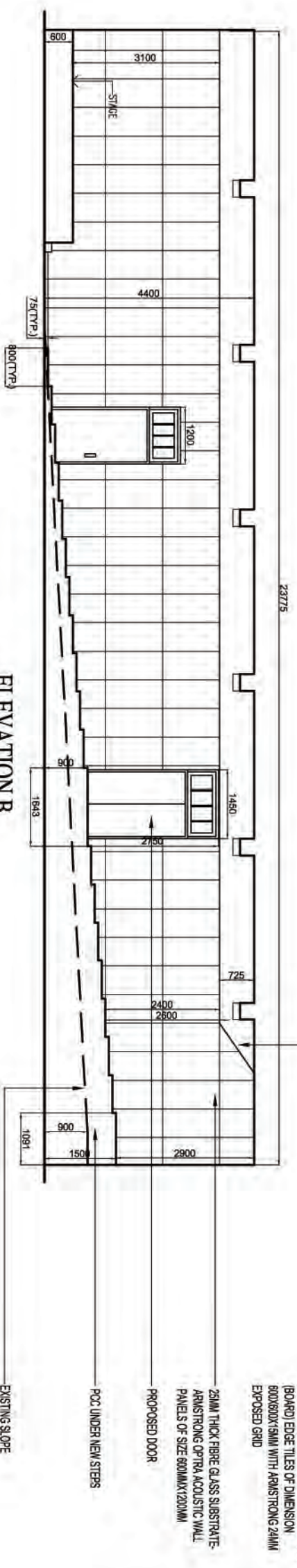
ISSUED FOR TENDER PURPOSE ONLY

DATE - 4.04.2013	DESIGN - PARTHA DAS
SCALE - 1:100 @A3	CHK. BY - PARTHA DAS
DRAWN BY - SOHINI	DWG. NO. - PDA/ICAI/CI/INT/NDAR 2

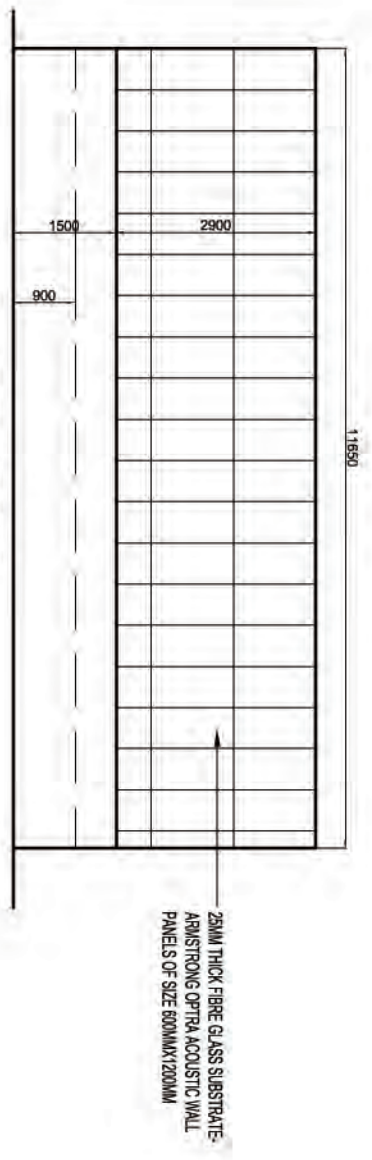
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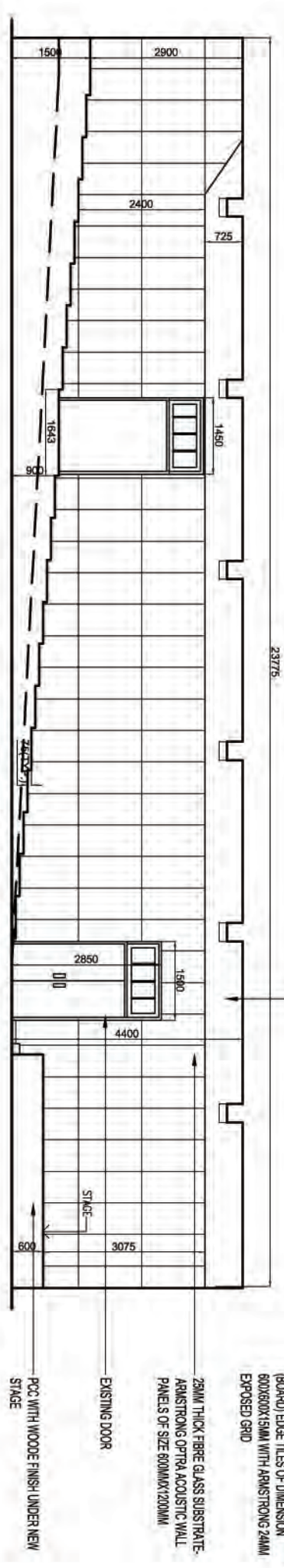
ELEVATION A



ELEVATION B



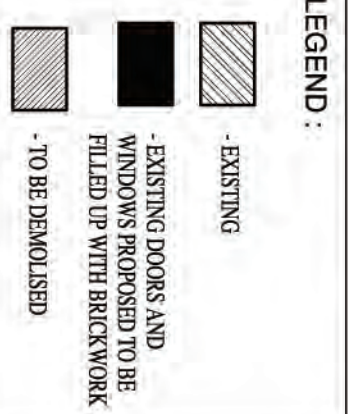
ELEVATION C



ELEVATION D

NOTES
 1. ALL DIMENSIONS ARE IN MILLIMETRES
 2. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED

AREA STATEMENT :
 AREA OF AUDITORIUM = 272.52 SQM



PROJECT:
 PROPOSED CIVIL WORKS IN AUDITORIUM OF INSTITUTE OF COST ACCOUNTANTS OF INDIA, KOLKATA

CLIENT:
 INSTITUTE OF COST ACCOUNTANTS OF INDIA (ICAI), KOLKATA

DRAWING TITLE:
 ELEVATIONS OF AUDITORIUM IN GROUND FLOOR

PARTHA DAS & ASSOCIATES
 ARCHITECTURE, URBAN DESIGN, LANDSCAPE, INTERIORS
 A/57/1, SECTOR 1, SALT LAKE CITY, CALCUTTA-700084

ISSUED FOR TENDER PURPOSE ONLY
 DATE - 4.04.2013 DESIGN - PARTHA DAS
 SCALE - 1:100 @A3 CHK. BY - PARTHA DAS
 DRAWN BY - SOHINI DWG. NO. - PD/CA/CI/WT/ND/AR 3