

THE TAMILNADU HANDLOOM  
WEAVERS' CO-OPERATIVE  
SOCIETY LTD.,  
350 PANTHEON ROAD, EGMORE,  
CHENNAI – 600 008

## TENDER SCHEDULE

Name of the Work: **Construction of Show room Building in  
old survey no.747,New Survey ward A Block45,Town  
Survey No.160 Hosur-Bagalur Main Road,Hosur Town.**

## INVITATION TO TENDERER

1.1 Sealed tenders on item rate basis are invited in the prescribed form by the Managing Director Co-optex, Head Office, 350 Pantheon Road, Egmore, Chennai 600 008.

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Tender No	Nature of Work	Earnest Money Deposit	Time of completion
1	Construction of Co-optex Show room Building in Old Survey No.747, New Survey Ward A Block 45, Town Survey No 160 Hosur-Bagalur Main Road, Hosur Town.	90000/-	9 months

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1.2 The work as detailed in this tender shall be executed and completed in all respects within, the stipulated period in accordance with the Tender Documents, Bill of Quantities, Drawings and instructions, to the satisfaction of the Engineer and Employers.

1.3 The tenderer is required to deposit Rs.90000/- as EARNEST MONEY along with the tender in the form of crossed Demand Draft payable at TNHWCS LTD, Chennai. The earnest money will be refunded without any interest to the unsuccessful Tenderers.

1.4 Tenders filled in the prescribed form should reach the Office of the Tamilnadu Handloom Weavers Co-operative society Ltd, Chennai on 03.03.2017 15 hrs by sealed covers and super scribed with name of the work and the Tender. would be opened on the same day 16.00 Hrs.

1.5 Rates must be quoted Contracted rate accepted by the CO-OPTEX  
Rs. for complete work at site, Inclusive of all cost, Taxes, any  
other charges etc. All charges like Sale tax, Work contract tax, ESI  
charges etc would be borne by the contractor and employer will not  
entertain any claim whatsoever in this respect.

1.6 The tender shall remain valid for acceptance by the employer for the  
period of three months from the date of opening the tender.

1.7 The security amount and The Retention Money will be refunded  
without any interest. as per the schedule mentioned.

1.8 The Defects liability period will be 1 year from the date of completion of  
work. Any defects found during this period in the various jobs executed by  
the contractor will have to be rectified by him, without any extra charges.  
In case the employer finds that the contractor has not carried out the  
rectification, then he is at liberty to get the same executed by another  
contractor and adjust the amount spent from the Security Deposit of the  
main contractor.

The earnest money of the successful Tenderer will be forfeited in the  
event of his refusal/ delay in starting the work. The decision of Co-optex MD  
will be final in this.

1.9 Tender documents (complete) duly filled and signed by the tenderer shall  
be submitted as the tender for the work.  
*Co-optex* does not bind themselves to accept the lowest or any tender, or  
to assign any reason thereof and also reserves the right of accepting the  
whole or part of the tender. The tenderer in such an event will be bound  
to perform the contract at the same rates as quoted in the tender for  
various works. Any item is liable for alteration at the discretion of the  
Engineer of the Co- optex ,if required.

- 1.10 Canvassing in any form in connection with the tender is strictly prohibited and the tenders submitted by the contractor who resorts to canvassing in any form will be liable for rejection.
- 1.11 The tendering signs in case the tender is a partnership firm, Shall submit the tender signed by all the partners.
- 1.12 On acceptance of the tender, the Contractor shall intimate the name of his accredited representative who would be the responsible for taking instructions from the Engineer and carrying out the work.
- 1.13 The successful Tenderer will extent full co-operation with the other contractors appointed by the Co-optex, so that the work shall proceed smoothly. The main responsibility of the overall completion of the work in time will he with the furnishing Contractor.
- 1.14 The successful Tenderer will need to sign the agreement, three sets; on stamp paper of Rs.100/- only. Tenderer failure to make such an agreement with- in stipulated time frame will amount to non-acceptance on his part. In this the Co-optex will have the right to revoke the acceptance of tender without any further notice to the Tenderer.

## Instruction to Tenderer

2.1 The tenderer is advised to visit and inspect the site at his own cost and responsibility And to secure all necessary information which may be required for completing the tender. Ignorance of site conditions or local information shall not be considered as an excuse for non-performance of the contract or any increase in the rates quoted by him.

2.2 The tenderer shall examine carefully all the tender documents consisting of:

- Invitation to Tenderers
- Instruction to Tenderers
- General and special condition of contract.
- Schedule of Quantities
- Set of Drawings

All the above shall form part of agreement.

2.3 Time is the essential of contract and the tenderers are required to complete the Works in all respects to the satisfaction of the Managing Director of co-optex with in the stipulated time.

2.4 The tender should contain the rates and the amounts (both in figures and in words), in the prescribed column of the BOQ. All the items should be totalled up in the end. All corrections should be duly attested by the Tenderer. In case of any discrepancy between rates and amounts, the lower value will be taken for the finalizing of the tender amount.

I enclose a Demand Draft for Rs.90,000/- ( Rupees Ninety thousand only) on Bank, DD. No. ----- dt -----, payable at Chennai in favour of The Tamilnadu Handloom Weavers Co-operative society Ltd as Earnest Money Deposit and fully understand that this amount will not bear any interest.

**We further enclose the following documents:**

- i. Partnership deed, Articles of Association & Power of attorney, as applicable. We agree that no change will be made in these documents without prior approval of CO-OPTEX.
- ii. Tender documents duly signed.
- iii. Details of my firm.
- iv. Latest IT C. C.

Date

Yours Faith fully,

Signature of Tenderer

Office stamp with seal

## FORWARDING LETTER

**FROM:**

**TO**

**The Managing Director,  
Tamilnadu Handloom Weavers' Co-operative Society Ltd,  
350. Pantheon Road, Egmore,  
CHENNAI.600 008**

- 1 **Ref:** Co-optex – Construction of Co-optex Show room Building in Old Survey No.747, New Survey Ward A Block 45, Town Survey No 160 Hosur-Bagalur Main Road, Hosur Town

Dear Sir,

With reference to the tender invited by you, I hereby offer to perform, provide, execute and complete the work in conformity with conditions of contract, drawings and specifications for the respective items of schedule of quantities attached hereto.

I have satisfied ourselves as to the location and prevailing conditions of the site and have read carefully the Articles of Agreement, Conditions of Contract, Specifications, General and Special Conditions, Technical Specifications, etc., I understand that the works are to be completed within 9 months from the date of issue of letter / Order and fully understand that time will be the essence of the contract.

Signature of Tenderer

Office Seal with stamp

## General Condition of Contract

### DEFINITION

In the contract, the following words and expressions shall have the meaning thereby assigned to them unless the contract described a different meaning.

- a. **EMPLOYER** means CO-OPTEx and includes their authorised representatives to deal with any matter on their behalf.
- b. **ENGINEER** means the engineer employed by CO-OPTEx to give consultancy.
- c. **CONTRACTOR** means in the Individual, firm or Company with whom the contract is entered into and includes the heirs executors or successors.
- d. **The expressions contract** means the document forming the Tender and Acceptance tender and included all the section of the Tender including BOA and drawings.
- e. **Tender** means the offer made by an individual of firm of company for execution of the works.
- f. **Acceptance of Tender** means the letter from the employer communicating to the Tenderer the acceptance of this tender and include the advance acceptance of his Tender.
- g. **Drawings** means the drawings referred to in the Tender documents including any modifications of such drawings approved in writing by the Engineer or his representative and such other drawings as are made from time to time and furnished by the contractor and approved by the Engineer.
- h. **Site** means the actual place as described in the tender at which the execution of work uses to be done with the surroundings areas.
- i. **A Week shall** means 7 days without regard to the number of Hrs worked in a day in that week.



- j. **Specifications** means standard specifications for works and materials brought out in the tender, and added to or super ceded by special specifications. In absence of any specifications for any item of work the relevant specifications in Tamilnadu PWD or works manual shall be followed and work be executed accordingly.

## **GENERAL CONDITION OF CONTRACT**

### **Reference to Tamilnadu Building Practice:**

- 1.1 It is intended by these Tamilnadu Building practice to describe -
  - a. the character of the materials to be used.
  - b. the method of execution of work and
  - c. the contractor's responsibilities and liabilities to the public, Government and its workmen and general contract conditions which are to be accepted by every contractor who executes work entrusted to him by the Corporation
- 1.2 Wherever the term 'Standard specifications' or "Specifications" or the abbreviation "TNBP No." or "TNBP" is used in the specifications or in estimates or contract documents, it shall refer to the relevant specifications in the Tamilnadu Building practice.
- 1.3 The abbreviation "I.S" shall mean "Indian Standard".
- 1.4 The abbreviation TNHWCS Ltd., shall mean Tamilnadu Handloom Weavers' Cooperative Society Ltd.,

## **2. Applicability of the Tamilnadu Building Practice**

- 2.1. It shall be unnecessary to include in any contract documents a specification for any item of work, which is defined in the tender notice in the contract of work to be done by a Tamilnadu Building Practice number (TNBP No.), the fact that the term is defined as specification, shall mean that the contractor is to execute the work according to such specification modified as may be necessary by an addendum specification for that particular item of work. In the absence of specification for any work or material in the T.N.B.P. such work should be carried out in accordance with the instructions given by the Managing Director.
  - 2.1.1 THESE GENERAL CONDITIONS OF CONTRACT SHALL APPLY TO ALL AGREEMENTS ENTERED INTO BY CONTRACTORS WITH THE TNHWCS LIMITED and

shall form an inseparable condition of contract, and it shall not be necessary to append a copy of the same to the agreement.

Signature of the contractor

**1. Contractor to sign copy of the T.N.B.P.**

3.1.1. Every contractor who executes work for the Renovation work shall carefully study the specification for all items of work which are included in the schedule for work to be done and his obligation under the 'General condition of contract' which apply to all agreements.

3.2. It shall not be necessary for the contractor to sign the copy of the T.N.B.P. for every contractor awarded to him, but his signature therein will be evidence that he accepts the conditions of contract (Which include the standard specifications) as detailed in the T.N.B.P for every contract into which he enters. It shall also be the contractor's responsibility by frequent perusal of the copy to become conversant with sanctioned alterations or additions made to the T.N.B.P maintained in TNHWCS in which will be entered all sanctioned alterations or additions. This must also be studied and signed by every contractor before executing any agreement. Interleaving correction slips will not be made for this purpose. The contractor should purchase book of the T.N.B.P. for his reference while executing work.

**4. Additions and alterations to the T.N.B.P.**

4.1. Additions and alterations to the T.N.B.P will be incorporated in the addenda volume.

**5. Power of MD:** The MD, TNHWCS Ltd., may alter the specification for any particular contract which is within his respective power of sanction, when such alteration is found necessary by attachment of a correction sheet to the contract. Similarly additional specifications for items for which there are no standard specifications will be made by attachment to the contract documents of addendum specifications sheets bearing the signature of the MD, TNHWCS Ltd., as the case may be and the signature of the contractor.

## **B. DEFINITIONS AND INTERPRETATIONS**

### **6. Evidence of experience:**

Tenderer shall, if required, present satisfactory evidence to the MD, TNHWCS Ltd that they have been regularly engaged in construction of such works, as the proposed one and that they are fully experienced with the necessary capital, machinery and materials to begin the work promptly and to conduct it as required by the T.N.B.P. and the other specifications for the particular work it tendered for, in the event of their tender being accepted.

## **C.DRAWINGS AND SPECIFICATIONS**

### **7. Purpose:**

7.1. The Contract drawings if any, read together with the contract specifications are intended to show and explain the number of executing the work and to indicate the type and class of materials to be used.

### **8. Conformance:**

8.1. The works shall be carried out in accordance with the drawings and specifications, which form and of the contract and in accordance with such further drawings, details and instructions, supplementing or explaining the same as may from time to time be given by the MD, TNHWCS Ltd.,

8.2. If the work shown on any such further drawings or details, or other work necessary to comply with any such instructions, directions, or explanations, be in the opinion of the contractor, of a nature which the schedule rate in the contract does not legitimately cover he shall before proceeding with such work, give notice in writing to this effects to the MD, TNHWCS Ltd.,

In the event of the MD, TNHWCS Ltd., and contractor that the contractor is not there is any excess rate to be fixed and the MD, TNHWCS Ltd., deciding that the contractor is to carry out the said work, the contractor shall accordingly do so, and the question whether or not there is any excess and if so the amount thereof, shall failing agreement, be settled by an arbitrator as provided in the arbitration clause, unless the subject is one which is left to

the sole discretion of the MD, TNHWCS Ltd., under the clauses of these conditions of contract and the contractor shall be paid accordingly.

- 8.3. It shall be the responsibility of the contractor to give timely notice to the MD, TNHWCS Ltd., regarding anything shown on the drawings and not mentioned in the specification, or mentioned in the specifications and not shown in the drawings or any error or discrepancy in drawings of specifications and obtain his orders thereon. Figure dimensions are to be taken and not those obtained from sealing the drawings. In any discrepancy between drawings and specifications, the latter shall prevail. In any such cases or in case any feature or the work is not fully described and set forth with the drawings and specifications, the contractor shall forthwith apply to the MD, TNHWCS Ltd., for such further instructions, drawings or specifications as he requires it, being understood that the subject is to be dealt with under the building procedure of best modern practice. he MD, TNHWCS Ltd., will furnish the further instructions, drawings or specifications if in his opinion, competent workmen, for the execution of the work, require them.

## **9. Variations in Quantities**

Please refer Article 1.10 of Tender Notice

- 9.1. For all modifications, omissions from or additions to the drawings and specification, the MD, TNHWCS Ltd., will issue revised plans, or written instruction or both, and no modifications, omissions or additions shall be made unless so authorized and directed by the MD, is writing.
- 9.2. The MD, TNHWCS Ltd., shall have the privilege of ordering modifications, omissions or additions at any time before the completion of the work and such orders shall not operate to annual these portions of the specifications with which said changes do not conflict.
- 9.3. The contractor shall submit to the MD, TNHWCS Ltd., a statement giving details of the claims for any additional work within 30 days of the order of the work and no claim for any such work will be considered which has not been included in the statement.

## **9.4. Copies of drawings and specifications:**

- 10.1. One copy of the available drawings and specifications (apart from the T.N.B.P a copy of reference) shall be furnished free of cost to the contractor for his

own use. Such copies of supplementary details furnished by the MD, TNHWCS Ltd., shall be kept by the contractor on the work until the completion thereof and MD, TNHWCS Ltd., shall at all times have access to them.

**11. Signed drawings:**

- 11.1. No signed drawing shall be taken as in itself an order for variation, Unless either it is entered in the agreement schedule of drawings under proper attestation of the contractor and the CIVIL Engineer, TNHWSC or unless it has been sent to the contractor by the MD, TNHWCS Ltd., with a covering letter confirming that the drawing is an authority for variation of the contract under reference.

**D. MATERIALS AND WORKMANSHIP**

**12. Quality of the Materials:**

- 12.1. All materials, articles and workmanship shall be as per ISI specifications for the class of work described in the contract specifications and schedule, materials being obtained from source approved by the Managing Director, TNHWCS Ltd., The word 'ISI' as used in these specifications shall mean, that in the opinion of the Managing Director, TNHWCS Ltd., there is no other superior quality of materials or finish of articles on the market and that there is no better class or workmanship available for the nature of the particular item described in the contract schedule. The contractor shall upon the request of the Managing Director, furnish him with the vouchers to prove that the materials are such as are specified.
- 12.2. Samples of materials shall be furnished at the contractor's expense to the Managing Director, TNHWCS Ltd., when called for in the tender notice or ordered to be furnished by the Managing Director, TNHWCS Ltd., prior to execution of any work.

**12. Conventions for proportions:**

13.1. Wherever the proportions are written by figures without further description and where the meaning is otherwise clear as to which figure is intended to apply to each material, then the usual conventions will be understood to apply.

1:2 Means 1 time (or cement in accordance with the context) and 2 sand.

1:2:4 means 1 time (or cement in accordance with the context) 2 sand and 4 broken stone (or other aggregate in accordance with the context)

**14. Measurement and mixing:**

14.1. In the case of loose materials such as lime, sand, cement, broken stone, surki, mortar, etc., the proportions demanded by the specifications must be measured in properly constructed measuring boxes or weighed or in such other manner as shall be instructed by the Managing Director, TNHWCS Ltd., Measurement is not to be done in loose heaps when intimate mixtures such as mortar, concrete, etc., are to be formed. The mixing must always be done closely constructed platforms so that there will be not leakage of any of the materials through the floor of the platform and also that no foreign materials can be incorporated during the mixing. The Managing Director, TNHWCS Ltd., must approve these platforms. The cost of such measuring boxes and platforms and all the work referred to herein shall be borne by the contractor.

**15. Layout of materials stacks:**

15.1. The Contractor shall deposit materials for the purpose of the work on such parts only on the ground as may be approved by the Managing Director, TNHWCS Ltd., He shall submit for the approval of the Managing Director, TNHWCS Ltd., before starting work, a detailed site survey clearly indicating positions and areas where materials shall be stacked and sheds built.

16. Test inspection and rejection of defective materials and works:

16.1. The Contractor shall provide proper facilities at all for the testing of materials and inspection of the work by the Managing Director, and the Managing Director, TNHWCS Ltd., Shall according by also have access at all times to the places of storage or manufacture is proceeding in accordance with the drawings and specifications.

16.2. The Contractor shall upon demand also forward for the Managing Director, TNHWCS Ltd., inspection, test certificate supplied by the vendors, when he is



purchasing consignments of cement, steel and other materials in respect of which such certificate are usually available.

- 16.3. The Managing Director, TNHWCS Ltd., shall have power to reject at any stage, any work which he considers to be defective in quality of materials or workmanship and he shall not be debarred from rejecting wrought materials by reasons of his having previously passed them in an unworked condition. Any portion of the work or materials rejected or pronounced to be inferior or not in accordance with the drawings and specifications, shall be taken down and removed from the work site at the contractor's expense, within 24 hours after written instructions to that effect have been given by the Managing Director, TNHWCS Ltd., Replacement shall at once be made in accordance with the specifications and drawings at the contractor's expense.
- 16.4 In case of default on the part of the contractor to carry out such orders, the Managing Director, TNHWCS Ltd., shall have power to employ and pay other persons to carry out the orders at the contractor's risk and all expenses consequent thereon and incident thereto shall be borne by the contractor.
- 16.5. In lieu of erecting work not done in accordance with the contract the Managing Director, TNHWCS Ltd., may allow such work to remain, and in that case shall make such allowance for the difference in value, as in his opinion may be reasonable.
- 16.6. **Works Opened for inspection:** The Contractor shall at the request of the Managing Director, TNHWCS Ltd., within such time as the Managing Director, TNHWCS Ltd., shall name open for inspection any work covered up; and should the contractor refuse or neglect to comply with such a request, the Managing Director, TNHWCS Ltd., may employ other workmen to open up the same. If the said work has been covered up in contravention of the Managing Director, TNHWCS Ltd., instructions, or if on being opened up, it is found not in accordance with drawings and specifications or the written instructions of the Managing Director, the expenses of opening it and covering it up again, whether done by the contractor or such other workmen, shall be borne by, or recovered from the contractors. If the work has not been covered up in accordance with the instructions or if on being opened up it be found to be in accordance with the drawings and specifications of the written instructions of the Managing Director, TNHWCS Ltd., the expenses

aforesaid shall be borne by TNHWCS Ltd., and shall be added to the contract sum, provided always that in the case of foundations, or any other urgent works so opened up and requiring immediate attention the Managing Director, TNHWCS Ltd., shall within reasonable time after the receipt of a notice from the contractor that the work has been opened, make or cause other inspection there of to be made, and at the expiration of such time if such inspection shall not have been made, the contractor may cover up the same, and shall not be required to open it up again inspection except at the expense of government.

**17. Defects, shrinkages, etc., after completion:**

17.1. Any defects, shrinkage or other faults which may appear within one year from the completion of the works arising, in the opinion of the Managing Director, TNHWCS Ltd., from faulty materials or workmanship not in accordance with the drawings and specifications or the instructions of the Managing Director, TNHWCS Ltd., shall upon the directions in writing of the Managing Director, TNHWCS Ltd., and within such reasonable time as shall be specified therein, be amended and made good by the contractor at his own cost, unless the MD, shall decide that the contractor ought to be paid for the same at the rates agreed on such reduced or other rates as the MD, TNHWCS Ltd., may fix and in case of default, the Managing Director, TNHWCS Ltd., may employ and pay other persons to amend and made good such defects, shrinkage or other faults or damage, and all expenses consequent thereon and incidental thereto shall be borne by the contractor.

17.2. Provided that in the event of taking over portions of the works as and when they are completed the liability of the contractor under this clause shall extent to a period of six months from the date of final taking over of the work irrespective of the actual dates on which portion of the works were taken over.

**18. Managing director, TNHWCS decision:**

18.1. To prevent disputes and litigation, is shall be accepted as an inseparable part of the contract that in matters regarding materials workmanship, removal of improper work, interpretation of the contact drawings and contract

specifications, mode of procedure and the carrying out of the work, the decision of the Managing Director, shall be final and binding on the contractor and in any technical questions which may arise touching the contract, the Managing Director, TNHWCS Ltd., decision shall be final and conclusive.

19. Dismissal of workmen:

19.1. The contractor shall employ in and about the execution of the works only such persons as are careful, skilled and experienced in their several trades and callings and the Managing Director, TNHWCS Ltd., shall be at liberty to object to and request the contractor to remove from the works any person employed by the contractor in or about the execution of the works who in the opinion of the Managing Director, misconduct himself or is incompetent or negligent in the proper performance of his duties and such persons shall not be again employed upon the works without the permission of the Managing Director.

#### **E. GENERAL OBLIGATION**

#### **20. Contractor's mastery of agent and contractor's staff.**

20.1 The contractor shall in his own absence keep constantly on the works a competent mastery or agency and any directions or explanations given by the Managing Director, TNHWCS Ltd., or his representatives to such mastery or agent shall be held to have been given to the contractor.

20.2 The contractor shall further provide all staff, which is necessary for the proper supervision, execution and measurement of the work to ensure full compliance with the terms of the contract.

#### **21. TNHWCS or Representative**

21.1 The TNHWCS Ltd., may be represented on the work by any authorized representative. He (if appointed) shall in the absence of the Managing Director, TNHWCS Ltd., furnish the contractor with the Managing Director's instructions of the works and the contractor shall duly comply with such instructions and directions and shall on the written requisition of the mastery clerk of works or agent, stay the further progress of any portion of the works which in his judgment is being constructed with unsound or improper material or workmanship, until the opinion

and determination of the Managing Director, TNHWCS Ltd., shall be obtained thereon, but such mastery clerk of works or agent is to have no power whether to order any extra works or deviation from the specifications and drawings.

## **F. CONTRACT RATES**

### **22. Defining contract schedule rates:**

22.1 The rate entered in a contract schedule for any class of work shall be for finished work in site and shall include all contingent expenses whether direct construction expenses involved in the building in place in accordance with the drawings and specifications or whether they be expenses imposed by and outside authority such as a local body<sup>o</sup> Such contingent expenses shall not entitle the contractor to claim an extra in respect thereof.

### **23. Carriage:**

23.1. Rates for finished work shall always include the cost of conveyance and all leads lifts, loading, unloading and stacking in the manner and at the place ordered by the officer in immediate charge of the work, unless circumstances necessitate provisions for a separate schedule item in which class such will be specified in the tender notice or schedule.

23.2. Wherever the term Carriage or Conveyance is used in a schedule item it shall in the absence of other schedule provisions or modifying description in the specification, be taken to include all leads, lifts, loading, unloading and stacking in uniform stacks to the satisfaction of the Managing Director, TNHWCS Ltd., with careful attention to close packing in the case of materials which are to be measured in stacks as a basis of payment for finished work.

### **24. Construction Plant:**

24.1 The contractor shall include in his tendered price and shall provide and install all necessary plant and shall use such methods and appliances for the performances the construction operations connected with the work embraced under the contract as will secure a satisfactory quality of work and stage of progress which, in the opinion of the Managing Director, TNHWCS Ltd., will

ensure the completion of the work within the time specified.

If at any time before the commencement, or during the progress of the work, or any part of it such methods or appliances appear to the Managing Director, TNHWCS Ltd., to be insufficient or inappropriate for securing the quality of the work required or the said rates of progress the Managing Director may order the contractors to increase their efficiency or to improve their character and the contractor shall comply with such orders but the failure of the Managing Director, TNHWCS Ltd., to demand such increase of efficiency or improvement shall not relieve the contractor from this obligation to secure the quality of work and the rate of progress required by the contract and the contractor alone shall be responsible for the efficiency and safety of his plant, appliances and methods.

- 24.2 It is however open to the Managing Director, TNHWCS Ltd., to lend or supply to the contractor any tools, implements, materials and machinery that the Managing Director, TNHWCS Ltd., may consider desirable but for any such tools, implements, materials and machinery that may be lent or supplied to contractor by, the contractor shall pay such deposit and hire, or purchase price as may be determined by the MD,. All articles that may so lent or hired to the contractor shall be returned in good serviceable condition by him to the TNHWCS Ltd., before the final bill for work is paid and any shortage or damage shall be recovered from the contractor in the final bill at such rate as may be determined by the MD, after making such allowances he may consider suitable for fair wear and tear.

**25. Scaffolding instructions:**

- 25.1 All requisite scaffolding shall be provided at the contractor's expenses and shall be double i.e. it must have two sets of upright supports. Care must be taken to ensure the safety of the work people and the contractor must comply with such instructions as the Managing Director, TNHWCS Ltd., may issue to ensure such safety. The contractor will be entirely responsible for any damage or injuries to persons or property resulting from ill erected scaffolding defective, ladders or otherwise arising out of his default in his respect. The contractor's attention is also invited to the safety code.

**26. Temporary Structure:**

**26.1** The contractor shall erect and maintain at his own cost temporary weather proof sheds at such places and in a manner approved by the Managing Director, for keeping materials under cover. The contractor shall also provide and maintain at his own expenses such temporary fences, guards, bridges and road as may be necessary for the execution of his contract work or for safeguarding or accommodating the public if the Managing Director, TNHWCS Ltd., shall order any departure, he shall comply with such orders as the Managing Director, TNHWCS Ltd., may issue to safeguard or accommodate the public, the sheds for housing workmen shall be provided at the contractor's expenses if, in the opinion of the Managing Director, TNHWCS Ltd., such are necessary or desirable.

**27. Water and lighting**

**27.1** The contractor shall pay all fees, provide water, and light as required from municipal mains or other sources and shall pay all charges therefore (including storage tanks, meters, etc) for the use of the work and workmen unless otherwise arranged and decided on, in writing with the MD, The water for the works shall be, so far as practicable, free from earth vegetable, or organic matter and from salts or other substances likely to interfere with the setting of mortar otherwise prove harmful to the work.

**28. Sun protection, keeping dry and pumping:**

**28.1** The contractor shall at his own expenses arrange all requisite protection of the work and materials against sun or rain effects and shall keep all portions of the work free from water to the satisfaction of the Managing Director, TNHWCS Ltd., and shall use his own plant for the purpose unless otherwise specifically provided in the contract specification.

**29. Tolls and Taxes**

**29.1** The contractor shall unless otherwise specifically stated in the tender notice and subsequently on this basis in the contract be responsible for the payment wherever payable of all import duties, tolls, octroi duties, quarry fees, etc, on all materials and articles that he may use.

- 29.2 The contractor shall be solely responsible for the payment of sales tax under the provision of the Chennai General Sales Act, 1939 (Chennai act IX of 1939) as in force for the time being and the rates for the various items of the work shall remain unaffected by any change that may be made from time to time in the rate at which such tax is payable.
- 29.3 The contractor shall pay quarry charges due for use of private quarries and private land.
- 29.4 The contractor shall form his own approach road to the work site for which no extra will be due to him. On completion the contractor shall not be permitted to remove the materials laid for formation of road. If the contractor is allowed to use the existing roads he shall maintain them in good condition at his own cost through out the period of the contract.

30. **Setting out Works:**

- 30.1 The contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position levels, dimension and alignment of all parts of the works and for the provision of all materials, staff and labour in connection herewith.

31. **Cleaning up during progress and for delivery**

- 31.1 All rubbish shall be burnt or removed from the site, as it accumulates. All floors, stairs, landing windows, surface and soil drains shall be cleaned down and put in a thoroughly complete clean, sound and workman like state to the satisfaction of the Managing Director, before the work is finally handed over. All rubbish and surplus materials not required by the Managing Director, TNHWCS Ltd., having first been removed by the contractor. The contractor shall give notice in writing to the Managing Director, TNHWCS Ltd., when the work is so ready to be handed over, and shall be responsible for its maintenance until it is taken over by the Managing Director,

**G. RESPONSIBILITIES AND LIABILITIES OF THE CONTRACTORS**

32. **Observance of laws, local regulations and notice attachments:**

- 32.1 The contractor shall conform to the regulations and by laws of any local

authority and or of any water or lighting companies with those systems the structure is proposed to be connected and shall before making any variations from the drawings or specifications that may be necessitated by so conforming given to the Managing Director, TNHWCS Ltd., written notice, specifying the variations proposed to be made and the reasons for making them and apply for instructions thereon~ In case the contractor shall not receive such instructions within 7 days he shall proceed with the work conforming to the provisions regulating or by law in question and any variation in the drawings or specifications so necessitated shall be dealt with under clause 9 of General Conditions of Contract.

The contractor shall give all notices required by the said act, regulation or by laws and pay all fees in connection therewith unless otherwise arranged and decided on in writing with the Managing Director, TNHWCS Ltd., He shall also ensure that no attachments are made against materials of work forming part of or for the use of the contract. In every case referred to in this clause the contractor shall protect and indemnify Government against any claim or liability arising from or based on the violation of any such law ordinance, regulation orders decree, or attachment whether by himself or by his employees, The violation of any such law ordinance, regulation order, decree, or attachment whether by himself or by his employees.

### **33. Accidents -hoarding - Lighting observations -Watchmen**

- 33.1 When excavations have been made or obstacles have been put in public thoroughfares or in places where there is any likelihood of accidents, the contractor shall comply with any requirement of law or the subject, and shall provide suitable hoardings, lighting and watchmen as necessary.
- 33.2 It shall be the contractor's sole responsibility to protect the public and his employees against accidents from any cause and he shall indemnify Government against any claims for damages for injury to person or property, resulting from any such a claim and shall where the of the workmen compensation act apply, take steps to properly insured against any claims there under.
- 33.3 On the occurrence of accident which result sin the death of any of the workmen employed by the contractor or which is so seriousness as to be



likely to result in the death of any such workman the contractor shall within 24 hours of the happening of such accident, intimate in writing to the concerned officer of the fact of such accident resulting directly or indirectly from his failure to give intimation in manner aforesaid including the penalties of fines if any payable by as a consequence of failure to give notice under the workmen's compensation act or otherwise conform to the provisions of the aid act in regard to such accidents.

- 33.4 In the event of an accident in respect of which compensation may become payable under the workmen's compensation act VIII of 1923 whether by the contractor or by the as principle it shall be lawful for the MD, TNHWCS Ltd., to retain out of money due to and payable to the contractor such sum or sums of money as may, in the opinion of the said MD be sufficient to meet such liability. The opinion of the MD, shall be final in regard to all matters arising in this clause.
- 33.5 The contractor shall indemnify from and against all claims and proceedings for or on account of infringement of any pattern rights, design, trade mark, or name of other protected rights in respect of any constructional plant, machine work or material used of road in connection with the works or temporary works, or any of them and from and against all claims, demands, proceedings, damages, costs, charges and expenses whatsoever in respect thereof in relation thereto.
- 33.6 In respect of all directly employed in the works for the performance of the contractor's part of this agreement, the contractor shall comply with or caused to complied with all the rules framed by the from time to time for the provision of health and sanitary arrangements to workers employed by and their contractors (vide appendix). In case the contractor fails to make arrangements and provide necessary facilities as aforesaid the Managing Director, TNHWCS Ltd., shall be at liberty to make arrangements, provide facilities as aforesaid, and recover the costs incurred in that behalf from the contractor.
- 33.7 In respect of all labour directly or indirectly employed in the works for the performance of the contractor's part of this agreement, the contractor at his own expense shall arrange for the safety provision as per "safety code" framed from time to time and shall at his own expense provide for all facilities in connection therewith. In case the contractor fails to make arrangements,

provide facilities as aforesaid, and recover the costs included in that behalf from the contractor.

- 33.8 In respect of all labour directly or indirectly employed in the work for the performance of the contractor's part of this agreement the contractor shall arrange furnish in triplicate particulars for each work in the Performa vide appendix XXXVIII by the end of every month to the Managing Director, in charge of the work.

**34. Permit other workmen - co- operation - Afford facilities:**

- 34.1 The Managing Director, TNHWCS Ltd., shall have full power to send workmen upon the premises to execute fittings and other works not included in the contract, for whose operations the contractor is to afford every reasonable facility during ordinary working hours, provided that such operations shall be carried on in such a manner as not to impede the progress of the work included in the contract, but the contractor is not to be responsible for any damage which may happen to or be occasioned by any such fittings or other works~ provided he complies with the Managing Director, TNHWCS Ltd., instructions in connection there with and provided that the damage is caused by himself or his workmen.

- 34.2 The contractor shall at all times, co-operative, assist, attend on, and afford facilities for such specialists as may be employed by the Managing Director, TNHWCS Ltd., on other works in connection with the building allowing them free of charge the sue of all plant light and water installed in the works. The contractor shall cause such special work or protect it as instructed to avoid injury during progress for the works. For failure so to protect the contractor must make good any damage caused.

- 34.3 When two or more contractors are engaged on installation or construction work in the same vicinity the Managing Director, TNHWCS Ltd., shall have authority to direct the manner in which each shall conduct the work so far as it affects other contractors.

**35. Holes for Water Services, Gas, Electrical, and Sanitary fittings:**

- 35.1 The contractor shall leave all holes in masonry and flows for the insertion of water services, gas and electrical connections and sanitary fittings in the

exact position indicated by the Managing Director, TNHWCS Ltd., during the progress of the work. These holes must be built up in a workmen like manner in the contractors cost as soon as the fittings have been installed in cases, where the installations are made during the construction of the building and where in the opinion of the Managing Director, delays in settlement of accounts will not there by occur.

**36. Contractor's Risk and Insurance:**

- 36.1 The work executed by the contractor under the contract shall be maintained at the contractors risk until the work is taken over by the Managing Director, The contractor shall accordingly arrange his own insurance, against fire and other usual risk during such period unless otherwise specified.
- 36.2 Provided however that the contractor shall not be liable for all or any loss or damages occasioned by or arising out of acts of God, and in particular unprecedented flood, volcano eruption, earthquake or other convulsion of nature invasion, the act of foreign enemies, hostilities or war like operations (before or after declaration of war rebellion, military, or usurped power.

**37. Holidays**

- 37.1 Subject to any provision to the contrary contained in the contract none of the permanent work shall save as hereinafter provided be carded on during he night or on Sundays and other holidays without the permission in writing of tile Managing Directors, TNHWCS Ltd., or of the officer in charge of the work: save when the work is unavoidable or absolutely necessary for the save of life of property or for the safety of the works in which case the contractor shall immediately advise the Managing Director.

**H. MISCELLANEOUS**

**38. Sand and Gravel**

- 38.1 The contractor shall not make any excavations upon the site for the propose of obtaining gravel, sand or soil other than that shown or implied by the drawings, except with the previous permission of the Managing Director, TNHWCS Ltd.,.

**39. Old Curios**

39.1 All old curiosities, etc., found in excavating or pulling down shall be the property of the TNHWCS Ltd., and be handed over to the MD, TNHWCS Ltd., Should any ancient masonry, or other old work of interest be opened up, the Managing Director, TNHWCS Ltd., attention shall be called to the same before demolition or removal.

#### **40. Order Book**

40.1 An order book shall be kept at the site of the work. As far as possible, all orders regarding the work are to be entered in this book. All entries shall be signed and dated by the officers in direct charge for the work and by the contractor or by his representative. In important cases, the Managing Director, will countersign the entries, which have been made. The order book shall not be removed from the work except with the written permission of MD, TNHWCS Ltd.,

40.2 No photographs of the site or of the work of any part thereof shall be taken except with the permission in writing of the MD, TNHWCS Ltd., and no such photographs shall be published or otherwise circulated without the permission of the MD.

#### **PROGRESS**

The following rate of progress and proportions value of work done from time to time, as will be indicated by Managing Director has to be completed. Date of commencement of this programme will be date on which the site (for premises) is handed over to the contractor.

Period after date of commencement	Percentage of work completed (based on contract lump sum amount)
1 <sup>st</sup> month	15%
2 <sup>nd</sup> month	30%
3 <sup>rd</sup> month	40%
4 <sup>th</sup> month	50%
5 <sup>th</sup> month	60%
6 <sup>th</sup> month	70%
7 <sup>th</sup> month	80%
8 <sup>th</sup> month	90%
At the end of the 9 <sup>th</sup> month	100%

Signature of the Contractor

## **I. DATE OF COMMENCEMENT, COMPLETION, DELAYS, EXTENSION,**

### **41. SUSPENSION OF WORK AND FORFEITURE**

41.1. On notification of possession of the site (or premises) being given to the contractor by letter registered for acknowledgement as provided in calls 9.1. Supra., he shall forthwith begin the work shall regularly and continuously proceed with them and shall complete the same (except for painting or other work which, in the opinion of the MD, it may be desirable to delay) by the date of completion, as defined in the "Articles of Agreement" subject nevertheless to the provisions of extension of time mentioned in the next clause. The contractor shall under no circumstances be entitled to claim any damages from TNHWCS Ltd., If he incurs any expenses or liabilities payment under the right to withdraw from the contract and obtain refund of his security deposit if such intimation of handing over the site is delayed more than two months form the date of acceptance of the agreement by competent authority.

### **42. Delays and Extension of Time**

42.1 No claim for compensation on account of delays or hindrances to the work form any cause whatever shall tie except as hearing after defined. Reasonable extension of time will be allowed by the MD, TNHWCS Ltd., for unavoidable delays, such as may result from which in the opinion of the MD, or undoubtedly beyond the control of the contractor. The MD, TNHWCS Ltd., shall assess the period of delay or hindrance caused by any written instructions issued by him at twenty five percent in excess of the actual working period so lost. If at any time the MD, TNHWCS Ltd., of the opinion that there has been avoidable delays and the contractor fails to maintain the rate of progress specified in the article of agreement, it shall be lawful for the MD, TNHWCS Ltd., to impose penalty or order forfeiture from the deposit sanction the extension of time for such delays, provided however, the penalty and forfeiture shall be governed as defined in (Damages for delays and Non completion) Articles of Agreement.

42.2 Whenever authorized alterations or additions made during the progress of work or of such nature in the opinion of the MD, TNHWCS Ltd., as to justify

an extension of time in consequence thereof, such extension of time will be granted in writing by the MD, TNHWCS Ltd., When ordering such alterations or additions:-

**43. Delay in commencement, or in progress, or neglect of work or suspension of work by the contractor and forfeiture of earnest moneys security deposit and withheld amounts.**

**43.1** Time shall be considered as the essence of the contract. If at any time the MD, TNHWCS Ltd., shall be of the opinion that the contractor is delaying commencement of the work, neglecting or delaying the progress of work as defined in the tabular statement, rate of progress in the article of agreement plus and extension of time, or the contractor shall suspend the work or sublet the work or a portion thereof without the sanction of the MD, or violates any of the provision of the contract, the MD, shall so advise the contractor and at the same time demand compliance. If the contractor neglects to comply with such demands within 7 days after receipt of such notice, it shall then or at any time be lawful for the MD to impose a penalty or forfeiture on this contractor from the deposit or to determine the contract.

43.2 The penalty or forfeiture shall not exceed 5% of the value of work executed.

43.3 It shall be a further right of the MD, TNHWCS Ltd., to give any part of the work to any other contractor at his discretion or have it done departmentally in order to maintain the rate of progress and the contract shall done be determined for only that portion of the work given to the other contractor or done departmentally. The forfeiture in these circumstances be applied and any excess expenditure incurred on this account shall be recovered from the original contractor.

43.4 Determination of contract referred to shall carry the forfeiture of the security deposit. After determination of the contract, the MD has the right to give any part of the work to any other contractor, the unexecuted portion of the contract. In Such case any expenses which may be incurred in excess of such amount which would have been paid to the original contractor will be recovered from any money due to him by TNHWCS Ltd., under this contract or any other contract whatsoever. Provided also that if the expenses incurred by the TNHWCS Ltd., are less than the amount payable to the contractor at

his agreement rates, the difference will not be paid to the contractor.

- 43.5 In the event of anyone of the above clause being adopted by the MD, TNHWCS Ltd., the contractors shall have no compensation for any loss sustained by him by reason or his having purchased or processed any materials or entered into any engagements or made any advance on account or with a view to the execution of the work or the performance of contract, and in case action is taken under any of the provisions aforesaid the contractor shall not be entitled to be paid any sum for any work actually performed under the contract unless and until the MD, has certified in writing performance of such work and the value payable in respect thereof and he shall only be entitled to be paid the value so certified.
- 43.6 In the event of the MD putting in force all or any of the powers vested in him, he may if he so desires after giving a notice in writing to the contractors take position of the work, and site, and all such plants and materials thereon (or any ground contiguous thereof) and all such plants and materials as above mentioned shall there upon be at the disposal of absolutely for the purpose of completing the work. After such notice having been given the contractors shall not be at liberty to remove from the site of works any plant or materials belonging to him, which shall have been placed thereon for the purpose of the above work. TNHWCS Ltd., shall not be able to make any payment to the contractor on account of use of such plant for the completion of the works. On taking position of the materials and stores belonging to the contractor or procured by the contractor and intended to be used for the execution of work or any part thereof, the contractor shall be paid for the same in account at the contract rates to be certified thereof shall be final, otherwise the may give notice in writing to the contractor to remove any of his plant or materials from the site and not required for any completion of the works, if such plant and or materials are not removed within 14 days after notice, shall have been so given, may remove and sell shall be final and binding on the proceeds less the cost of removal and sale to the credit of the contractor The certificate of the MD as the expense of any such removal and sale shall be final and binding on the contractor.



## **J. PARTICULARS OF PAYMENT**

### **44. Payment on lump sum basis or final measurement at unit prices**

44.1 It shall be accepted as a condition of the contract that the payment of the final bill to the contractor less the with held amounts and his acceptance thereof shall constitute a full and absolute release of TNHWCS Ltd., from all further claims by the contractor under the contract.

### **45. Fraud, willful, neglect or default;**

45.1 No final or other certificate or payment of or completion, acceptance or settlement of account shall in any circumstances relieve the contractor from his liability for any fraud or willful neglect or default in the execution of the contract or any willful neglect for unauthorized deviations from drawings, specifications instructions and directions for the time being binding upon him.

### **46. Unfixed materials:**

46.1 No payment or advance will be made for unfixed materials when the rates are for finished work in situ.

### **47. Payment and certificates:**

47.1 Payments will be made to the contractor under the certificates to be issued by the Engineer at reasonably frequent intervals by the MD of a sum equal to 95% of the value of work as so certified and the balance of 5% will be withheld and retained as security for the fulfillment of the contract.

Under the certificate to be issued by the CIVIL Engineer, on the completion of the entire works, the contractor will receive the final payment due to him under or by virtue of the contract, except security deposit and the withheld amount equal to 2.5% of the total value of work done provided there is no recovery from or forfeiture by the contractor to be made. The amount withheld from the final bill will be retained under "DEPOSIT" and paid to the contractor on expiry of one year from the date of completion of work and executing an indemnity bond for the further period of four years as prescribed by the However the E.M.D and Security Deposit will be released to the contractor after six months reckoned from the date of completion of work or as soon after the expiry of such period of six months. In the event

the final bill remains unpaid even after the period of six months aforesaid, the MD shall refund the security deposit which includes the E.M.D. No certificate of the CIVIL Engineer, TNHWCS Ltd., shall be considered conclusive evidence as to be sufficiency of any work or materials or correctness of measurements to which it relates, nor shall it relieve the contractor from his liability to make good defects as provided from the contractor. The contractor when applying for a certificate shall prepare sufficiently detailed bill based on the original figures of quantities and rates in the contract schedule to the satisfaction of the MD, to enable the check the claims and issue the certificates~ The certificates as to such of the claims mentioned in the application as are allowed by the Managing Director, TNHWCS Ltd., shall be issued within 14 days of a previous application. An irrevocable bank guarantee will also be accepted for security deposit

- 47.2 When there are complaints from the Labour Department about non-payment of wages to the labourers employed by the contractor for the execution of work under agreement, the MD shall have full powers to withheld the bill claimed by the contractor pending clearance certificate from the Labour Department and to act as per direction given by the Labour Department.

#### **48. Acceptance of final measurements**

The contractor agrees that before payment of the final bill shall be made on the contract, he will sign and deliver to the Managing Director, TNHWCS Ltd., either in measurement book or otherwise as demanded a valid release and discharge from any and all claims and demands whatsoever for all matters arising out of are connected with the contract and also produce a certificate from the income tax authority such all income tax payable by him up to date has been duly paid, provided that nothing in this clause shall discharge or release the contractor from his liability under the contract. It is further expressly agreed that Managing Director, TNHWCS Ltd., in supplying the final measurement certificate need not be bound by the preceding measurements and payments. The final measurements, if any of the Managing Director, TNHWCS Ltd., shall be final conclusive and binding on the contractor.

#### **49. Recovery of money from contractor in certain cases:**

- 49.1 In every case in which provision is made for recovery of money from the

contractor, shall be entitled to retained or deduct the amount thereof from any money that may be due may become due to the contractor under these presents and or under any other contract or contracts or any other account whatsoever.

**50. Contractor dying, becoming insolvent, insane, or**

**Imprisonment**

50.1 In the event of the death of insanity or insolvency or imprisonment of the contractor, or where the contractor being a partnership of firm becomes dissolved or being a corporation goes into liquidation voluntary or otherwise, the contract may at the option of the MD be terminated by notice in writing posted at the site of the works and advertised in one issue of the local district gazette and all accepted and acceptable works shall forthwith be measured up and paid for at the rates provided in the contract schedule where such apply, or otherwise by the most recent schedule of rates of the division approved by competent authority to the person or persons entitled to receive and give a discharge for the payment.

**51. Arbitrations:**

In case of any dispute or difference between the parties to the contract either during the progress or after the completion of the works or after the determination, abandonment or breach of the contract or as to any matter or thing arising hereunder except as to the matters left to the sole discretion of the MD of 'General Conditions of Contract' or as to the with holding by the MD of payment of any bill to which the contractor may claim to be entitled, the either party shall forthwith give to the other, notice of such dispute of difference and such dispute or difference shall be and is hereby referred to the arbitrator mutely accepted by both the parties.

51.2 Subject as aforesaid to the provisions of the Arbitration Act, 1996, or any statutory modification or re enactment thereof and the rules made hereunder and for the time being in force shall apply to the Arbitration Proceeding under this clause. Upon every and any such reference, the costs of and incidental to the reference and award respectively shall be discretion of the arbitrator subject to the condition that the amount of such costs to be awarded to

either party shall not, in respect of a monetary claim exceed the percentage set out below of any such award irrespective of the actual fees costs and expenses incurred by either party provided that where a monetary claim is disallowed in full the said percentage shall be calculated on the amount of the claim. The arbitrator may determine the amount of the costs be awarded or direct the same to be taxed as between solicitor and client or as party and partly and shall direct by whom and to whom and in what manner the same shall be borne and paid.

The interest on any monetary award will carry an interest of 5% on award which do not exceed Rs. 10,000, 3% on the next Rs. 40,000, 2% on the next Rso 50,000 and 1% on any excess over Rs. 1,00,000/-.

## **APPENDIX NO.1**

### **General Rules as to scaffolds**

1. Suitable scaffolds shall be provided for workmen for all works that cannot be safely done from a ladder or by other means When a ladder is used an extra mazdoor shall be engaged of holding the ladder and the ladder shall be given an inclination not steeper than 0.25 to 1 (ff25 horizontal to 1 vertical) When the ladder is used for carrying materials as well, Suitable foot holds and handholds shall be provided on the ladder.
2. A Scaffold shall not constructed, take a down or substantially altered, except, (a) under the supervision of a competent and responsible person; and (b) as far as possible by competent workers possessing adequate experience in such work;
3. A scaffolds and appliances connected therewith and all ladders shall:-  
  
be of sound material;  
  
be of adequate strength having regard to the strain to which they will be subjected; and be maintained in proper condition.
4. Scaffolding or staging more than 3.5 meters above the ground or floor shall have a guard rail properly attached, bolt braced and otherwise secured at

least 0.9 meters above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such opening as may be necessary for the delivery of materials. Such scaffolding or staging shall be as fastened as to prevent it from swaying from the building or structure.

5. Scaffolds shall be so constructed that no part thereof can be displaced in consequence of normal use.
6. Scaffolds shall not be overloaded and so far as practicable the load shall be evenly Distributed.
7. Before installing lifting gear or scaffolds special precautions shall be taken to ensure the strength and stability of the scaffolds.
8. Working platform, gangways and stairways should be so constructed that no part there can save unduly or unequally. If the height of the platform or the gangway or the stairway is more than 3.5 meters above ground level or floor level they should be closely boarded, should have adequate width and should be suitably fenced as described in (4 above).
9. Every opening in the floor of a building or in a working platform shall be provided with suitable fencing or railing for a minimum height of 0.9 meter to prevent the fall of persons or material.
10. Safe means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9 meters in length while the width between side rails in rung ladder shall in no case be less than 30 cm. For ladder up to and including 3 meters in length. For longer ladders this width should be increased at least 20mm. For each additional meter of length. Uniform step spacing should not exceed 30 cm. Adequate precautions should be taken to prevent danger from electrical equipment. No materials on the site of work shall be so stacked or placed as to cause danger or inconvenience to any person or the public. The contractor shall provide all necessary fencing and lights to protect the public from accidents and shall be bound to bear the expenses of defense of every suit, action or other proceedings at law that may be brought by any persons for injury sustained owing to neglect of the above precautions and to pay any

damages and cost which may be awarded in any such suit, action or proceedings to any such persons or which may with the consent of the contractor be paid to compromise any claim by any such person.

**Excavation and trenching:**

11. Trenches: 1.2 meters or more in depth shall at all times be supplied with at least one ladder for each 30 meters in length or fraction thereof. Ladder shall be extended from bottom of the trench to at least 0.8 meters above the surface of the ground. The sides of the trenches, which are 1.5 meters, or more in depth shall be stepped back to give suitable slope or hold securely by timber bracing so as to avoid the danger of sides to collapse.
12. **Demolition:** Before any demolition is commenced and also during the process of the work:
  - a) All roads and open areas adjacent to the work site shall either be closed or suitably protected.
  - b) No electric cable or apparatus, which is liable to be a source of danger over a cable or apparatus used by the operator, shall remain electrically charged.
  - c) All practical steps shall be taken to prevent danger to persons employed from risk, fire, or explosion or flooding. No floor, or roof or other part of the building shall be so overloaded with debris or materials as to render it unsafe.
13. All necessary personal safety equipment as considered adequate by the Managing Director, TNHWCS Ltd., shall be kept available for the use of the person employed on the site and maintained in a conditions suitable for immediate use, and the contractor should take adequate steps to ensure proper use of equipment by those concerned.
  - a) Works employed on mixing aphetic materials, cement and lime mortars shall be provided with protective footwear and protective goggles.
  - b) Those engaged in welding works shall have protective goggles and protective clothing and seated at sufficiently safe intervals.
  - c) Those engaged in white washing and mining or stacking of cement bags or any material, which is injurious to the eyes, shall be provided with protective

goggles.

- d) Those engaged in welding works shall be provided with welder's protective sight lings.
- e) When workers are employed in sewers and man holes, which are in use the contractor shall ensure that the manholes covers are opened and are ventilated at least for an hour before the workers are allowed to get in to the manholes, and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals or boards to prevent accident to the public.
- f) The contractor shall not employ men below the age of 18 years and women on the work of painting with products containing lead in any form. Wherever men above the age of 18 are employed on the work of lead painting the following precautions shall be taken.
  - (i) No paint containing lead and lead products shall be used except in the form of paste or ready-made paint.
  - (ii) Suitable face masks should be supplied for use by the workers when paint is applied in the form of spray or a surface having lead paint dries rubbed and scrapped.
  - (iii) Overalls shall be supplied by the contractors to the workmen and adequate facilities shall be provided it enables the working painters to wash during the cessation of work.
  - (iv) When workers are employed in dangerous occupations like work with not bitumen, drilling operations etc, which are likely to prove dangerous resulting in physical damage and casualty, adequate protection of the works should be provide.
- 14. When the work is done near any place where there is risk of drawing all necessary equipments should be
- 15.
  - a) Hoisting machines and tackle including their attachments anchorage and supports shall be good mechanical construction sound materials and

adequate strength and free from patent defect and shall be kept in good repair and in good working order. Every rope used in hoisting or lowering materials or as a means of suspension shall be of suitable quality adequate strength and free from patent defect.

- b) Every crane driver or hoisting appliance operator shall be properly qualified and no person under the age of 21 years should be in control of any hoisting machine, including the scaffold which or give signals to the operator.
  - c) In the case of every hoisting machine and of every chain ring hook shackle level and pulley block used in hoisting or lowering or as a means of suspension the safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with the safe working load, in the case of a hoisting machine having variable safe working load, each safe working load and the conditions under which it is applicable shall be clearly indicated. No part of any hoisting machine or of any gear referred to above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing.
16. Motors, gearing, transmissions, electric wiring and other dangerous parts of hoisting appliance shall be provided with efficient safeguards. Hoisting appliances shall be provided with such means as will reduce to a minimum the risk of the accidental descent of the load & Adequate precautions shall be taken to reduce to a minimum the risk of any part of a suspended load becoming accidentally displaced.

When workers are employed on electrical installations, which are already energized, insulating mats, wearing apparel such as gloves & Sleeves and boots as may be necessary should be provided. The workers should carry keys or other materials, which are good conductors of electricity.

17. These safety provisions should be brought to the notice of all concerned by display on a notice board at a prominent place at workshop. The contractor shall name the person responsible for the compliance of the safety code.
18. To ensure effective enforcement of the rules and regulations relating to safety precautions, the arrangements made by the contractor shall be open to inspection by the labour officer, Managing Director, TNHWCS Ltd., of the



TNHWCS Ltd., or other representative.

19. Notwithstanding the above clauses (10 to (18) there is nothing in these to exempt the contractor from the operations of any other act of roles in force in the Republic of India<sup>o</sup> Model roles for the provision of Health and Sanitary arrangements for workers employed by the TNHWCS Ltd.,

The contractor's special attention is invited to relevant clauses of the "General Conditions of Contract" in the Tamilnadu building Practice and he is requested to provide at his won expense the following amenities to the satisfaction of the MD.

1. Application:- These rules shall apply to all building and construction works on charge of TNHWCS Ltd.,
2. Definitions:- (i) 'Work place' means a place at which average fifty or more workers are employed in connection with construction work.

(ii) Large Work Place: means places at which, at average 500 or more workers are employed in connection with construction work.

**3. First Aid: -**

- (a) At the work site there shall be maintained in a readily accessible place, first aid appliances and medicines including and adequate supply of sterilized dressing and sterilized cotton wool. The appliances shall be kept in good order. They shall be placed under the charge of a responsible person who shall be readily available during working hours.
- (b) at large work places, where hospital facilities are not available within easy distance of the works, first-aid posts shall be established and be run by a trained compo under.
- (c) Where large work places are remote from regular hospitals and in - door ward shall be provided with one bed for every 250 employees.
- d) Where large work places are situated in cities, towns or in their suburbs and no beds are considered necessary owing to the proximity of city or town hospitals, suitable transport shall be provided to facilitate removal of urgent

cases to these hospitals. At other work places, some conveyance facilities such as a car shall be kept readily available to take injured person or persons suddenly taken seriously ill to the nearest hospital.

**4. Drinking Water:**

- (a) Water of good quality fit for drinking purposes shall be provided for the work people on a scale of not less than 15 litres per head per day.
  - (b) Where drinking water is obtained from an intermittent public water supply each work- place shall be provided with storage tank where such drinking water shall be stored.
  - (c) Every water supply storage shall be at a distance of not less than 15 meters from any latrine, drain or other source of pollutions~ Where water has to be drawn from an existing well~ which is with in such prominently of latrine, drain or any other source of pollution the well shall be properly chlorinated before water is drawn from it for drinking° All such wells shall be entirely closed in and be provided with a trap door, which shall be dust and waterproof.
  - (d) A reliable pump shall be fitted to each covered well, the trap door shall be kept locked and opened only for cleaning or inspection which shall be done at least once a month.
5. Washing and bathing places: Adequate washing and bathing places should be provided, latrines and urinals in an accessible place and the accommodation separately for each of them shall be on the following scale or on the scale so directed by the Managing Director, TNHWCS Ltd., in any particulars cases.
- (i) Where the number of persons employed does not exceed 50.
  - (ii) Where the numbers of persons employed exceed 50 but do not exceed 100.
  - (iii) For every additional 100, if women are employed separate latrines and urinals, screened from those for men shall be provided on the same scale.

Except in work places provided with water flushed latrines connected with a water

borne sewage system, all latrines shall be provided with receptacle on dry earth system which shall be cleaned at least four times daily and at least twice during the working hours and kept in strictly sanitary conditions. The receptacles shall be tarred inside and outside.

The extra from the latrines shall be disposed off at the contractors expense, in out way pits approved by the local Public Health Authority. The contractor shall also employ adequate number of scavengers and conservancy staff to keep the latrines and urinals in a clean condition.

**7. Shelters during rest:** At every work site there shall be provided free of cost two suitable sheds one for meals and the other for rest separately for men and women for the use of laborers

**8. Creches:** (a) At every work place at which 50 or more women workers are ordinarily employed there shall be provide tow huts of suitable size for the use of children under the age of 6 years, belonging to such women, one hut shall be used for infants, games and play and the other as their bed room. The huts shall not be constructed on a lower standard than the following. Thatched roofs (ii) mud floors and walls (iii) planks spread over the mud floor and covered with matting.

The huts shall be provided with suitable and sufficient opening for light and ventilation. There shall be adequate provision of sweepers to keep the places clean. There shall be two daises in attendance. Sanitary utensils shall be provided to the satisfaction of the Health Officer of the area concerned: the use of the huts shall be restricted to children of women workers.

- a) Where the number of women workers is more than 25 but less than 50, the contractor shall provide at least on hut and one dai to look after the children of women workers.
- b) The size of creche or creches shall vary according to number of women workers.
- c) The creche or creches shall be properly maintained and necessary equipment like toys, etc. Shall be provided.

9. **Canteens:** A cooked food canteen on a moderate scale shall be provided for the benefits of workers if it is considered expedient.
10. **Sheds for workmen:** The contractor should provide at his own expense sheds for housing his workmen. The sheds shall be on a standard not less than the cheap shelter type, to live in which the work people in the locality are accustomed to.

A floor area of about 1.8 meters \* 1.5 meters for two persons shall be provided. The sheds to be in rows with 13 meters clear space between sheds and 9 meters clear space between rows if conditions permit, The work people's camp shall be laid out in units of 400 persons, each unit to have a clear space of 12 meters around.

**APPENDIX. IX. XXXVIII**

**MONTHLY REPORT OF CONSTRUCTION EMPLOYEES UNDER CONTRACTORS**

**RETURN FOR THE MONTH ENDING**

1. Name, Location and type of work
2. Name of Contractor
3. Workers engaged in
  - i. TNHWCS Ltd., work
  - ii. Government work other than TNHWCS Ltd.,
  - iii. Other works
4. Name and address of Manager(s) of works
5. Value of Contract
6. Employment earnings:

	<u>Employees</u>			
Category	Men	Women	Boys	
Girls				
1	2	3	4	5
- (i) Total number of employees during the month  
  
Number of employees in the work on the last working day of the month  
  
Total wages paid for the  
  
Total Number of working days during the month  
  
Length of normal wages period  
  
Date :  
  
Place :

To:

The Managing Director,

TNHWCS Ltd.,

Chennai – 8. Tamilnadu

The Employment Officer,

District Employment Office,

### **ADDITIONAL CONDITION – 1**

1. Clean river sand shall be used in all cases.
2. Only clean fresh water shall be used on the work. The contractor shall make his own arrangements for water and shall meet all charges therefore. The special attention of the contractor is drawn to clause 27 of General Condition of Contract regarding water and Lighting.
3. The broken stone for concrete RCC works and road works should be of granite and passed by the Managing Director,
4. All iron work or steel work of every kind except such as to be embedded in concrete shall immediately on arrival at the site be properly scraped and wire brushed and given a priming coat of approved lead painting without claim for extra.
5. The iron holdfasts shall be build up in walls in C.M. 1:3 at the time of construction of walls. No extra claim shall be due for the same wherever holdfasts are to the provided in 9' thick walls. These should be fixed with cement concrete 1:3:6 using 20mm gauge broken granite stone jelly for proper anchorage and proper binding. No separate rate for such packing of concrete filling at holdfast points will be allowed and this will be measured as masonry along with adjacent masonry.
6. The teakwood shall be of best Indian teakwood only, shall be subject to inspection, and approved before use on the work. Country wood where specified shall be Karimarudu / Pillarmarudu or Kongu for scantling and Ayini for planks subject to approval of Managing Director,
7. Holes for electric wiring, water supply and drainage etc., shall be provided as directed during progress of work without a claim for extra.
8. The work will be carried out with the least hindrance to the adjoining building and the contractor will be responsible for any damage, caused to the existing fixture electric fittings etc., in the course of execution and the contractor shall make good any damage without any claim for extra.

9. In the case of 'T' beams and 'L' beams the quantity given in the schedule is the quantity of rib portion only. The top flange portion will be always measured with the general slab portion and paid for at the slab rate only. For all RCC works the rate shall include the treatment of bearing as per plate No2 of 1946 as per 1NDSS (Page 5 of 964 Edition).
10. Concrete Works: All exposed surfaces will be required to be furnished by cement plaster as detailed in Schedule A. the contract rate shall include the cost of providing cement mortar border for the sunshades roof projections and stair case steps landing slab etc~ as per the directions of the Managing Director,
11. Plastering all external comers, edges of beam edges of doors and window opening etc. shall be finished sharp using richer mortar and also finished truly vertically or horizontal as the case may be. The rate for plastering shall include the cost of finishing as above and no separate extra for the comers, edges, beams etc., shall be paid.
12. If rates are not separately called for similar items of works in different floor, the contractor should note that one rate is applicable for all floors indicated in the detailed plans. Any claim for extra for such items floor wise will not be entertained under any circumstances.
13. The MD, TNHWCS Ltd., reserves the right to split up the work and entrust the main work internal water supply and sanitary arrangement to different contractors without assigning any reason therefore.
14. The projection if any to the masonry will be measured under the relevant items and extra will be paid for finishing the same.
15. The arrangements of M.S. rods for all RCC works shall be in accordance with the working drawing supplied.
16. The planks for forms and centering for RCC works shall be well-seasoned timber according to clause 10 to TNDSS No. 30. They must be made smooth and perfectly level at top so as to given smooth and even finish to the RC ceilings. Alternatively, the contractor may use steel sheets over wooden forms provided the required finish to the underside of the slab is obtained. Mango planks shall not be used under any circumstances. Steel centering need only be used in the works.



17. Payment for centering works for all RCC items shall be made only after the concrete is laid even though separate items for centering works are included in the schedule.
18. All cement concrete for RCC works shall be machine mixed and vibrated.
19. All cement mortar shall be ground mixed as per TNBP.
20. If night work is required to fulfillment the agreed rate of progress, all arrangements shall he made by the contractor inclusive of lighting without any claim for extra.
21. The contractor shall not employ the labour below the age of 12 years and shall also note that he must offer employment of ex-servicemen ex-toddy tapers and unemployed agricultural laborers as far as possible.
22. The construction of the building will be deemed to be complete only if all the items of works including finishing its contemplated therein are executed.
23. The contractor shall abide the contractor's labour regulation framed by the Tamilnadu Government.
24. When there are complaints on non-payment of wages to the labour bill of the contractor may be with held pending a clearance certificate from the labour department.

**Particulars to be Furnished by the Tenderer**

- 1) Name of Tenderer :
- 2 Name of company :  
(If Applicable)
- 3 Address for communication :
- 4 Permanent Address :
- 5 Proof of Government registration of :  
Contractor  
(Attach Xerox copy of your registration )
- 6 Xerox copy of latest renewal of your Registration :
- 7 E.M.D Details :
- 8 Details of annual return filed to income tax  
Department for the last three years :
- 9 Name of works executed with estimate  
For the last three years :
- 10) PAN No :
- 11) TIN No :
- 12) Do you have any due with sales tax :
- 13) Do you have any due with income tax :
- 14) Have you been debarred or blacklisted  
From any department  
(If so, give details ) :

Place :

Signature

Date :

# **TECHNICAL SPECIFICATION**

## **PREFACE**

### **INTENDED AND REFERENCE TO TAMILNADU BUILDING PRACTICE**

1. It is intended by the Tamilnadu Building Practice to describe.
  - a. The Character of the materials to be used.
  - b. The method of execution of work.
  - c. The contractors responsibilities to the public, Government and its workmen and general contract conditions which are to be accepted by every contractor who executes the work entrusted to him by the Department / Corporation.
- 1.2 Wherever the term 'Standard Specification' or 'Specification' or the abbreviations "TNBP No." or TNBP is used in the specifications or estimates or contract documents it shall refer o relevant specification in the TamilNadu Building Practice.
- 1.3 The abbreviation "IS" shall mean "Indian Standard".
- 1.4 Government means TamilNadu Government. Department means TamilNadu Public Works Department.

### **Section 1**

The term Indian Standard specifications herein after referred to as IS means the relevant Indian Standard Specifications with all Amendments published up to the date of Submission of tenders. A Statement of relevant IS applicable to this context, it enclosed.

List of Indian Standards.

SI.No	Short Title	L.S. Number	TNBP Number
I.	<p><b>CEMENT</b></p> <p>1. Specifications for ordinary and low heat Portland cement</p> <p>2. Specifications for Portland Pozzolana Cement</p>	<p>269 – 1976</p> <p>1489-1976</p>	<p>10</p> <p>10A</p>
II.	<p><b>AGGREGATES</b></p> <p>1. Specifications for coarse and fine aggregate from Natural source of concrete</p> <p>2. Specification for sand for Masonry Mortars</p> <p>3. Method of Tests for aggregates for concrete</p>	<p>383 – 1970</p> <p>2116-1980</p> <p>2386-1963 (part I to VIII)</p>	<p>5 &amp; 7</p> <p>7</p> <p>7</p>
III.	<p><b>BUILDING STONES</b></p> <p>1. Method of test for Determination of Strength properties of natural building stones</p>	<p>1121-1974</p> <p>Part-1 to IV</p>	

	Part-1 Compressive Strength part-II Transverse Strength  Part – III Tensile Strength Part – IV Shear Strength  2. Method of Measurement of Buildings and Civil Engineering works	1200 – 1976  (Part – IV)	35
IV	STEEL		
	1. Code of Practice for bending and fixing of bars concrete reinforcement  2. Code of Practice for Welding of M.S. Bars used for reinforced Concrete Construction  3. Recommendation for detailing of reinforcement in reinforced cement concrete works  4. Specification for Mild Steel and medium Tensile Steel bars for concrete reinforcement  5. Measurement of Building and Civil Engineering Works, Part-VII Steel work and Iron Works  6. Structural Steel (Standard Quality) fifth amendment No, 1 to 5	2502 -1963  2751 – 1979  5525-1969  432-1966 (Part010  1200-1974 (Part-VIII)  223 – 1975  2077-1979	30,86  30,86  30,86  30,86

	7. Code of Practice for corrosion protection of steel reinforcement in RB and RCC Construction		
	1. Code of practice for construction of stone Part 01 Rubble stone masonry	1597-1967 (part01)	3,35H
	2. Method of Measurement of building and Civil Engineering Works Part – XII plastering and Pointing.	1200 -1 976 (Part – XII)	35,35D
VI.	CONCRETE		
	2. CONCRETE WORKS Code of Practice for plain and reinforced Concrete	456-1978	28,30
	3. Specification for Precast concrete coping blocks	5751-1969	
	4. Method of test for strength of concrete	516-1959	
	5. Specification for Admixtures for Concrete	9103, 1979	
	6. method of test for strength of concrete	1199-1976	28,30
	7. General requirements for Concrete Vibrators – Immersion type	2505 – 1980	
	8. Method of test for permeability of cement mortar and concrete	3085-1965	
	9. Code of practice for installation of joints in concrete pavements	6509-1972	

VII	EARTH WORK		
	1. Method of Measurement of building and Civil Engineering works part – 1 Earth Work	1200-1974 (Part – 1)	20,A,A C,23,24,25
	2.Safety code for excavation works	3764-1966	19,26

## **EXCAVATION**

### **a. Classification of Excavation**

Except as otherwise provided in these specifications material excavated will be measured in excavation to the lines shown on the drawing or as provides in these specifications and all for excavation. No additional allowance above the price bid in the schedule will be made on account of any of the material being wet. Bidders and the Contractors must assume all responsibility for deducing and concluding as to the nature of the materials to be excavated and the difficulties of making and maintaining the required excavation. The Government does not represent that the excavation can be performed and maintained at the pay lines described in these specifications as shown on the drawings.

### **b. Excavation for Structures**

Excavation for the foundation of structures shall be to the elevation shown on the drawings or as directed by the Engineer-in-charge. In so far as practicable the material removed in excavation for structures shall be used for backfill and embankments.

### **C. Foundations for Structures**

All trenches in soil other than rock or hard compact soil more than 1.5m deep, into which men enter, shall be securely shored and timbered.

All trenches in soil soft or fissured rock or hard soil exceeding 2 m in depth, into which men enter shall be securely shorted and timbered.

Notwithstanding anything said above, it shall be understood that the need for shoring shall receive careful and frequent consideration even in trenches of less than 1.5 or 2 m in depth (as the case may be). When there is doubt as to the safety of the work without shoring, no further excavation or other work shall be continued until adequate shoring is provided.

Where the sides of trenches are sloped but not within 1.5m of the bottom, the vertical sides shall be shored and the shoring shall extend at least 30 cm above the vertical sides.

When unsuitable material is encountered in the foundation for structure the Engineer-in-Charge will direct additional excavation to remove the unsuitable material. The additional excavation shall be refilled as follows. In excavation of soils, the over selected bedding concrete I shall fill in excavation 1:5:10 (One cement, five sand and ten aggregate of maximum size 40mm by volume). No separate payment for excavation backfill will be made as per clause 3.2.2 (A).

**d. Measurement for Payment for payment**

Excavation for structures will be measured for payment, for box cutting with vertical sides of foundation dimensions. The Contractor will have to make his own arrangement for shoring, strutting provision of adequate slopes for the sides to prevent slips etc., and no separate charge will be paid for any incidental charges arising during excavation of foundation or in construction of the structure.

**e. Payment**

Payment for excavation for structures will be made at the unit price per cubic metre.



## MATERIALS

### Stone for Masonry

#### A. General

The stones used for stone masonry shall conform to the relevant specification of clause 4.1 of I.S. 1597 (Part 1) 1967 and I.S. 1123 – 1975 code of practice for construction of stone masonry part – 1 Rubble stone Masonry.

#### Stone Masonry using Granite:

The stone shall be supplied from the specified quarry and shall have abrasion value of 45% and specific gravity of about 2.6.

The crushing strengths of the stones shall be determined in accordance with I.S. 1121-1974 (Part 1 to a). The strength shall be as detailed below in Table 4(A).

**Table 4 (A)**

Sl.No	Types of stone	Minimum Crushing Strength
1.	Granite	100 Kgs/Sq.cm

The percentage of water absorption by the stones when immersed in water for 24 hours shall not exceed 5% of their dry weight as determined in Accordance with I.S. 1124 – 1974.

Samples of the stones collected from the stone stacks by the Contractor will be tasted for the standards specified above and other relevant Indian Standards and if stone stacks not conforming to the standards will be rejected and their cost shall be borne by the Contractor. The Contractor shall obtain these stones from the approved portions of the approved quarries only.

### Sand for Masonry

#### General

The term sand is used to designate fine aggregate with maximum size of particle 43.75mm. The sand shall be of course category conforming to the Indian Standard Specifications IS – 2116 – 1980. "Sand for masonry mortars" as revised from time to time.

Where sand from different sources is being used at one work at the same time, these shall be blended to ensure uniform grading in successive batches.

Variations in the grading of sand being obtained from the same source shall be controlled by means of the fineness modulus test.

The following control shall be used.

Controlled to limits of plus and minus 0.5 of running average of ten consecutive test samples. For natural sand, fineness modulus shall be greater than 2.30 and less than 3.10.

For manufactured sand, the specifications should be the same as in relevant section under specifications for concrete.

### **Quality of sand**

The sand shall consist of natural sand, crushed stone or crushed gravel sand, or a combination of any of these.

The sand shall be hard, durable, clean, and free from adherence coatings and organic matter and shall not contain more than permissible limit of clay balls or pellets as specified further below.

The sand shall not contain any harmful impurities, such as iron pyrites, alkalis, salts, coal, mica shale or similar laminated or other materials in such form or in such quantities as to affect adversely the hardening, the strength, the durability or the appearance of the mortar applied or to attack any reinforcement used in the masonry work.

a.	Clay, finesilt and fine dust  (Determined in accordance with Appendix C of I.S. 383 – 1963 and also I.S.2386 (Part II) 1963.	Not more than 5 per cent by weight
b.	Organic impurities (Determined in accordance with I.S. 2386 (part) Specified in 1963.	Bellow that indicated by comparison with the standard solution 6.2.2 of I.S. 2387 (Part II) 1963.

Sand shall generally conform to specifications given in paragraph 6.3.6 except that the sand for mortar shall conform to the grading of sand given in clause 4 of I.S. 2116 – 1980 as detailed below, in Table 3 (B).

**Table**

Sieve Designation	Percentage passing by Mass
1.	2.
4.75 mm	100
2.36 mm	90 to 100
1.18 mm	70 to 100
600 micron	40to 100
300 micron	5 to 71
150 micron	0 to 15

A sand whose grading falls out-side the specified limits due to excess or deficiency or coarse or fine particles may be processed to comply with the standard by screening through suitably size sieves and or blending with required quantities of suitable sized sand particles.

If the sand brought to site is not clean, it must be washed in clean water. Fine sand, pr sea sand, or sand containing saline impurities shall on no account be used.

**Cement**

The Contractor has to make his own arrangement for procurement of cement of required specification.

Ordinary Portland cement conforming to I.S. 269 - 1989 shall be used for Masonry work. Portland pozzolana cement conforming to I.S. 1489 – 1991 may also be used for masonry work, in the event of non-availability of ordinary Portland cement with the approval of Engineer – in – charge.

## **MORTAR**

### **Preparation of Mortar**

Unless otherwise specified the cement mortar used in masonry works shall be cement mortar mix 1:5 (One cement and five sand by volume). Mixing shall be done thoroughly in the mixer operated manually or by power. Water shall be added gradually and mixing continued at least for 2 minutes. Water should not be more than that required for bringing the mortar to the required working consistency of 90 to 130 millimeters as required in clause 9.1.1 of 22501 – 19891. The mix shall clean and free from injurious kind of soil, acid, alkali, organic matter deleterious substances.

### **Time of use of Cement Mortar**

Cement mortar shall be used as soon as possible after mixing before it has begun to set, within 30 minutes should not be used and shall removed from the site or work. The cost of such wasted mortar shall be borne by Contractor. The use of retempered mortar will not be permitted to be use for the masonry.

### **Tests of Mortar**

Mortar test cubes shall be cast for the mortar used on the work and shall be tested in accordance with Appendix – A of I.S. 2250- 1965 code of practice for preparation and use of Masonry mortars. Such cubes shall develop a compressive strength of at least 50 Kgs/Sq cm for cement mortar mix, 1:5 and 75 kgs / sq.cm for mortar mix 1:4.

### **Measurement and payment**

Cement mortar will not be measured and paid separately and its cost including cost of materials, mixing charges, transporting and placing shall be included in the unit price per cubic metre bid hereafter in the bill of quantities of the contract for the relevant finished item of work for which cement mortar mix mentioned in the above paragraph is required.

## **STONE MASONRY**

### **General**

Stone masonry in General shall conform to the requirement of I.S. 1597 code of practice for construction of stone masonry (Part 1) 1976 and IS 1127 – 1970 for rubble stone masonry, part II 1967 Ashlar Masonry. I.S.1129 – 1972 is specification for dressing natural building stones.

### **Moving stone after it has been placed upon the Mortar bed**

If it is necessary to move a stone after it has been placed on the mortar bed, it should be lifted clear and reset. Attempt must never be made to slide it over stone already laid. Care must be taken not to disturb already laid when handling or moving stone.

### **Size of stone**

The Length of stones shall not exceed three times the height nor shall the stones be less than twice as long as height plus one joint. No stones shall be less in breadth than height and the breadth on the base shall not be greater than  $\frac{3}{4}$ " thickness of the wall nor less than 20 centimeters.

### **Laying of stones for Random Rubble Masonry**

The masonry shall be laid to lines, levels, curves, and shapes shown in the drawings. Stone in the hearting shall be laid on their broadest face.

Stratified stones must be laid on their natural beds. All bed joints shall be normal to the line of pressure upon them.

In battered walls, the beds of the stones and the planes of course should be at right angles to the batter.

The course of Random rubbles the masonry shall ordinarily be predetermined. Where there is to be variation in the depth of course, large stones shall be placed in the lower courses, the thickness of course decreasing gradually towards the top of the wall. The variation in depth of courses shall be adopted after the approval of the Engineer-in-Charge.

The face stones shall be squared on all joints with beds horizontal and unless otherwise ordered by the Engineer-in-Charge they shall be set in regular courses of uniform thickness from bottom to top throughout. No face stone shall be less than 200 millimeters for 450 mm thick walls and 250mm for 600mm thick walls. More than half the quantity of stones shall each have a volume of more than  $\frac{1}{70}$  cubic metre  $\frac{1}{50}$  cubic metre and  $\frac{1}{35}$  cubic metre being used in for walls of 400mm, 450mm, and 600mm thickness respectively. The bed and vertical joints of the stone shall be hammer dressed square with the face for a width of not less than 75mm and 40mm on wards from the respectively. Bushing shall not project more than 40 mm in faces.

Unless otherwise ordered by Engineer-in-Charge the height of each course shall be the height of the stone used in the course. Stones of different depts. should not be used. Height of each course shall not exceed breadth at face nor thickness inwards.

The face stone shall be laid alternately in headers and stretchers; so as to break joint by at least 75mm. Headers shall project at least 100mm beyond the stretchers. The joints should not exceed 12 mm in thickness.

In walls up to a width of 600mm bond stones running through the wall shall be provided at intervals of 1.8 mts clear I every course. For walls thicker than 600mm a line of headers each header over lapping the other by 150 mm or more shall be provided from front to back at 1.8 mts. Intervals in every course. Care shall be taken not to place the bond stones of successive courses over each other. The positions of bond stones shall be marked with paint on both the faces for identification and verification.

### **Dressing of stones for random rubble Masonry**

The face stone shall be hammer dressed in the face, sides, and the beds to enable it to come into close proximity with the neighboring stone. The busing in the faces shall not project more than 40 mm on an exposed face and 12 mm on a face to be plastered. Stones with round surface shall not be used in construction.

## **PLASTERING AND POINTING**

### **Materials**

#### **Sand for Mortar for Plastering and Pointing**

##### **a. General**

Sand shall generally conform to specification given in paragraph 7.1.6 except that the sand for preparation of Mortar for plastering and pointing shall conform to the gradation, as per I.S. 1542 – 1997.

##### **4.1.2. Cement**

The specification and conditions specified for supply of cement in paragraph 7.1.3 shall be used for preparation of mortar for plastering, pointing and for masonry work. In the event of non-

availability of ordinary Portland cement, Portland pozzolana Cement conforming to IS 1489-1976 may be used with the approval of Engineer - in - Charge.

## **MORTAR**

Preparation of Mortar for Plastering Work

unless otherwise specified the cement mortar used in plastering work shall be in C.M. 1:5 (one cement, five sand by volume)

Preparation of mortar for Pointing:

The cement mortar used in pointing work shall be cement mortar mix 1:4 (one cement, four sand for volume).

The other specifications and conditions enunciated in paragraph 4.2.1 shall apply for this mortar for pointing work also.

### **Plastering with cement Mortar (1:3 one cement, three sand by volume)**

The roughening of the background improves the bond of plaster. All joints shall be thoroughly raked. After roughening the surface, care shall be taken to moisten the surface sufficiently before applying the plaster. Care shall be taken to see that the surface is not too dry as this may cause lack of adhesion or excessive suction of water from the plaster. A fog spray may be used for this work. As far as possible, the plasterwork shall not be done under hot sun.

## **MEASUREMENT AND PAYMENT**

### **a. Plastering**

The measurement of plastering will be in units of square metres and it shall be paid at the relevant unit prices bid per one square metres of plastering in the bill of quantities which unit price shall include the cost of materials, their conveyance, charges for preparation of mortar including mixing charges and charges for performing the plastering work as illustrated in this division including curing.

### **b. Pointing**

Unless specified in the contract document, no separate payment will be made for pointing random rubble masonry and coursed rubble masonry and the unit price of the rubble masonry in the bill of quantities, shall include the cost of material, their conveyance, charges for preparation

of mortar including mixing charges and charges for performing the pointing work as illustrated in the division including curing.

## **GENERAL CONCRETE REQUIREMENTS**

### **Composition**

#### **A. GENERAL**

The I.S. 456-1978 code of practice for plain and reinforced concrete shall be followed.

Concrete shall be composed of cement, sand, coarse aggregate water and admixtures (if any) as specified and well mixed in batching plant by weight or in concrete mixer and brought to the proper consistency. The Contractor shall provide such means and equipments as are required to accurately determine and control the relative amounts of various material required for the concrete. Such means, the equipment and its operation shall be subject, at this time, to the approval of the Engineer-in-charge. The measuring and weighing equipments shall operate with the degree of accuracy specified b the Engineer-in-Charge.

For works in which tightness is required the specification in I.S. 3370 (part 1 & Part II) 1965 Para 1 to 10 shall be applied.

### **Mixing**

Concrete shall be mixed in a mechanical mixer and shall be as dense as possible, plastic enough to consolidate well and stiff enough to stay in place on the slopes.

Mixing shall be continued until there is a uniform mixing of the materials and the concrete is uniform in color and consistency. The time of mixing shall be as shown in table of IS 457-1957 reproduced below.

#### **Minimum time of Mixing**

<b>Capacity of Mixer</b>	Natural	Manufactured
	Aggregates	Aggregates
	2 minutes	2½ minutes

### **Concrete Classification**

It is related to the specified 28 days compressive the table below;



Classification of concrete (IS 45G-1978)	Max. Size aggregates	Characteristic Compressive Strength N/mm <sup>2</sup> 15cm cube at 28 Days
1.M 10	40	10
2.M 15	40/20	15
3.M 20	20	20

A minimum of 3 set specimens shall be made for each and 120 M3 of each class of concrete is for given age. There shall be at least 3 test specimens for each day of concreting even if only a few cubic metres of the particular concrete is manufactured in a day.

The test shall satisfy the following criteria

1. The average strength of any 3 consecutive samples shall be greater than the specified strengths.
2. The overall co-efficient of variation for any ten consecutive sample strength shall be less than 15%.
3. Not more than 10% of the specimen strengths shall be less than 85% of the specified strength.

Note: The mix shall be designed to produce the grade of concrete having the required workability and characteristic strength not less than appropriate values given in table.

**b. Normal maximum size of aggregates**

For sizes of aggregates IS 383-1970 shall be apply. The coarse aggregate to be used in concrete shall be as large as practicable, consistent with required strength, starting of reinforcement and embedded items, and placement thickness. The size of the coarse aggregate to be used will be determined by the Engineer-in-Charge and may vary incrementally according to the conditions encountered in each concrete placement. Nominal maximum size of aggregate for concrete in structures shall be as indicated in the relevant drawing appended to the contract documents.

Smaller coarse aggregate than specification shall be used where the opinion of the Engineer-in-Charge that proper placement of concrete is impracticable with the size of the aggregate specified in the drawings.

Designation of size	Normal size range
20mm aggregate	4.75 to 20mm
40mm aggregate	20mm to 40mm

Generally coarse aggregate of maximum nominal size of 40mm shall be used in M 7.5 and of 20mm size in M 10 grade concrete bed.

### **c. Mix Proportions**

The proportions of various ingredients to be used in the concrete for different items of the work are given in the bill of quantities. In proportioning concrete, the quantity of both cement and aggregate should be determined by mass. Water shall be either measured by column in calibrated tanks or weighed, Wherever the quantity of concrete involved in a particular work is small, nominal mix concrete may be allowed with the specific approval of the Engineer-in-Charge who may also allow volumetric batching/proportioning for the restricted quantity, The proportion of materials for nominal size concrete shall be in accordance with Table 3, page 50 of IS 456-1978, All measuring equipment shall be maintained in a clean serviceable condition and their accuracy periodically checked, Adjustments shall be made as directed to obtain concrete having suitable workability, impermeability, density, strength and durability without the use of excessive cement acceptance or rejection of concrete shall be as per the acceptance criteria laid down in clause 15 of I.S. 456-19786

The net water cement ratio exclusive of water absorbed by the aggregate shall be sufficiently low to provide adequate durability in concrete, the water cement ratio for various grades of concrete shall be a determined and ordered by the Engineer-in-Charge.

Admixtures of pozzolana, if ordered, shall conform to the requirements specified in I.S. 9103-1979 (Indian Standard Specification for admixtures for concrete),

## **Consistencies**

The slump of concrete at the placement shall range from 25mm to 50mm with vibrations achieved through the vibrators to the satisfaction of Engineer-in-Charge. The slump test shall conform to IS 1199-1959.

## **CEMENT**

### **a. General**

Cement shall conform to clause 4 of ISO 456-1978 for the purpose of specifications. Cement used shall be one of the following two types with prior approval of the Engineer-in-Charge.

Ordinary or low heat Portland cement conforming to I.S. 269-1697 (I.S. specification for ordinary and low heat Portland cement third revision)

### **b. Acceptance of Cement**

The Contractor according to clause 10.1 of I.S.269-1976 will supply tested cement.

## **Water**

The water used in making a curing of concrete, mortar and grout shall be free from objectionable quantities of silt, organic injurious amounts of oils, acids, salts and other impurities etc. as per I.S. specification No.456-1978.

The Engineer -in-charge will determine whether or not such quantities are objectionable,

Such determine will usually be made by comparison of compressive strength, water requirement, time of set and other prosperities of concrete made with distilled or very clean water concrete made with the water proposed for use. Permissible limits for solids when tested in accordance with I.S. 3025-1964 shall be as tabulated below.

## **PERMISSIBLE LIMITS FOR SOLIDS IN WATER**

- |    |                   |  |
|----|-------------------|--|
| 1. | Organic           | Maximum permissible limit 200mg/litre            |
| 2. | Inorganic         | 300 mg/litre                                     |
| 3. | Sulfate (as So4)  | 500 mg/litre                                     |
| 4. | Chlorides (as CL) | 2000 mg/litre for plain concrete work and 1000mg |

/litre for RCC works.

5. Suspended matter 2000 mg /litre

If any water to be used in concrete, mortar, or grout is suspected by the Engineer-in-Charge of exceeding the permissible limits for solids, samples of water will be obtained and tested by the Engineer-in-Charge in accordance with I.S 3025-1964.

### **Sand (Fine aggregate)**

#### **a. General**

The term sand is used to designate aggregate most of which passes 4.75 millimeter I.S, sieve and contains only so much coarser materials as permitted in clause 4,3 of I.S. 383-1970. Sand shall be predominantly nature sand, which may be supplemented with crushed sand to make up deficiencies in the natural sand grading.

All sand shall be furnished by the Contractor from any approved sources specified in the contract.

Sand as delivered to the batching plant. Shall have uniform and stable moisture content. Determination of moisture content shall be made as frequently as possible, the frequency for a given job being determined by the Engineer-in-Charge.

#### **b. Quality**

The sand shall consist of clean, dense, durable, uncoated rock fragments, as per I.S. 383-1979.

Sand may be rejected if it fails to meet any of the following quality requirements.

#### **Organic Impurities in Sand**

Colour no darker than the specified standard in clause 6.2.2 of I.S. 23286 part II 1963. (Indian Standard method of test for aggregate for concrete part -II estimation of deleterious materials and organic impurities).

Sand shall be screened before use, If sand brought to site is not clean it must be washed clean in water. Fine drift sand or sea sand or sand containing saline impurities shall on no account to be used.

### **Sodium sulphate test for soundness**

The sand to be used shall pass sodium or magnesium sulphate accelerated test specified in I.S. 2386 (Part- V) 1963 for limiting loss of weight.

Specific Gravity: 2.6 minimums.

### **Deleterious substances**

The amounts of deleterious substances in sand shall not exceed the maximum permissible limits prescribed in table I clause 3.2.1 of IS. 383-1970 and shall be described as Fine aggregates, grading Zones-I, II, III and IV, sand complying with the requirements of any of the four grading zones is suitable for concrete. But, sand conforming to the requirements of grading zone - IV shall not be used for reinforced cement concrete work.

### **Coarse Aggregate**

#### **a. General**

For the purposes of these specifications the term "coarse aggregate" designate clean well graded aggregate most of which is retained on 4.75 mm I.S. sieve and containing only so such finer material as permitted for various type described under clause 2.2 of I.S. 383-1970. Coarse aggregate for concrete shall consist of uncrushed stone, or crushed stone.

Coarse Aggregate for the Contractor from the approved quarries shall furnish concrete specified in the contract documents. The Contractor shall unless otherwise specified in the tender notice and subsequently on this basis in contract be responsible for payment of signora, quarry fees etc., on all materials.

Coarse Aggregate as delivered to the building plant shall generally have uniform and stable moisture content. In case of variations, clause 9.2.3 of I.S. 456-1978 shall govern during batching.

### **Batching**

#### **a. General**

The Contractor shall notify the Engineer-in-Charge 24 hours before batching concrete. Unless inspection is waived in each case, batching shall be performed only in the presence of an Engineer authorized by Engineer-in-Charge.

The Contractor shall provide, maintain, and operate the equipments as required to accurately determine and control the prescribed amounts of the various materials entering the concrete mixers. The quantities of cement sand and each size of coarse aggregate entering each batch of concrete shall be determined by individual measurement: Cement has to be weighed separately.

## **Mixing**

### **a. General**

The concrete ingredients shall be thoroughly mixed in mechanical mixers designed to positively ensure uniform distribution of all the component materials through out the concrete at the end of the mixing period. Mixing shall be done as per clause 9.3n of I.S. 456-1978 the mixer should comply with I.S. 1791-1985 (I.S. specifications for batch type concrete mixers).

The concrete as discharged from the mixer shall be uniform in composition and consistent from bath, workability shall be checked at frequent intervals as per I.S. 1199-1959. Mixers will be examined regularly by the Engineer-in-Charge or his authorized Engineer for changes in condition due to accumulation of hardened concrete or mortar or to wear of blades. The mixing shall be continued until there is a uniform distribution of the materials so that the mass is uniform in colour and consistency and to the satisfaction of the Engineer-in-Charge. If there is segregation after unloading the concrete should be remixed.

Any mixer that at any time produces unsatisfactory mix shall not be used until repaired. If repair attempts are unsuccessful, a defective mixer shall be replaced. Batched size shall be at least 10% of, but not in excess of the rate capacity of the mixer unless otherwise authorized by the Engineer-in-Charge.

## **Forms**

### **a. General**

Form shall be used wherever necessary, to confine the concrete and shaping it to the required lines. If a type of form does not consistently perform in an acceptable manner, as determined by the Engineer-in-Charge, the type of form shall be changed, and the Contractor subject to approval of the Engineer-in-Charge shall modify method of creation.

Plump and string lines shall be installed before, and maintained during concrete placement. Such lines shall be used by the Contractor's personnel and by the Engineer-in-Charge, shall be in sufficient number, and properly installed as determined by the Engineer-in-Charge. During concrete placement, the Contractor shall continuously monitor plump and string lines, form

positions and immediately correct deficiencies.

Forms shall have sufficient strength to withstand the pressure resulting from placement and vibration of the concrete and shall be maintained rigidly in position. Where form vibrators are to be used, forms shall be sufficiently rigid to effectively transmit energy from the form vibrators to the concrete. While not damaging or altering the positions of forms. Forms shall be sufficiently tight to prevent loss of mortar from the concrete. Chamber strips shall be placed in the corners of forms and at the top of wall placement to produce beveled edges on permanently exposed concrete surfaces. Interior angle of inter-seating concrete surfaces and edges of construction joints shall not be beveled except where indicated on the drawings.

Suitable struts or stiffeners or ties shall be used for the formwork wherever necessary. All supports shall be braced and cross-braced into two directions. All splices and braces shall be secured by bolting unless specially intended otherwise. All struts shall be firmly supported against settlement and slipping by suitable means as directed; all supports shall be cut square at both end and firmly supported against settlement and slipping. When the formwork is supported on soils, planks, sleepers etc., shall be used to properly disperse the loads. In case, the supports rest on already completed beam or slab, suitable props shall be provided under the latter.

The joint between the formwork and existing concrete shall also be "grant tight". Forms shall, over lap the hardened concrete in the lift previously placed by not more than 75 mm and shall be tightened against the hardened concrete so that when concrete placement is resumed the forms will not allow loss of mortar at the construction joint.

The formwork shall be of well-seasoned timber or steel. When timber forms are used, they shall be lined, with mild sheet or other suitable smooth faced non-absorbent materials as specified. Supports may be of timber or steel. Suitable wedges in pairs to facilitate adjustment and subsequent releasing of forms shall be provided preferably at the upper end of the support. Before erection, the proper approval is essential.

In case of columns, retaining walls of deep vertical component the height of the column shall facilitate any placement and compaction of concrete and suitable arrangement may be made for securing the form to the already poured concrete for placing the subsequent lifts. No steel ties or wires used for securing this formwork shall be left exposed on the face of the finished work.

Suitable inserts for blackouts for electrical and other service fixtures where necessary shall be provided in the required locations as specified.

Cleaning and oiling of forms at the time the concrete is placed on corms, the surfaces of the forms shall be free from encrustations of mortar, grout of other foreign material. Before concrete is placed, the surface of the forms shall be oiled with commercial forms of oil.

### **Removal of forms**

The stripping of formwork shall conform to clause 10.3 of I.S. 456-1978. The Contractor shall be liable for damage and injury caused by removing forms before the concrete has gained sufficient strength. Forms on upper sloping faces of concrete such as forms on the watersides of warped transitions, shall be removed as soon as the concrete has attained sufficient stiffness to prevent sagging. Any needed repairs or treatment on such sloping surfaces shall be performed at once and be followed immediately by the specified curing.

To avoid excessive stresses in concrete that might result swelling of forms, wood forms for wall openings shall be loosened as soon as loosening can be accomplished without damages to the concrete. Forms shall be removed with care so as avoid injury to concrete and any concrete so damaged shall be repaired in accordance with paragraph 6.3.21.

### **Cost**

The cost of furnishing all materials and performing all work for constructing forms, including any necessary treatment or coating of forms are to be included at applicable prices bid in the schedule.

### **Reinforcing Bars**

#### **a. General**

Reinforcing bars shall be placed in the concrete as shown in the drawings or as directed. For anchoring the concrete to the Hard rock provision of Anchor rods is made in the Drawing and the Contractor shall place these anchor rods to the spacing and depth shown in the drawings.

#### **b. Materials**

Unless shown otherwise on the drawings the reinforcement to be used shall be High yield strength deformed (H.Y.S.D) bars of grade Fe 415 conforming to I.S. 1786-1985. I.S. specification for high yield strength deformed steel bars and wires for concrete reinforcement.



### **c. Placing**

Reinforcement shall be bent and fixed in accordance with the procedure specified in I.S, 2502-1963 (code of practice for bending and fixing of bars for concrete reinforcement), All reinforcement shall be placed and maintained in the position shown in the drawings splices shall be located where shown in the drawings, provided that the location of the splices may be altered subject to the written approval of the Engineer-in-Charge,

Subject to the written approval of the Engineer-in-Charge, the Contractor may for his convenience, splice bars at additional locations other than those shown on the drawings. All additional splices allowed shall be at the expense of the Contractor. In order to meet design and space limitation on splicing, some bent bars may exceed usual clearance cutting and bending of such bars from select lengths may be required at the site.

Unless otherwise prescribed, placement dimensions shall be to the centre lines of the bars. Reinforcement will be inspected for compliance with requirements as to size, shape, length, splicing, position, and amount after it has been placed, but before being laid with concrete.

Before reinforcement is embedded in concrete the surface of the bars and the surfaces shall be cleaned of heavy flaky rust, loose mill scale, dirt, grease or other foreign sunstones, which in the opinion of the Engineer-in-Charge are objectionable. Heavy flaky rust that can be removed by firm rubbing with burlap, or equivalent treatment is considered objectionable.

As specified in clause 11.3 of I.S. 456-1978 unless otherwise specified by the Engineer-in-Charge, reinforcement shall be place with the following tolerances.

- a. For effective depth 20 mm or less = 10mm
- b. For effective depth more than 200mm = 15mm
- c. The cover in no cases be reduced by more than one third of specified cover or 5mm whichever is less.

Reinforcement shall be securely held in position so that it will not be displaced during the placing of the concrete and special care shall be exercised to prevent any disturbances of the reinforcement in concrete that has already been placed. Welding of bars shall be done as directed by the Engineer-in-Charge and in conformity with the requirements of clause 11.4 of I.S. 456-1978. Chairs, hangers, spacers, and other supports for reinforcement shall be of concrete, metal, or other approved material. Concrete cover shall be as shown on the drawings

**d. Reinforcement Drawings**

The Engineer-in-Charge will supply drawings of reinforcement details and bar bending Schedule for adoption,

**e. Measurement and Payment**

Measurement for payment of reinforcement bars will be based on the weight of the bars placed in the concrete in accordance with the drawings supplied by the Engineer-in-charge in conformation with those specified drawings have been determined at the time of embedment. Except as otherwise provided below payment for furnishing and placing reinforcing bars will be made at the unit pre per one quintal bid in the bill of quantities for furnishing and placing reinforcing bars, which unit price shall include the cost of reinforcing bars, attaching, wire ties or other approved supports and of cutting, bending cleaning securing and maintaining in position reinforcing bars as shown on the drawings.

The total weight of bars placed, as reinforcement in concrete shall be arrived at by adding the products of lengths of each of size and mass per meter (vide Table 1 and Para 6.2.1 of IS 1786-1985) of that size of rod.

**Dowels**

The dowels shall be of same H.Y.S.D bars of grade Fe 415 conforming to I.S. 1786-01985 as used for reinforcement.

Details for dowels shall be as shown on the drawings or as directed by the Engineer-in charge.

Dowels shall be placed in the concrete where shown on the drawings or where directed and will be accepted for compliance with requirements as to size, shape, length, position and amount after they have been placed but before being covered by concrete.

The dowels shall be accurately placed and secured in position so that they will not be displaced during the placing of the concrete.

Measurement for payment of dowels will be made only on the weight of the dowels placed in the concrete in accordance with the drawings or as directed. Payment for furnished and placing of dowels will be made at the unit price per on quintal bid in the bill of quantities for furnishing and placing of reinforcement bars which unit price shall include the costs of furnishing all the materials and for placing the dowels as required.

## **Preparation for placing**

### **Construction Joints**

Construction joints are defined as concrete surfaces upon or against which concrete is to be placed and to which new concrete is to adhere but which have become so rigid that the new concrete cannot be incorporated integral with that previously placed. The provision of construction joints shall conform to clauses 12.4.1 and 12.4.2 of I.S. 456-1978.

When the work has to be resumed on a surface, which has hardened such surface, shall be roughened. It shall then be swept clean and thoroughly wetted. For vertical joints neat cement slurry shall be applied on the surface before it is dry. For horizontal joints the surface shall be covered with a layer of mortar about 10 to 15 mm thick composed of cement and sand in the same ratio as the cement and sand in concrete mix. This layer of cement slurry or mortar shall be freshly mixed and applied immediately before placing of the concrete.

Where the concrete has not fully hardened all laitance shall be removed by scrubbing the wet surface with wire of bristle brushes, care being taken to avoid dislodgement of particles or aggregate. The surface shall be thoroughly wetted and all free water removed. The surface shall then be coated with neat cement slurry. On this surface, a layer of concrete not exceeding 150 mm in thickness shall first be placed and shall be well rammed against old work, particular attention being paid to corners and close spots, and work thereafter shall proceed in the normal way.

### **Preparation of proper Construction Joints:**

Preparation of proper construction joints must be ensured by the contractor through the following guidelines. A sketch of air water gun is also enclosed. The contractor must use such air water guns.

### **Compaction**

The compaction of concrete shall conform to clause 12,3 to I.S. 456-1978.

Concrete shall be consolidated by vibrators / tampers. The vibrations shall be sufficient to removal all undesirable air voids from the concrete, including the air voids trapped against the forms. After consolidation, the concrete shall be free of rock pockets and honeycomb areas shall be closed tightly against all surfaces of forms and embedded materials. All concrete shall be properly consolidated before it hardens.

Except, as herein after provided, consolidation of all concrete shall be by immersion-type vibrators. Immersion type vibrators shall be operated in nearly vertical position and the vibrating head shall penetrate and re-vibrate the concrete in the upper portion of the underlying layer. Care shall be exercised to avoid contact of the vibrating head with embedded items and with formed surfaces, which will later be exposed to view. Concrete shall not be placed upon either plastic concrete until the previously placed concrete has been thoroughly consolidated.

Form vibrators shall be used in conjunction with slip form lining machines to consolidate concrete in canal linings. Such vibrators shall be arranged for effective uniform consolidation of the concrete. The Engineer-in-charge or his representative may remove samples of the hardened concrete for testing and examination, and the contractor shall repair, at no cost to the Government, concrete from which such samples are removed.

Immersion type vibrator shall be operated at a speed of 7000 revolutions per minute when immerse in concrete. Form vibrators shall operate at a speed of at least 6000 revolutions per minute when being used to consolidate concrete. The contractor shall immediately replace improperly operating vibrators with acceptable vibrators.

### **Finishes and finishing**

The contractor shall notify the Engineer-in-charge before finishing concrete. Unless inspection is waived, in each specific case, finishing of concrete shall be performed only when on Engineer's representative is present. General surfaces will be tested by the Engineer-in-charge in where necessary to determine whether the concrete surface is within the specified tolerances shall be repaired in accordance with Paragraph 6.3.21.

Interior surfaces shall be sloped for drainage where shown on the crawling or as directed. Surfaces which will be exposed to the weather and which would normally be level shall be sloped for drainage.

## **CURING**

### **General**

The contractor shall furnish all materials and perform all work required for curing concrete.

The uniformed top surfaces of concrete shall be cured for 28 days with a damp sand covering or curing mat over. The sand or curing mats shall both be kept so wet as to allow alter to drain from them and stain other concrete. The sand or curing mats shall be removed after the expire of the during period.

All concrete surfaces shall be treated as specified to prevent loss of moisture from the concrete until the required curing period elapsed or until immediately prior to placement of other concrete or backfill against those surfaces. Only sufficient time to prepare construction joint surfaces and to bring them to a surface dry condition shall be allowed between discontinuance of curing and placement of adjacent concrete.

Forms shall be removed with 24 hours after the concrete has hardened sufficiently conforming to clause 10.3 of I.S. 456-1978 to prevent structural collapse of other damage by careful form removal. Where required, repair of all minor surface imperfections shall be made immediately after form removal and prior to curing. Minor surface repair shall be completed within 2 hours after form removal and shall be immediately followed by the initiation of curing by the applicable method specified herein. Concrete surfaces shall be kept continuously moist after form removal until initiation for curing.

### **Placement of Kraft Paper**

The top surface of the masonry should beveled and pointed with brush, with asphaltic emulsion of 20/30 grade, such that the bearing surface is ordered smooth and uniform. Over this surface, Kraft paper bearing should be placed and the top painted with asphaltic emulsion of 20/30 grades. The unit price bid in the bill of quantities for this item shall include the cost of all materials and labour involved in the operations.

## **BRICK MASONRY**

I.S 1077/1970 and 3102/1971 cover specifications for Building Bricks and classification.

Bricks are to be well soaked in water before use for a period sufficient for the water to penetrate the whole depth of the bricks. For further instructions regarding soaking and size of bricks to be used IS 2212/1962 and IS 1200 Part III/1970 shall apply. Wetting the bricks assists in removing the dirt, sand and dust from them and also it prevents the suction of water from the wet mortar, as otherwise the mortar is likely to dry out soon and crumble before attaining any strength. Bricks shall not be too wet at the time of use as they are likely to slip on the mortar and proper adhesion of bricks to mortar will not be possible.

Regarding making of bricks IS 2117/1967 shall apply. Specifications for facing brick is covered by IS 2691/1972,

**Mortar:** Specification is covered by IS 2212/62 should the mortar perish, i.e., become dry white of powdery through neglect of watering =, the work shall be pulled down and rebuilt at the

Contractor's expense, or should the contractor fail to watch the work to the satisfaction of the Engineer-in-charge of the work the later may supply the requisite men to watch the work properly and charge the cost to the contractor.

All masonry shall be washed down on completion and strains-lime or otherwise removed from the face.

No bats or cut bricks shall be used except where absolutely required for obtaining the dimensions of the different courses for obtaining the specified bond wherein the opinion of the Engineer-in-charge of the work is of to o pretty a nature to warrant the special molding of bricks of the shapes required.

Setting bricks in mortar, bond and making of joints are covered by ILS 2212/1962.

No extra payment will be made for the manner of finishing bricks work face joints and it shall be included by the contractor in his unit rate for brickwork.

Raking back, when circumstances render it necessary on the same section of the structure in uneven course the bricks shall be raked back so as to maintain an uniform and effective bond.

Openings: This is covered in para 10.2, 10.4 of IS 2212/1962.

Contract unit rate for brickwork are inclusive of queen and joints

Measurement of brick work is covered by IS 1200

Brickwork shall generally be measured in cubic metres or otherwise specified.

Walls half bricks in width and less shall be measured in square metres stating thickness.

Brick walls of width over half bricks shall be measured in multiples of half brick that shall be deemed to be inclusive of mortar joints, irrespective of excess of executed width. Wall exceeding one brick thick by not exceeding three bricks in thickness shall be measured in multiples of half brick which shall be deemed to be inclusive of the mortar joints where fractions of half brick occur due to architectural or other reasons the measurements shall be taken as follows:

- a. Up to  $\frac{1}{2}$  brick-actual measurement,
- b. Exceeding  $\frac{3}{4}$  brick - full half brick walling more than three bricks thickness the actual thickness of wall shall be measured.

The following shall be taken as half brick measurements

For Metric bricks

For bricks 19 \* 9 \* 9 cm - 10.00 cm

For bricks 19 \* 9 \* 5.7 cm - 10.00 cm

For Bricks other than metric bricks

Brick of size 9" \* 4 1/2" \* 3" (23 \* 11.5 \* 7.5 cm) - 11.50 cm

Brick of size 8 3/4" \* 4 1/4" \* 2 3/4" (23 \* 11 \* 7 cm) - 11.00 cm

Brick of size 8 3/4" \* 4 1/4" \* 2 1/4" (23 \* 11 \* 5.7 cm) - 11.00 cm

Brick of size 8 3/4" \* 4 1/4" \* 2" (23 \* 11 \* 5 cm) - 11.00 cm

Handling bricks: Bricks shall not be handled in baskets or in other manner, which will destroy the sharpness of their edges.

Rounding corners: Corners of rooms or pillars whether interior (or) projecting shall not be rounded by in exceptional cases where it is so desired round the corners shall be done in piaster for the reentrant corners but will require chiseling of projecting angles before plastering.

Brick on edge coping etc. Para 10 of IS 2212/1962 shall apply. No payment will be made for this work, over the contract rate for brickwork. The contract rate shall include the same.

**Plinth offsets:** Plinth offsets on the interior faces only should be kept 15 cm below floor level (unless finished thickness of floor to be laid will determine, instead of the 15 cm) to allow for the floor paving which is done subsequently coming upon the face of the superstructure, Similarly retaining wall of verandahs etc must be built with due regard to the slope allowed for the floors.

**Parapets:** All parapets will be measured under the masonry below them and which they are continuous in a floor, the parapet has to be reckoned with the lower floor.

### **General quality**

Bricks shall be hard - or machine moulded, they shall be free from cracks, flaws, and modules of free lime. Bricks of 9 cm height shall be moulded with a frog 1 or 2 cm deep on one of its flat side. Bricks of 4 cm height and those made by an extrusion process may not be provided with frogs.

## **Physical properties**

Compressive strength: common building bricks shall have a minimum compressive strength of 50 kg/cm<sup>2</sup> when tested in accordance with procedure laid down in table 1 of IS: 3495 -1966 (see also note under 1.1)

The compressive strength of any individual brick shall not fall below the average compressive strength specified for the corresponding class of bricks by more than 20 per cent.

**Water absorption:** When tested accordance with the procedure laid down in table 2 of ID: 3495 - 1966 (method of sampling and testing of clay building bricks) the average water absorption of common building bricks shall not be more than 20 per cent up to class 125 (see 30-1 below) and 15 per cent for higher class, by weight after immersion in cold water for 24 hours.

**Efflorescent:** When common building bricks are tested in accordance with the procedure laid down in Table 3 of IS: 3495 - 1966 (method of sampling and testing of clay building bricks) the rating of efflorescent shall not be more than "moderate" up to class 125 and "slight" for higher classes.

### *General quality of burnt clay solid Bricks:*

**General quality:** The facing bricks shall be made of clay, shale or mixture of these materials with or without admixtures and burnt to meet the requirements of this standard. The coloring material added to the clay shall be of suitable ceramic materials and shall be well distributed throughout the body. The bricks shall be of uniform colour.

Bricks shall be free from cracks, flaws and modules of free lime and of even texture. These shall be thoroughly burnt and shall have plane rectangular faces with parallel sides and sharp straight right-angled edge.

The average compressive strength obtained in accordance with the procedure laid down in Table 1 of 3495-1966 (Method of sampling and testing clay building bricks) shall not be less than 75 kg/cm<sup>2</sup> for class II and 100 kg/cm<sup>2</sup> for Class I.

Water absorption requirement when tested in accordance with the procedure laid down in Table 2 of IS: 3495.-1966 for 24 hours immersion shall not exceed 15 per cent.

When tested in accordance with the method specific in Table 3 of IS: 3495-1966 fluorescence requirements shall be "Nil" for both cases.



Bricks: Unless otherwise specified, burnt clay bricks shall conform to the requirement of IS: 1077-1957 specification for common burnt clay building bricks, and shall be of the specified class.

### **GENERAL TECHNICAL SPECIFICATION - WATER SUPPLY AND SANITARY**

The contractor, while carrying out pile line work, should encounter any interference with other services such as cables or conduits etc., should take sufficient precaution in order to prevent any damage to them~ In case any damage, it should be rectified to original condition to the satisfaction of concerned service engineer at the contractor's cost.

The rate quoted by the tenderer for all the items covered under internal sanitary installations shall be the rate any floor (Ground Floor, First floor, Second floor and upper floors).

All sanitary fittings and fixtures shall be handed over to engineer/owner's representative complete in all respects on completion of work and no incomplete work will be taken over. All loss or damage of these due to any reason whatsoever before handing over shall be at contractor's cost and charge.

The rates are for complete items as fixed in position and overall costs = e.g. cutting of holes, chases, etc., and also for provision of fixing arrangements viz., clamps brackets, wooden blocks etc. the rates shall also include restoration to original condition of all damage to walls, floors etc. during the process of fixing sanitary installations, water supply and drainage. All the debris of plumber's excavation, etc., shall be removed without any extra charge° The plumbing work / or the other building work effected by the plumbers work shall be left thoroughly cleaned to the satisfaction of the Engineer.

Unless specified to the contrary, all materials should conform to IS specification and be of best quality and make as approved by the Engineer. Testing shall be undertaken for various pipe lines and as may be directed by the Engineer.

All G.I. pipes, brackets, fixtures, and manhole covers shall be painted with 2 coats of synthetic enamel paint.

All G.I. pipes and fixtures and M.S. fixtures shall be painted with 2 coats of synthetic enamel paint over a primer coat of red lead.

All painting work shall be carried out to the satisfaction of the Engineer and cost thereof shall be

covered in the rates of all the respective items.

The plumbers shall obtain the drainage completion certificate and the certificate of adequate water supply from the Municipality and shall abide by the rules and regulations prescribed by them or other authorities concerned.

**Samples:**

Samples of the materials proposed to be used shall be submitted for approval of the Engineer-in-charge before taking up the work in hand,

**Testing of work and material**

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

Wherever reference has been made to Indian Standards or any other specifications the same shall mean to refer to the latest specification irrespective of any particular edition of such specifications being mentioned in the specifications below or schedule of quantities.

The rates quoted shall be for all heights and depths,

The quantities indicated in the schedule are the total quantities for all the buildings put together. However for further clarifications the split up of the total quantities for each item among buildings is shown in the Annexure attached to the Bill of Quantities. The bidder should note these quantities are approximate and are subject to variations.

**PAINTING NEW WOOD WORK AND IRON WORK**

Specification for painting new woodwork lay down in IS 2338 (part I) / 67 shall apply.

Specification for painting new ironwork lay down in IS 1477 (part I) / 71 shall apply.

Approved paint shall be brought to the site of work by the contractor in their original containers in sealed condition. The material shall be brought in at a time in adequate quantities to suffice for the whole work or at least a fortnight work. The materials shall be kept in the joint custody of the contractor or Engineer in charge. The empties shall not be removed from the site of work, till the relevant tie of work has been completed and permission obtained from the Engineer in

charge.

### **Commencing work**

Painting shall not be started until the Engineer in charge has inspected the items of work to be painted, satisfied himself about their proper quality, and given his approval to commence the painting work.

### **Preparation of surface**

The surface shall be thoroughly cleaned and dusted. All rust, dirt, scales, smokes and grease shall be thoroughly removed before painting is started. The prepared surface has received the approval of the Engineer in charge after inspection, before painting is commenced.

### **Application**

Before pouring into smaller containers for use, the paint shall be stirred thoroughly in its containers, when applying also; the painting shall be continuously stirred in the smaller containers so that its consistency is kept uniform.

The painting shall be laid on evenly and smoothly by means of crossing and laying off, the later in the direction of the grain of wood. The crossing and laying consists of covering the area over with paint, brushing the surface hard for the first time over and then brushing alternatively in opposite direction two or three times and then finally brushing lightly in a direction at right angles to the same. In this process, no brush marks shall be left after laying off is finished. The full process of crossing and laying off will constitute one coat.

Each coat shall be allowed to dry out thoroughly and rubbed smooth before the next coat is applied, This should be facilitated by through ventilation,

Each coat except the last coat, shall be lightly rubbed down with sand paper or fine price stone and cleaned off dust before the next coat is laid.

No left over paint shall be put back into the stock tins. When not in use, the containers shall be kept properly closed.

No hair marks from the brush or logging of paint puddles in the corners of panels angles of moulding etc, shall be left on the work.

In painting door and windows the putty round the glass panels must also be painted, the care must be taken to see that no paint stains etc. are left on the glass. Top of shutters and surfaces

in similar hidden locations shall not be left out in painting~

In painting steel work, special care shall be taken while painting over bolts, nuts, rivets, overlaps etc.

## **MISCELLANEOUS**

### **Steel Doors and windows**

All steel doors and windows shall conform to IS 1039-1968. Appendix A and NB. code, part V of Appendix.

Frames shall be fixed to plumb and accurate, as otherwise opening portions will not function satisfactorily. For actual fixing the procedure is usually given by the makers of each type of door and window and shall be followed with such modifications as lie Engineer in charge order.

The glazing shall conform to standard specification for glaziers work regarding thickness and type of glass and putty to be used.

### **Aluminum Doors & Windows & Ventilators**

The specifications shall conform to IS 1946-1961. The fixing of doors, windows, and ventilators shall be as per IS 1081-1960; the glazing shall conform to Para 10 of IS 1080-1960.

### **Rolling shutter**

The shutter should conform to specification as laid down in IS 6248-1971. Clear width and clear height of the opening for rolling shutters shall be measured.

### **Doors and Windows, Furniture and Fittings**

Hold fasts shall be made from mild steel that iron of specified size. The bolt head shall be sunk into the frame and the other end should be fixed in cement concrete block of specified size.

### **Fittings**

Fittings shall be of brass or Aluminum or as specified conforming to IS standards. These shall be well made, reasonably smooth and free from sharp edges, corners, flaws and other defects. Screw holes shall be counter sunk to suit the head of specified screws. The fittings generally used for different types of doors and windows are indicated in the schedule. The Engineer in Charge should approve the fittings. These fittings should be properly fixed using C.P, nettle fold screws.

## **Iron Grills**

These shall be manufactured as per drawing and specification. All members shall be thoroughly cleaned off rust, scales dust etc., and given a red oxide priming coat. The process of welding various members shall be done as per standard specification.

## **Weathering Course and Pressed Tiles**

Weathering course of brick jelly concrete is laid over RC slab using 20mm gauge broken brick jelly and stacked lime in the proportion as specified without using sand~ Necessary slope to drain the rainwater shall also be given in the weathering course The slope shall not be less than 1 in 50 and as directed by the Engineer in Charge.

After six days or after the concrete laid has hardened, one course of pressed tiles of size 20 cm \* 20cm \* 20 mm as approved shall be laid in CM. 1:3 with standard water proofing agent and rubbed smoothly.

## **Rainwater down fall pipe**

The pipes used shall conform to standard specifications. These shall be straight, true, smooth, and regular in thickness. Pipes shall be secured to the face of the wall, below all joints by standard holder bat clamps.

## **White washing and colour washing**

Wherever scaffolding is necessary it shall be erected on double supports laid together horizontal pieces over which scaffolding plank shall be fixed. No ballies, bamboos or planks shall rest on or touch the surface which is being white or colour washed.

Where ladders are used piece of gunny bags shall be tied on their tops to avoid damage or scratchier to walls. For white washing the ceiling proper stage scaffolding shall be erected.

Before new work is white washed, the surface shall be thoroughly brushed free from mortar dropping and foreign matter.

Each coat shall be allowed to dry before the next one is applied. Further each coat shall be inspected and approved by the Engineer - in - charge before the subsequent coat is applied.

The mineral colours not affected by lime shall be added to white washing. No colour wash shall be done until a sample of the colour wash of the tint is approved by the Engineer –in- charge.

### **Damp proof course**

Water proofing material of approved quality shall be added to the Cement mixture in the proportion as specified or as directed by the Engineer in charge. The thickness of DPC is 20mm and the width is for the full masonry wall.

### **ELECTRICAL WORKS**

### **SPECIAL CONDITIONS**

### **CONDITIONS**

### **(Electrical Works)**

1. All the materials to be used in works should be ISI marked and of approved make and quality.
2. All the materials approved by the Exe. Engineer before use on work.
3. Necessary guarantee certificates should be produced for the fittings/fixtures used before making payment.
4. If any defective material found in works they should be replaced immediately as and when warranted without extra cost.
5. The wires used on works should be "FINOLEX" brand.
6. Fans / Exhaust fans should be of "CROMPTON" brand.
7. Bulbs, Tube lights fittings and tube lights, S.V. lamps should be of 'PHILIPS' brand.
8. The Contractor is responsible for obtaining service connection from the M.E.S. The requisite fee alone will be paid by the TNMSC Ltd.

### **RECEPTION AND DISTRIBUTION OF MAIN SUPPLY**

#### **Control at point of entry of supply**

There shall be linked main switchgear with fuse of circuit breaker on each live conductor of the supply mains at the point of entry. The wiring throughout the installation shall be such that there is no break in the neutral wire except in the form of linked switchgear. The neutral shall also be distinctly marked. In this connection rule 32 (2) of the Indian Electricity Rules, 1956 (see Appendix A) shall be referred.

The main switchgear shall be situated as near as applicable to termination of service line and shall be easily accessible without the use of any external aid.

On the main switchgear, where the conductors include an earthed conductor of a two-wire system or an earthed neutral conductor of a multi-wire system or a conductor, which is to be connected thereto, an indication of a permanent of a permanent nature shall be provided to identify the earthed neutral conductor. In this connection rule 32 (1) of the Indian Electricity Rules, 1956 (see Appendix A) shall also be referred.

### **Main switchgears, switchboard, and their location.**

All main switches of miniature circuit breakers shall be either metal clad enclosed pattern or of any insulated enclosed pattern which shall be fixed at close proximity to the point of entry of supply.

#### **Location:**

Open type switchboards shall be placed only in dry situation and in well lateral rooms and they shall not be placed in the vicinity of storage batteries and exposed to chemical fumes.

In a damp situation or where inflammable or explosive dust, vapour or gas its likely to present, the switch boards shall be totally enclosed or made flame proof as may be necessitated by the particular circumstances.

Switchboards shall not be erected above gas, stoves or sinks or within 2.5m of any washing unit in the washing rooms of laundries or in the bath rooms, lavatories, toilets or kitchens.

In case of switch boards; if unavoidably; fixed in places likely to be exposed to weather to drip or to abnormal moist atmosphere, the outer casing shall be weather proof and shall be provided with glands or bushings or adopted to rewire conduct according to the manner in which cables are run.

A switchboard shall not be installed so that its bottom is within 1.25m, above the floor, unless the front of the switchboard is completely enclosed by a door, or the switchboard is located in a position to which only authorized persons have access.

Switchboard shall be recessed in the wall if so specified in the schedule of work or in the special specification. The front shall be fitted with hinged panel of wood or other suitable material such as hardboard in good frame with locking arrangement, the outer surface of door being flush with walls. Ample room shall be provided at the back for connections and at the front between the switchgear mountings and the door.

Equipment, which is on the front of a switchboard, shall be so arranged that inadvertent personal contact with live parts is unlikely during the manipulation of switchgears, changing of fuses or like operations.

No holes other than the holes by means of which the panels are fixed will be drilled closer than 1.3cms from any edge of the panel.

The parts be part unless they effectively screened by substances batteries or non-hygroscopic, non-inflammable insulating material shall be so spaced that and are cannot be maintained between such parts and earth.

The arrangements of the gear shall be such that they shall be readily accessible and their connections to all instruments and apparatus shall also be traceable.

In every case in which switches and fuses are fitted on the same pole, these fuses shall be so arranged that the fuses are not alive when their respective switches are in the 'off' position.

No fuses other than fuses in instrument circuit shall be fixed on the back of or behind a switchboard panel or frame.

All the metal switchgears and switchboards shall be painted, prior to erection with one coat of anti-rust paint. After erection, they shall be painted with two coats of approved enamel or aluminum paints as required on all sides wherever accessible.

All switchboards connected to medium voltage and above shall be provided with "Danger" notice plate conforming to relevant Indian Standards.

### **Type of Switchboards**

Metal clad switchgear shall be preferably be mounted on any of the following types of boards.

Hinged type metal boards - these are particularly suitable for small switchboard for mounting metal clad switchgear connected to supply at low voltage (230 volts).

Switchboards shall be suitable for mounting of metal clad switchgear consisting of not more than one iron clad switch and ICDB 4 way or 6 way 15 amps per way.

These shall consist of a box made of sheet metal not less than 2mm thick and shall be provided with a hinged cover to enable the board to swing open for examination of the wiring at the back. The joints shall be welded. A teakwood board thoroughly protected both inside and outside with



good insulating varnish conforming to IS 347-1952 (specification for varnish, shellac for general purposes with Amendment No.i) and not less than 6.5mm thickness shall be provided at the back for attachment of incoming and outgoing cables. There shall be a clear distance of not less than 2.5 cm between the Teakwood board and the cover, the distance being increased for larger boards in order that on closing of the cover the insulation of the cable is not subjected to damage and no short length of cable is subjected to excessive twisting or bending in any case. The board shall be securely fixed to the wall by means of rag bolts, plugs or wooden gutties and shall be provided with a locking arrangement and an earthing stud.

No apparatus shall project beyond any edge of the panel. No fuse body shall be mounted within 2.5 cm of any edge of the panel.

Fixed type metal boards - such board shall be suitable for large switchboards for mounting large numbers of switchgears and/or higher capacity metal clad switchgear or both.

These shall consist of an angle or channel iron frame fixed on the wall or on the floor and supported on the wall at the top. There shall be a clear distance of 1 m in front of the switchboard, if there are any attachments of bare connection at the back of the switchboard. Rule 51(1) of Indian electricity rules (see Appendix A) shall apply.

The connection between the switchgear mounting and the outgoing cable up the wall shall be enclosed in a protection pipe.

Teak wood boards - for small installation connected to a single phase 240 volts supply, teak wood boards may be used as main boards or sub-boards. These shall be of seasoned teak or other durable wood with solid back impregnated with varnish of approved quality with all joints dovetailed.

### **Main and Branch distribution boards**

Main and branch distribution boards shall be of any type.

Main distribution boards shall be provided with a switch or circuit breaker on each pole of each circuit a fuse on the phase or live conductor and a link on the neutral or earthing conductor of each circuit. The switches shall always be linked.

### **Branch Distribution Boards:**

Branch distribution boards shall be provided with a fuse or a miniature circuit breaker or both of adequate rating /setting on the live conductor of each circuit and the earthed neutral conductor

shall be connected to a common link and be capable of being disconnected individually for testing purposes. At least one spare circuit of the same capacity shall be provided on each branch distribution board.

In residential and office installations lights and fans may be wired on a common circuit. Such sub-circuit shall not have more than a total of ten points of lights, fans, and socket outlets. The load of such circuit shall be restricted to 800 watts. If a separate fan circuit is provided the number of fans in the circuit shall not exceed ten. Power circuits shall be designed according to the load but in no case shall there be more than two outlets on each sub circuit.

### **Installation and Distribution Board:**

The distribution fuse boards shall be located as near as possible to the centre of the load they are intended to control.

These shall be fixed on suitable stanchion or wall and shall be accessible for replacement of fuses.

These shall be either metal clad type or air-insulated type. But if exposed to weather or damp situations, they shall be totally enclosed in accordance with I.S.2148-1968 (Specification for flame proof enclosures of electrical apparatus (first revision) with Amendment Nos. 1 to 3).

### **Wiring of Distribution Boards**

In wiring a branch distribution board, the total load of the consuming devices shall be divided as far as possible evenly between the numbers of ways of the board leaving the spare circuit for future extension.

All connections between pieces of apparatus or between apparatus and terminals on a board shall be neatly arranged in a definite sequence following the arrangement of the apparatus mounted thereon avoiding unnecessary crossings.

Cables shall be connected to terminals only be soldered or welded lugs unless the terminals are of such a form that they can be securely clamped without cutting away of cable strands. Aluminum conductors should be tinned before insertion in clamps.

All bare conductors shall be rigidly fixed in such a manner that a clearance of at least 2,5cm is maintained between conductors of opposite polarity or phase and between the conductors and any material other than insulating material.

In a hinged board the incoming and outgoing cables shall be neatly bunched and shall be fixed in such a way that the door shall be cable of swinging through an angle of not less than 90 degrees.

If required in the special specification, a pilot lamp shall be fixed and concocted through an independent single pole switch and fuse to the bush bars of the board.

### **Fuses**

A fuse carrier shall not bind with a fuse – element larger than that for which the carrier is designed.

The current rating of a fuse shall not exact the current rating of the smallest cable in the circuit protected by fuse.

The use of rewirable fuses should be restricted to circuits with short-circuit level of 4 KVA; for higher level either cartridge or HRC fuses shall be used.

Every fuse shall have its own case or cover, on in an adjacent conspicuous position, an indelible indication of its appropriate current rating for the protection of the circuit which it controls.

### **Passing through walls and floors**

When conductors pass through walls, any one of the following methods shall be employed, care shall be taken to see that wires pass very freely through protective pipe or box and that wires pass through in a straight line without any; twist of cross in wire, on either ends of such holes,

A box of teak wood or approved hard wood extending through the whole thickness of the wall be buried in the wall and casings or conductors shall be buried in the wall and casings or conductors shall be carried so as to allow 1.3cm air space on the three sides of the casing or conductor.

The conductors shall be carried in an approved heavy gauge solid drawn or lap welded conduit conforming to I.S. 1653-1960(specification for Rigid steel conduits for electrical wiring (second revision)) or in a porcelain tube of such size that it permits easy drawing in. the ends of conduit shall be neatly bushed with porcelain, wood or other approved material.

Insulated conductors while passing through floors shall be protected from mechanical injury by means of Steel conduit (as per I.S. 1653-1963) to a height of not less than 1.5 meters above the floors and flush with the ceiling below. This steel conduit shall be earthed and securely bushed.

Where a wall tube passes outside a building so as to be exposed to weather, the outer end shall

be bell mouthed and turned downwards and properly bushed on the open end,

### **Fixing on walls and ceiling.**

Plug for ordinary walls or ceiling shall be well seasoned teak or other approved hard wood not less than 5cm long by 2.5cm square on the inner end and 2cm square on the outer end. They shall be cemented into walls within 6.5mm of the surface, the remainder being finished according to the nature of the surface with plaster or lime punning.

Where owing to irregular coursing or other reasons the plugging of the walls or ceiling with wood plugs present difficulties the wood pattern or metal conduit shall be attached to the wall or ceiling in an approved manner. In the case of new buildings, the teak wood plugs shall be fixed in the walls, as far as possible before first coat of white washing.

Plugging of walls or ceiling can be done in a better way where neatness is the first consideration. In all such cases an approved type of asbestos or fiber fixing plug (Raw or Phil plug) with correct sizes of tools shall be used and done in a workman like manner.

### **METHODS OF INTERNAL WIRING**

Tough Rubber Sheath or P.V.C, - sheathed wiring system

Attachment to walls and ceilings - all sheathed cables on brick walls, stone or plaster walls and ceilings steel joists, or any structural steel work be run on well seasoned perfectly straight and well varnished on four sides take wood batten not less than 10 mm finished thick and the width of which is such as to suit total width of cables laid on the batten. Prior to erection, these shall be painted with one coat of varnish conforming to IS 347-1952, approved distemper, or approved paint of colour to match with the surroundings. These battens shall be secured to the walls and ceilings by flat head wood screws to wood plugs or other approved plugs at an interval not exceeding 75cm. The flat head wood screws shall be counter sunk within the wood batten and smoothed down with file.

Where wiring is to be carried along the face of rolled steel joist, a wooden batten of adequate width shall first be laid on the same and clipped to it as inconspicuously as possible. The wiring should then be fixed to this backing in the ordinary way where wiring passes through structural steel work; the holes shall be suitably bushed to prevent abrasion of cables,

This method of wiring shall in no case be run above false ceiling without the approval of Engineer -in-charge.

Link clips only tinned brass link clips or joint clips shall be used. Link clips or joint clips shall be used, Link clips or joint clips shall be so arranged that one single clip shall not hold more than two twin core TRS or PVC sheathed cables up to 2.5 sq.mm, above which a single clip shall hold a single twin core cable or two single core cables.

The clips shall be fixed on varnished wood battens with brass pins or brass screws and spaced at intervals of 10 cm in the case of horizontal runs and 15 cm in the case of vertical runs. For the wiring and runs of mains exposed to heat and rain, clips specially made of outdoor use from a durable metal, resistant to weather and atmospheric corrosion shall be used.

Earthing precautions shall be adopted to ensure that all lead sheathing including portable appliance with exposed metal parts, together with all joint boxes and other similar receptacles are efficiently earthed in accordance with the requirements laid down under chapter 6 and made electrically continuous throughout their lengths by means of soldered joints or approved suitable clamps or alternatively with earth continuity conductors (earth bonded cables) specially manufactured for the purpose. The earthing shall extend to all main switches distribution boards etc, in compliance with I.E. rules, 1956 (see appendix A) as well as manufacturer's design and instructions in connection with earthing of all insulated incrogap main switches or similar fittings.

Testing - the electrical resistance of the metal sheathing together with the resistance of the earthing lead measure from the connection with the earth electrode to any other position in the completed installation shall not exceed one Ohm.

Painting - where required all metal sheath wiring or its protective covering when such is fitted shall be neatly painted after erection with two coats of Zinc paint.

### **Recessed conduit wiring system**

General - recessed conduit wiring system shall comply with all the requirements for surface conduit wiring system and in addition conform to the requirements specified in the following clause:

The chase in the wall shall be neatly made and be ample dimensions to permit the conduit to be fixed in the manner desired. In the case of buildings under construction chases shall be provided in the wall, at the time of their construction. The conduits shall be buried on the wall plastering and shall be filled up neatly after erection of conduit. In case of exposed brick / rubble masonry

work, special car shall be taken to fix the conduit and accessories in position along with the building work.

## **EARTHING**

### **General**

The object of an earthing system is to provide as neatly as possible a system of conductors at a uniform potential and as nearly zero or absolute earth potential as possible. The purposes of this is to ensure that in general all parts of apparatus other than live parts shall be at earth potential as well as to ensure that process coming in contact with it shall be at earth potential at all times.

### **System earthing:**

Earthing associated with current carrying conductor is normally essential to the security of the system and is generally known as system earthing.

### **Equipment earthing:**

Earthing of non - current carrying metal work and conductor is essential to the safety of human life, of animals and of property and it is generally known as equipment earthing.

As far as possible all earth connection shall be visible for inspection and shall be carefully made: if they are poorly made or inadequate the purpose for which they are intended, loss of life and property or serious personal injury may result. Earthing shall conform to the relevant Indian Standards.

## SCHEDULE 'A'

### SCHEDULE OF RATES AND APPROXIMATES QUANTITIES

#### (Construction of co-optex showroom building at Hosur)

- a) The Quantities given here are those upon which the limps-sum Quotation cost of the work is based but they are subject to alterations as provided for in the conditions of this contract and do not necessarily show the actual quantities of wok to be done. The Unit rates noted below are those governing payment for extra or deductions or omissions according to the conditions of the contract as set forth in the preliminary Specifications of the Madras Detailed Standard Specifications and other conditions or specifications of the this contract.
- b) It is to be expressly understood that the measured work is to betaken not (not withstanding) any customs or practice to the contrary according to the actual quantities when in place and finished according to the drawing or as may be ordered from in to tine by the Executive Engineer and the cost calculated by measurement or weight at the respective prices will out any additional charge for any necessary or contingent works connected therewith. The rates quoted are for.

Item No	Probable Quantity	Description of work	Rate			Unit Words	Amount	
			Words	Figure			Figure	
				Rs.	P.		Rs.	P.
1	298.00	Earthwork excavation for foundation to full depth as designed in all soils and sub soils except soft disintegrated rock not required blasting and hard rock required blasting and balling water wherever necessary. Refilling the sides of foundation, with excavated earth other than sand in layers of well rammed and compacted and depositing the surplus earth in places shown by the departmental				One cubic Meter		

		officers with an initial lead of 10m and initial lift of 2m and cleaning and leveling the site etc., complete up to 2.70m depth						
2	24.50	Supplying and filling in foundation and basement with river sand/filling sand in layer of not more than 15cm thick well watered, rammed and consolidated etc., complete.				One cubic Meter		
3	24.50	Laying the plain cement concrete 1:4:8 using HBG machine crushed machine crushed stone jelly of size 40mm gauge for foundation and basement including dewatering if found necessary and laid in layers of not more than 15 cms thick etc., complete.				One cubic Meter		
4		Reinforced Cement Concrete 1:1.5:3 (One cement, two sand and four HBG stone jelly) using 20mm stone jelly for Raft footing & mat slab, excluding cost of reinforcement, centering shuttering, and including curing, finishing all the RCC works and as directed by the departmental officers etc., complete complying with std. Specification						
a	80.50	a) For grade plinth beam, Column up to Raft beam & slab, compound wall, Basement.				One cubic Meter		
b	44.00	b) For RCC columns and sunshade, lintel beam, and slabs				One cubic Meter		
5.	71.00	R.R Masonary in cement mortar 1:5 (one cement, and five sand) for foundation and basement including simultaneously pointing above ground level with the same mortar etc., complete.				One cubic Meter		
6	179.00	Re-filling for footing & foundation pit excavating soils are refilling to earth including watering, consolidation etc.,.				One cubic Meter		



7.	22.10	Damp proof course in CC1:3:6 including compacting, curing etc.,				One square metre		
8.		Centering for soffits of reinforced cement concrete slabs, plane surfaces including strutting 3.66 m height using M.S.plate of size 90cm x 60cm and 10 gauge stiffened with welded mild steel angles of size25x25x3mm laid over silver oak joistsof size 10cmx60cm spaced at about 90cm c/c and supported by casurina props of 10cm complying with std. Specification						
	262.00	a) For Raft Beam and grade column, plinth beam (upto plinth level)				One square meter		
	126.00	b)For RCC columns and sunshade, lintel beam, G.F				One square metre		
	274.00	c) Plain surface such as roof beam,roof slab,waist slab etc				One square metre		
9	73.00	Gravel filling to the basement with Pallam river sand or locally available gravel as levelling course including watering and consolidation				One cubic metre		

10	18.50	PCC 1:4:8, 125mm tk below floor finish using 40mm hard blue granite metal including compaction, curing, levelling etc.,.				One cubic metre		
11	101.00	Brick work in Cement Mortar 1:5 using I st class country bricks of size 8 3/4 x 4 1/4 x3 including curing scaffolding etc., complete complying with std. specification in ground floor				One cubic metre		
12	28.85	Brick partition walls of 10.80cm thickness using best quality country bricks of size 8-3/4" x 4-1/4" x 2-1/4" in Cement Mortar 1:3 (One Cement and Three Sand) using hoop iron reinforcement if found necessary including curing etc. complete and as directed by the departmental officers. (Hoop iron reinforcement will be measured and paid for separately)				One square metre		
13	250.74	Special ceiling plastering and finishing the exposed surface of all RCC items of work such as slabs, beams, sunshades, facia, canopy slab, staircase waist slab, landing slab etc., with Cement Mortar 1:3 (One Cement and Three Sand) 10mm thick including hacking the surfaces, providing cement mortar nosing, beading for sunshades, staircases, steps, landing slabs and curing, etc., in all floors complying with standard specification and as directed by the departmental officers				One square metre		
14	854.00	Internal & External wall Plastering with Cement Mortar 1:5 (One cement and Five sand), 12mm thick in all floors including curing etc. complete complying with standard specification and as directed by the departmental officers.				One square metre		
15	1106.00	White washing the walls and ceiling two coat of best shell lime using fevicol, sodium chloride and blue including cost of brushes, high scaffolding charges etc., complete.				One square metre		

16	1106.00	Painting two coats of newly plastered wall surface with ready mixed plastic emulsion paint of first class quality and of approved colour over a priming coat including thorough scrapping, clean removal of dirt, and including necessary plaster of paris putty, wherever required etc., complete complying with standard specification.				One square metre		
17	68.00	Supplying and fixing 20 gauge steel rolling shutters for a clear opening of 2.44m x 2.44m and of approved make including supplying and fixing top hood cover and all other accessories locking arrangements etc. with one coat of red oxide primer				One square metre		
a	6.50	PVCdoorsfor toilet G.F				One square metre		
b	30.50	Aluminium windows & Ventilator G.F				One square metre		
18	58.00	Supplying and fixing of SS handrails for Staircase&Corridor inclusive of painting of approved design with necessary holdfasts etc.,(refer design and annexure for details).				One square metre		
19	154.50	Painting two coats for both sides of all the Rolling shutter,Ventilator with good quality enamel paint after the preparation work				One square metre		
20	145.00	Paving the floor with best quality Vertified Tiles of size 600 x 600 x 8mm of approved colour, shade and quality laid in cement mortar 1:3 (one cement and three sand) 20mm thick in all floors and the top pointed with the white cement mixed same colour pigments				One square metre		

		etc., complete complying with standard specification. (The make and brand of the tiles should be got approved by Executive Engineer before use on works)						
21	12.17	Skirting with vitrified tiles of 10mm thick laid over 20mm thick cement mortar 1:3(one cement and three sand) base mortar over the existing slab/floor including and cutting of tiles required sith special cutter wherever necessary laying in position and pointing with white cement mixed with colouring pigmentsat the rate of 0.3kg / sq.m etc, complete complying with standard specification.(the make the brand of the tiles should be got approved by Executive Engineers before use on works).				One square metre		
22	9.50	Flooring with following ceramic tiles of size 305 x 305 x 6 mm laid over 20 mm thick cement mortar 1:3 (One Cement and Three Sand) base mortar over the existing slab / floor including cutting the tiles to the required size with special cutter wherever necessary, laying in position and pointing with white cement mixed with colouring pigment at the rate of 0.3 Kg. / sq.m. etc., complete complying with standard specification. (The make and brand of the tiles should be got approved by Executive Engineer before use on works)				One square metre		
23	45.50	Dadoing with plain colour glazed tiles of size 150mm x 150mm x 6mm with following best approved quality, white / colour glazed tiles of following sizes set in Cement Mortar 1:2 (One Cement and Two sand) 10mm thick and pointing the joints with white cement mixed with colouring pigments at the rate of 0.40 Kg. / sq.m. neatly in all floors, curing, etc., complying with standard specification and as directed by the departmental officers.				One square metre		

		<b>FIRST FLOOR</b>						
24	44.00	Reinforced Cement Concrete 1:1.5:3 (One cement,two sand and four HBG stone jelly) using 20mm stone jelly for columns, excluding cost of reinforcement , grill centering shuttering, and including curing, finishing all the RCC works and as directed by the departmental officers etc., complete complying with std. Specification						
a	44.00	a)For F.F RCC columns and sunshade,lintel beam.				One cubic metre		
b	3.85	b)For Head room + parapet RCC columns and sunshade,lintel beam.				One cubic metre		
25		Brick work in Cement Mortar 1:6 using I st class country bricks of size 8 3/4 x 4 1/4 x 3 including curing scaffolding etc., complete complying with std. Specification						
a	68.60	First Floor				One cubic metre		
b	23.16	Head Roomand parapet				One cubic metre		
26	50.35	Brick partition walls of 10.80cm thickness using best quality country bricks of size 8-3/4" x 4-1/4" x 2-1/4" in Cement Mortar 1:3 (One Cement and Three Sand) using hoop iron reinforcement if found necessary including curing etc. complete and as directed by the departmental officers. (Hoop iron reinforcement will be measured and paid for separately)				One square metre		

27		Centering for soffits of reinforced cement concrete slabs, plane surfaces including strutting 3.66 m height using M.S.plate of size 90cm x 60cm and 10 gauge stiffened with welded mild steel angles of size 25x25x3mm laid over silver oak joists of size 10cmx60cm spaced at about 90cm c/c and supported by casurina props of 10cm complying with std. specification						
a	126.00	a)For RCC columns and sunshade,lintel beam,				One square metre		
b	274.00	b) Plain surface such as roof beam,roof slab,waist slab etc				One square metre		
c	64.10	Head room + Parapet wall lintel ,sunshade, column roof beam,roof slab, etc				One square metre		
28	249.24	Special ceiling plastering and finishing the exposed surface of all RCC items of work such as slabs, beams, sunshades, facia, canopy slab, staircase waist slab, landing slab etc., with Cement Mortar 1:3 (One Cement and Three Sand) 10mm thick including hacking the surfaces, providing cement mortar nosing, beading for sunshades, staircases, steps, landing slabs and curing, etc., in all floors complying with standard specification and as directed by the departmental officers				One square metre		
28a	14.11	Head room plastering				One square metre		

29	630.63	Internal & External wall Plastering with Cement Mortar 1:5 (One cement and Five sand), 12mm thick in all floors including curing etc. complete complying with standard specification and as directed by the departmental officers.(311.62+258.11+32.48+28.42)				One square metre		
29a	164.38	Head room Second floor plastering						
30	1058.00	White washing two coats with good shell lime after preparing the plastered wall surface				One square metre		
31	1058.00	Painting the walls with two coats with first class quality water Emulsion paint of approved colour over a priming coat including thorough scraping, clean removal of dirt. The Rate includes cost of brushes, sand paper, plaster of parries, patty wherever required and neat finishing etc., complete complying with standard specification						
32	67.00	Supplying and fixing 20 gauge steel rolling shutters for a clear opening of 2.44m x 2.44m and of approved make including supplying and fixing top hood cover and all other accessories locking arrangements etc. with one coat of red oxide primer.				One square metre		
33	6.50	a.]PVC doors for toilet F.F				One square metre		
34	36.50	b.]Aluminium windows & Ventilator F.F				One square metre		
35	2.00	c.]Aluminium door (Head room)				One		

						square metre		
36	43.00	Supplying and fixing of SS handrails for Staircase&Corridor inclusive of painting of approved design with necessary holdfasts etc.,(refer design and annexure for details).				One square metre		
37	153.00	Painting two coats for both sides of all the Rolling shutter,Ventilator with good quality enamel paint after the preparation work				One square metre		
38	145.00	Paving the floor with best quality Verified Tiles of size 600 x 600 x 8mm of approved colour, shade and quality laid in cement mortar 1:3 (one cement and three sand) 20mm thick in all floors and the top pointed with the white cement mixed same colour pigments etc., complete complying with standard specification. (The make and brand of the tiles should be got approved by Executive Engineer before use on works)				One square metre		
39	11.10	Skirting with vitrified tiles of 10mm thick laid over 20mm thick cement mortar 1:3(one cement and three sand) base mortar over the existing slab/floor including and cutting of tiles required sith special cutter wherever necessary laying in position and pointing with white cement mixed with colouring pigmentsat the rate of 0.3kg / sq.m etc, complete complying with standard specification.(the make the brand of the tiles should be got approved by Executive Engineers before use on works).				One square metre		
40	7.00	Flooring with following ceramic tiles of size 305 x 305 x 6 mm laid over 20 mm thick cement mortar 1:3 (One Cement and Three Sand) base mortar over the existing slab / floor including cutting the tiles to				One square		



		the required size with special cutter wherever necessary, laying in position and pointing with white cement mixed with colouring pigment at the rate of 0.3 Kg. / sq.m. etc., complete complying with standard specification. (The make and brand of the tiles should be got approved by Executive Engineer before use on works)				metre		
41	38.00	Dadoing walls with following best approved quality, white / colour glazed tiles of following sizes set in Cement Mortar 1:2 (One Cement and Two sand) 10mm thick and pointing the joints with white cement mixed with colouring pigments at the rate of 0.40 Kg. / sq.m. neatly in all floors, curing, etc., complying with standard specification and as directed by the departmental officers.				One square metre		
42	28.00	Inner Staircase floor finishing with flat granite stone 18/20mm thick - edge surface dressed including pointing in c.m 1:3 (G.F&F.F)				One square metre		
43	24.00	Outer Staircase floor finishing with flat granite stone 18/20mm thick - edge surface dressed including pointing in c.m 1:3 20mm thick (G.F&F.F)				One square metre		
43a	52.50	i.] Floor finishing with flat granite stone 18/20mm thick - edge surface dressed including pointing in front steps in CM 1:3				One square metre		
44	24400	Supplying and fabricating and placing the grills in position of M.S (or) RTS rods reinforcement grills for all RCC works including cost of steel rods and binding wire -				One Kilo gram		
45		Mesh drop work for portico ( lath plastering in cm 1:3, 75mm thk ,						

		inclusive of barbending, cementing , smoothening all complete						
a	36.25	G.F				One square metre		
b	19.00	F.F				One square metre		
46	11.85	Weathering course in brick jelly lime concrete using broken brick jelly of size 20mm uniform gauge in pure slaked lime (no sand to be used) to the proportion of brick jelly to lime being 32:12.5 by volume and laid over the RCC roof slab in a single layer of required slope and finished by beating the concrete with wooden beaters of approved pattern, keeping the surface constantly wet by sprinkling lime jaggery water, etc., complete as per standard specification and as directed by the deparmental officers.				One cubic metre		
47	158.00	Laying the layer of machine pressed tiles 23cmx23cm approved special quality and set in cm 1:3 20m thick using river sand and pointing with colour cement at the rate of 0.40kg/m <sup>2</sup> and mixing with colour pigment are the rate of 0.30kg/m <sup>2</sup> including finishing etc., complete.				One square metre		
48	153.00	Front Paving works with paving tiles of standard sizes.] 80mm thick M20 GRADE Cement concrete paving blocks inclusive subbase of 75mm and below river sand, consolidation all complete.				One square metre		
49		<b>Providing Sanitary arrangements (refer to design and</b>						

		<b>annexure for details)</b>						
		Plumbing fixtures						
a	5000.00	Sump for 5000 lits Capacity (5 HP motor)					One Litre	
b	1.00	Supplying and fixing of 2KL PVC water tanks of SINTEX make inclusive of electrically operated automatic water level controller					One number	
c	5000.00	Septick Tank for 5000 lits Capacity					One Litre	
	30.00	Providing and installation of 25 mm PVC conduits conforming to IS standards standards for raw water supply from sump to over head water tank to inclusive of all fixtures like elbow,tees,bends,union,coupling,reducer tees,etc.,. All complete					One running metre	
d	70.00	Providing and installation of 25 mm PVC conduits conforming to IS standards standards for fresh water supply from over head water tank to inclusive of all fixtures, like elbow,tees,bends,union,coupling,reducer tees,etc.,. All complete					One running metre	
e	40.00	Provision for 75mm dia PVC conforming to IS:13592 Waste water pipes arrangements inclusive of all fixtures like elbow, tees, bends, union,coupling,reducer tees, clamps,shoes etc., all complete.					One running metre	
f	25.00	Provision for 110mm dia PVC conforming to IS:13592 Soil Waste pipes arrangements inclusive of all fixtures like elbow, tees, bends, union,coupling,reducer tees,clamps,shoes other fixture etc., all complete.					One running metre	
g	20.00	Provision for 150mm dia pipes arrangements inclusive of commissioning of PVC sewer line of prince / supreme make					One running	

		confirming to IS:4985 of Agriculture series - 6 kgs / sq.cm. presser rated, for underground drainage laid under the soil from chamber to chamber outside the building, to the required slopes, jointing with solvent cement followed by application leak proof adhesives of FRP paste, including haunching / covering only the joints with cement concrete 1:3:6 at all the joints with and testing of joints with water column etc.all fixtures like elbow, tees, bends, union,coupling,reducer tees,clamps,shoes other fixture etc., all complete. excluding earthwork & filling.				metre		
h	30.00	Laying new PVC rain water down fall pipes of 119 mm dia size 4 Kg/cm2 with necessary shoes, specials, clamps, bends, cowl, screws, nails, teakwood block, etc., complete				One Running meter		
i	5.00	Supplying and fixing S.S 'Ball Valve' make 25mm dia valves to be online valves for the above pipe conduits inclusive of suitable unions making it removable for maintenance all complete				One number		
j	7.00	Supplying and fixing UPVC 'Ball Valve' make 25mm dia valves to be online valves for the above pipe conduits inclusive of suitable unions making it removable for maintenance all complete				One number		
k	4.00	Supplying and fixing of testing and commissioning of S.S IS standards quality Towel holder with screws ets.,				One number		
l	4.00	Supplying and fixing of testing and commissioning of 50% white Vitreous wash basin installed with 20mm thk granite counter and brackets, 15mm pillar cocks stop cocks,coupling,trap,other fixture etc., all complete. The work shall include cutting making of walls and floors etc. size 610x500mm.				One number		

m	4.00	Supplying and fixing testing and commissioning of glazed 50% colour Vitreous China floor mounted European water closet (constallation with concealed 'S' trap of parry ware / Hind ware make) MS / CI chair brackets, fisher bolts with CP bolts / nuts and with flush tank, solid plastic seat and lid with heavy duty CP hinges and rubber buffers and flap etc.including 10 liter capacity flushing tank. The work shall include cutting making of walls and floors etc.				One number		
n	4.00	Supplying and fixing testing and commissioning of CP health faucet consisting inclusive of all fixtures like clamps screws ets.,				One number		
o	4.00	Supplying and fixing testing and commissioning of 15mm dia CP short body bib tap with CP wall flange etc.consisting inclusive of all fixtures like screws ets.				One number		
p	12.00	Supplying and fixing testing and commissioning of 15mm dia CP long body bib tap with CP wall flange etc.consisting inclusive of all fixtures like screws ets.,				One number		
q	5.00	Providing, fixing, testing and commissiioning of 100mm PVC multi inlet floor trap of self cleaning design moulded or fabricated, if not available in size mentioned below, with or without vent arm jointing with rubber ring / solvent cement followed by application of leak proof adhesive like FRP paste including encasing all round fixing the floor trap in cement concrete 1:2:4 ratio of size 300 x 300 x 250 mm height (approx) and making good the floors.				One number		
r	2000.00	Rainwater tank size 1500x600x1500mm provition as per specification				ONE LITRE		

s	50.00	Easy Drain Rainwater pit Grates using flo-way deep pit with black grates in size 600x600x450mm provision for shop front sides at 10m interval as per specification				One running metre		
t	2.00	Manhole covers for septic tank size 600x600mm				One number		
u	1.00	Submersible pump of 5 HP/5.0 kw model CSM-9				One number		
50		Providing electrical arrangements (refer to design and annexure for details) all conforming to all subsections of BIS standards						
a	10.00	Supply and erection of 1Ø 12 way double door D.B.with 32 Amp TPN MCB as Incomer - 1				One number		
b	8.00	Electricity energy meter (sub meter)				One number		
c	1.00	ELCB for co-optex show room				One number		
d	4.00	1Ø socket box 20 Amp MCB				One number		
e		Supply and Laying of 1Ø Circuits Wiring.inclusive of pipe & fittings						
1	650.00	) 1.5 Sq.mm 3r.m.				One running metre		

2	500.00	2) 2.5 Sq.mm - 2 r.m. 1.5 Sq.mm 1r.m.				One running metre		
3	520.00	3) 4.00 Sq.mm 2r.m. 1.5 Sq.mm 1r.m				One running metre		
f		Light point, exhaust fan point, 6A power points on boards, 1.0 sq.mm wire from 'Havells' Modular Switches - 'Crabtree or Legrand' Modular fittings.						
	130.00	Light points				One number		
	18.00	Fan points				One number		
	4.00	Exhaust fan points				One number		
	30.00	6amp Modular electrical Switchboard				One number		
g	20.00	Supply and fixing of 16Amp power point modular box, inclusive of wiring up to 6 mtrs				One number		
h	170.00	Telephone Point wiring inclusive of pipe fittings				One running metre		

i	100.00	4c x 16sq.mm armour copper cable for 3Ø incoming cable inclusive of all accessories				One running metre		
j	70.00	Cabling for audio connections inclusive all terminations				One running metre		
k	220.00	Network cabling CAT-6 specifications- LEGRAND make for LAN connections including all terminations & RJ 45 connections etc all complete.				One running metre		
51	1186.00	Providing and fixing of Entry gate of size 3.70mx1.83m, sliding type inclusive of motorised roller mechanism - (MS brite bars and flats ) inclusive of welding, grinding, anchoring , painting- one coat of redoxide, one coat of steel putty , two coats of enamel paint all complete .( Roller mechanism should carry a performance warranty for 24 months from the date of commissioning )				One kilo gram		



## TENDER SCHEDULE- ANNEXURE 1(a)

Name of work	: Construction of <u>Co-Optex Show room</u> Building Krishnagiri District .
Estimated value of work	: 90,00,000.00 (Rupees Ninety Lakhs only)
Period of work to be completed	: 9 Months
Last date of Receipt of Tender	: 03.03.2017 3.00 P.M
Tender schedule can be available	: 16.02.2017 To 03.03.2017 up to 1.00 P.M
Date and time of opening	: 03.03.2017 04.00 PM
E.M.D	: 90,000/-
Mode of E.M.D to be remitted	: Demand Draft of any one of the Nationalized Bank drawn in favour of "TNHWCS Ltd; " Payable at Chennai Cash will not be accepted under any Circumstances.
9) Tender Receiving authority :	Managing Director, Co optex Head Office, 350 PantheonRoad Egmore, Chennai.600008 Or An Officer authorized by him at his office up to 3.00.P. M on. 03.032017

Tender documents are available on : <http://tenders.tn.gov.in> and the same can be downloaded and used as tender document for submitting the tender

10. Tender Scrutiny and finalization : Managing Director, Co-optex Head  
Office, 350 Pantheon Road Egmore,  
Chennai.600 008

#### ANNEXURE1 (b)

1. Name of work : Construction of Co-optex Show room Building in Old Survey No.747, New Survey Ward A Block 45, Town Survey No 160 Hosur-Bagalur Main Road, Hosur Town
2. Place : Hosur to Bagalur Main Road
3. Location : Hosur
4. Survey Number : Survey No.747, New Survey Ward A- Block 45 T.S.No. 160.
5. District : Krishnagiri.

#### TENDER CONDITIONS

The charges for the Tender schedule is **Rs.15,000.00+VAT (RS.750) (Rupees Fifteen thousand seven hundred and fifty only)**. It is to be remitted as DD or Cash while submitting the tenders in addition to EMD.

1) Tender will be scrutinized on the basis of Tamilnadu Transparency in Tender Act 1998 and Rule 2000.

5. The Tenderer should be Registered Contractor with class I category or above with PWD (Buildings) Department in Tamilnadu government and he should have

done construction work to PWD Buildings for an amount not less than 50 lakhs, for the last 3 years. (Necessary Certificates are to be enclosed with the Tenders).

6. Tenders submitted with out E.M.D and the approved form will be summarily rejected.

The tender and , Annexure I and II containing terms and conditions, General Particulars and E.M.D Drawings, Price Bid, should be closed s ingle cover then be submitted in a common sealed cover. Tenders not submitted in sealed cover will be summarily rejected

7.The rate in words and figures for each item of schedule should be furnished by the tenderer without fail in appropriate columns. Corrections, scribbling, over writing and erasing (should be avoided as far as possible and be attested by the contractor.

8.The total value of each item of work should be worked out and entered in the amount column, proper care must be taken in working out the value of each item of work taking in to account the unit for which the rate is quoted and the quantity of work to be done under the item.

9. The grand total value of tender should be worked out and furnished at the end, both in words and Figures.

10. a)Tender must be submitted in sealed cover and should be addressed to the following tender receiving authority on or before 03.00P.M – 03.03.2017.

**The Managing Director,  
Tamil Nadu Handloom  
Weavers' Co-operative  
Society Ltd, 350  
Pantheon Road, Egmore,  
Chennai.600 008**

- b)The tenders will be opened by the Tender Selection committee at 4.00P.M on03-03-2017. at Co-Optex Head Office,350.Pantheon Road,Egmore,Chennai
11. The Tenders not submitted in time, will be summarily rejected
  12. Current income tax clearance certificate should been closed with the tender.
  13. Sales tax Registration Number should be furnished and sales Tax clearance certificate should also be Produced before finalization of contract.
  14. Details of previous work done by the tenderers covering the cost of work , the agreement No and date, Department in which the work was carried out etc., should be furnished so as to assess the previous experience of the tenderer. Year wise details for the last 3 years should be furnished so as to see that the tenderers have minimum experience of major buildings.
  15. Successful tenderer , should pay an amount equivalent to 2% on the estimate of work, as security Deposits at Co-Optex Head Office,350.Pantheon Road,Egmore,Chennai .8
  16. The security Deposit payable by the successful tenderer, shall bear no interest and it shall be repaid only after the final valuation of the proposed buildings.
  17. The selected contractor should not in any way transfer the contract to any person or to make sub contract with any others.
  18. The work should be completed as per the scheduled time limit. Other wise penalty of Rs.500/-will be levied for every day of delay.

19. The decisions of the Tender Accepting Authority is final, wherever any doubts arises with regards tender document.
20. The tender Accepting Authority shall have full right to acceptor Reject, postpone or cancel the tender without assigning any reasons.
21. The work order will be issued only after the selection of tender by the tender selection committee  
i.e. the tender Accepting Authority.
22. The successful tenderer, should enter into agreement with the The Managing Director, Co-Optex Head Office,350.Pantheon Road,Egmore,Chennai.8
23. The income tax, sales tax and additional tax if any will be deducted while disbursement of the amount after completion of the building construction work and after final valuation made.
24. The proposed tenderer may get any clarifications regarding terms and conditions, from the Concerned office at week days.
25. If the contractor fails to complete the construction work in the stipulated time, the security deposit will be forfeited and retender will be called for the work which one left uncompleted ,More over the contractor will be held responsible if any loss that may be incurred.
26. The contractor should furnish certificate when ever, the higher official and Engineer require it with regards to the materials need, quality, Test Certificates of Materials and quantity etc., at their cost.
27. The Tender authority is not responsible for any delay caused by postal or courier services.
28. The Tender must be submitted in a sealed cover duly signing all conditions

29. The Tender should hold the prices/ rates offered in the tender valid for a period of 90 days.
30. Tenders shall be excluded in the following cases.
- a) Where the tenders are not in the prescribed form.
  - b) When the tender is not accompanied by requisite earnest money.
  - c) When the tender is not signed by the Tenderer.\
  - d) When the tender is from a black listed or a banned contractor.
  - e) When the tender is received after the prescribed time.

**TamilNadu Handloom Weavers' co-operative society Ltd.,  
350, Pantheon Road,  
Chennai 600 008.**

**QUALIFICATION APPLICATION AND PRICE TENDER**

For and on behalf of the Managing Director T.N.H.W.C.S.Ltd,Chennai ,invites tender at his office up to 15.00 hours as noted in column 9. (as per office Clock) in single covers containing (i) Qualification details and EMD and (ii) Price tender Schedule in another sealed cover duly super scribed distinctly on cover, from the experienced and competent contractors or firms as detailed below.

2. Contractors registered under Class – I with monetary limit of Rs. 75.00 Lakhs and above, in Public Works Department of Government of Tamilnadu (Registration shall be as on date alive up to date) are alone eligible for participation in this tender. Joint ventures are not permitted to participate in the tenders.

S.No	Name of work	Class of contractoreligible for participate in the tender	Approximite value of work(Rs.in Lakhs)	Period of contract (including monsoon	Amount of Earnest money Deposit( in Rupees)	Earnest Money Deposit and cost of Tender documents to be drawn in favour of	Date availability of tender documents.	Last date for Reciept of Tender Schedule	Cost of Tender documents and Vat
1	2	3	4	5	6	7	8	9	10
1	Construction of Commercial Building in Co-optex Showroom at Hosur Town old Survey No.747, New Survey Ward A- Block 45 T.S.No. 160.	Class-I Monetary Value of Rs.75.00 Lakhs and above State level	Rs.90.00 Lakhs	9 Months	Rs.90,000/-	T.N.H.W.C.S.Ltd.,	16.02.2017 to 03.03.2017	03.03.2017 upto 15.00 Hrs	Rs.15,000/- + VAT 5%

31. Intending tenderers may obtain the qualification application and price tender schedule in person or through their authorized agents from the office of the T.N.H.W.C.S.Ltd., 350 Pantheon Road, Egmore Chennai 600 008. during the office hours as mentioned in Column 8 of the above table (inclusive of both days) on all working days.

4. The qualification application and price tender schedule shall be purchased on written request to the Managing Director T.N.H.W.C.S.Ltd., 350 Pantheon Road, Egmore Chennai 600 008. by producing Demand Draft drawn in favour of T.N.H.W.C.S.Ltd., Chennai 600 008. The Managing Director as noted in Column 7 of the above table obtained from any Nationalized Bank towards the cost (not refundable), Sales Tax and Surcharge as noted in Column 10 of the above table.

5. The qualification application and price tender schedule will also be sent by post to any prospective Tenderer who makes a request for the documents on payment of cost as specified in column 10 of the above table, along with postal charges of Rs. 500/- (Rupees Five hundred only) separately in the shape of Demand Draft drawn in favour of T.N.H.W.C.S.Ltd., Chennai 600 008. noted in Column 7 of the above table obtained from any Nationalized Bank. This office is not responsible for any postal delay or loss in transit.

6. The qualification application and price tender schedule duly filled in all respects may be sent in person or through Registered Post, so as to reach the hands of the tender inviting authority before 15.00 hours as noted in column 9 of the above table (as per office clock)

7. Any tender received after the time set forth will not be entertained and will be returned unopened and the department will not be responsible for any delay so caused by any of the above services whosoever may be. The Contractor or their authorized representatives alone will be allowed to put their tender.

8. For any reason if the last day for issue of tender Schedule is declared as a holiday, the tender schedule will be issued by The Managing Director T.N.H.W.C.S.Ltd., Chennai 600 008. on the next working day to the Contractor on requisition.

**9. E.M.D should be enclosed only with the qualification application otherwise the tender will be summarily rejected.**

10. EMD shall be remitted in the shape of Demand Draft T.N.H.W.C.S.Ltd., as noted in Column 7 of the above table.

11. The qualification application and the price tender schedule duly filled in all respects will be received up to 15.00 hours as noted in Column 9 of the above table (as per office clock) by The Managing Director T.N.H.W.C.S.Ltd., Chennai 600 008. The cover containing qualification application alone will be opened by tender committee in the presence of the tenderers or their authorized representatives at 16.00 hours (as per office clock) on the same day.

12. For any reason if the tender date for receiving the tender by The Managing Director T.N.H.W.C.S.Ltd., Chennai 600 008. is declared as a holiday, the tender will be received by The



Managing Director T.N.H.W.C.S.Ltd., Chennai 600 008. on the next working day and opened at the same time mentioned originally.

13. The Managing Director T.N.H.W.C.S.Ltd., Chennai 600 008.reserves the right to accept or reject tenders without assigning any reason thereof.

14. The Contractors who have not participated in the tenders for the past two years or failed to participate in the tender after obtaining tender schedule for the three consecutive times, the **validity of registration as contractor will be deemed to have been cancelled.**

Managing Director

## **SPECIAL ATTENTION OF THE TENDERER**

1. Proof of registration in P.W.D. as a contractor shall be attached with the tender.
2. Current Income Tax clearance certificate shall be enclosed with the tender,
3. Sales Tax Registration Number should be furnished and Sales Tax clearance certificate should also be produced before finalization of contract.
4. E.M.D. will be accepted by means of Demand Draft of the Nationalized and drawn in the name of T.N.H.W.C.S Ltd. No other mode of payment will be accepted.
5. The successful tenderer should convert the E.M.D. already deposited and additional security deposit if any required for the fulfillment of contract .
6. The following particulars shall also be furnished by the contractor along with the tender.
  - a) List of details of works executed by the contractor with their value.
  - b) A list of details of work under execution by the contractor with their values.
  - c) Annual turnover of the last one year (necessary certificate to the effect issued by the respective bank shall be attached)
7. The tender documents will be issued to the contractors registered in Public Works Department in the appropriate class.

Managing Director

### **SPECIAL INSTRUCTION TO THE TENDERERS**

1. The Tenderer should carefully go through the tender schedule and quote their rates for all items.
2. The rates should be filled in neatly in figures and in words and taking into account the metric units specified in the tender, scribbling, overwriting and erasings should be avoided as far as possible.
3. The amount of each item of work should be worked out. Proper care must be taken in working out the amount of each item of work taking into account the unit for which the rate is quoted and the quantity of work to be done under the item.
4. The total for each page should be arrived at and, carried out to every page and the grand total value of work should be worked out and shown at the end.
5. The tender should be submitted along with a covering letter giving full details, as called for in the tender notice together with the copy of letter registering them into the appropriate class.
6. In case the tenderers who are eligible for confessional Earnest Money Deposit and accordingly they should furnish the reference No. and date in which the concession was granted to them A copy of the aforesaid reference may be enclosed along with the tender for ready reference.
7. Income tax clearance certificate for the current year should be submitted along with the tender or the tender in which the Income Tax clearance certificate for the current year was submitted to this office should be specified.
8. Details of previous work done by the Tenderers covering the cost of the work, the agreement, No. date, department in which the work was carried out, etc., should be furnished so as to assess the previous experience of the tenderers. Year wise details should be furnished so as to see that these tenderers have minimum experience of major building.
9. List of various machinery and other equipments at the tenderers disposal for use in the execution of the work, should be furnished.
10. The TENDER form should be filled in while submitted the tender. The tenders submitted without filling up the tender form are liable to be rejected.
11. The tender must be submitted in a sealed foolscap cover duly signing all the conditions.

Managing Director

### MINIMUM CRITERIA FOR QUALIFICATION

A. The applicant in the same name and style should be in Civil Engineering Construction field at least for the past three years.

B. The applicant should be a registered contractor of State PWD (Tamilnadu) under Class – I with a monetary limit above Rs. 75.00 Lakhs State level.

C. The applicant should have executed Similar nature of work for a value of not less than Rs. 50.00 Lakhs and in a single agreement as a prime contractor in any of the last three years in the State PWD or Central Government Works. A certificate obtained from the Executive Engineers concerned to this effect shall be enclosed

D. **The annual turnover** of the applicant should not be less than the amount of **Rs.100.00 lakhs in any of the previous Three years.**

E. The applicant should produce documentary evidence in support of his registration as PWD., Contractor, Experience and past track record, Sales Tax Registration (either State or Central) and Sales Tax Verification of Clearance Certificate. Qualification application and price tender schedule will not be issued against requisition received without the cost of tender documents.

F. The tender notice and documents will be available in Government web site

i) [http. // www.tenders.tn.gov.in](http://www.tenders.tn.gov.in)

ii) [http. // www.cooptex.com](http://www.cooptex.com)

The documents may be downloaded from the above web sites at free of cost.

Managing Director  
T.N.H.W.C.S.C.Ltd.,  
Chennai 600 008.

தமிழ்நாடு கைத்தறி நெசவாளர் கூட்டுறவு சங்கம் (வரையறுக்கப்பட்டது)  
மொத்த தொகை ஒப்பந்தமுறை – ஒரு உறை வழிமுறை

தகுதி விண்ணப்பம் மற்றும் விலை ஒப்பந்தப்புள்ளி

1. மேலாண்மை இயக்குனர் தமிழ்நாடு கைத்தறி நெசவாளர் கூட்டுறவு சங்கம் (வரையறுக்கப்பட்டது) சென்னை 600 008. அவர்களால் கீழே உள்ள அட்டவணை பத்தி எண் 9-ல் உள்ள தேதியில் பிற்பகல் 15.00 மணி வரை ஒரு உறை வழிமுறை ஒப்பந்தப்புள்ளி அடிப்படையில் மூடி முத்திரையிடப்பட்ட ஒப்பந்தப்புள்ளி, ஒரு உறையில் ஒப்பந்தகாரரது தகுதிகாண் விபரங்கள் மற்றும் அட்டவணை கட்டம் 6ல் தெரிவித்துள்ள முன்வைப்புத் தொகையும், தகுதி காண் படிவம் மற்றும் விலைப்புள்ளி படிவம் கொண்ட ஒரே உறையிலேயே வைக்கப்படல் வேண்டும் இல்லையெனில் ஒப்பந்தப்புள்ளி முற்றிலும் நிராகரிக்கப்படும் பூர்த்தி செய்யப்பட்ட ஒப்பந்தப்புள்ளி விலை விகித விபரங்களுடனும், என தெளிவாக குறிப்பிட்டு தகுதி மற்றும் அனுபவம் உள்ள ஒப்பந்தகாரர்களிடமிருந்து கீழ் காணும் பணிக்கு வரவேற்கப்படுகின்றது.
2. இவ்வொப்பந்தப்புள்ளிகளில் பங்கேற்பதற்கு மாநில அளவில் முதல் வகுப்பில் ரூ.75.00 இலட்சம் மதிப்பிற்கு மேல் உள்ள பணிகள் செய்வதற்கு தகுதி வாய்ந்த ஒப்பந்தகாரராக தமிழ்நாடு பொதுப்பணித்துறையில் பதிவு பெற்றவராகவும், அவரது ஒப்பந்தகாரர் பதிவு நடப்பில் உள்ளவராகவும் இருத்தல் அவசியம். இவ்வொப்பந்தப்புள்ளியில் ஒன்றுக்கு மேற்பட்ட நபர்கள் கூட்டாகச் சேர்ந்து பங்கு ஏற்க இயலாது.

வரிசை எண்	பணியின் பெயர்	வரிசை எண்	பணியின் பெயர்	வரிசை எண்	பணியின் பெயர்	வரிசை எண்	பணியின் பெயர்	வரிசை எண்	பணியின் பெயர்	வரிசை எண்	பணியின் பெயர்								
1	கோ- ஆப்டெக்ஸிற்கு சொந்தமான பழைய புலன் எண்:747, புதிய சர்வே வார்டு A பிளாக் 45, டவுன் சர்வே எண்:160 ஓசூர் - பாகலூர் நெடுஞ்சாலை, ஓசூர் டவுன் என்ற இடத்தில் விற்பனை நிலைய கட்டிடம் கட்டுமானப்பணி	2	பணியின் பெயர்	3	ஒப்பந்தப்புள்ளிகளில் பங்கேற்பதற்கு தகுதி வாய்ந்தத ஒப்பந்தகாரர்கள்	4	பணியின் தேராய மதிப்பு (ரூபாய் இலட்சங்களில்)	5	பணியின் ஒப்பந்தக்காலம் (பருவ மழைக் காலம் உட்பட)	6	முன்வைப்புத் தொகை (ரூபாயில்)	7	முன் வைப்புத் தொகை செலுத்த வேண்டிய பெயர் (வரைவோலை)	8	அலுவலக நேரப்படி ஒப்பந்தப்புள்ளி ஆவணங்கள் கிடைக்கும் காலம்	9	ஒப்பந்தப்புள்ளிகள் பெற கடைசி நாள்	10	ஒப்பந்தப்புள்ளியின் விலை மற்றும் மதிப்பு கூட்டு வரி (ரூபாயில்)
1.	கோ- ஆப்டெக்ஸிற்கு சொந்தமான பழைய புலன் எண்:747, புதிய சர்வே வார்டு A பிளாக் 45, டவுன் சர்வே எண்:160 ஓசூர் - பாகலூர் நெடுஞ்சாலை, ஓசூர் டவுன் என்ற இடத்தில் விற்பனை நிலைய கட்டிடம் கட்டுமானப்பணி	2	பணியின் பெயர்	3	ஒப்பந்தப்புள்ளிகளில் பங்கேற்பதற்கு தகுதி வாய்ந்தத ஒப்பந்தகாரர்கள்	4	பணியின் தேராய மதிப்பு (ரூபாய் இலட்சங்களில்)	5	பணியின் ஒப்பந்தக்காலம் (பருவ மழைக் காலம் உட்பட)	6	முன்வைப்புத் தொகை (ரூபாயில்)	7	முன் வைப்புத் தொகை செலுத்த வேண்டிய பெயர் (வரைவோலை)	8	அலுவலக நேரப்படி ஒப்பந்தப்புள்ளி ஆவணங்கள் கிடைக்கும் காலம்	9	ஒப்பந்தப்புள்ளிகள் பெற கடைசி நாள்	10	ஒப்பந்தப்புள்ளியின் விலை மற்றும் மதிப்பு கூட்டு வரி (ரூபாயில்)
	வகுப்பு - 1 (ஒன்று) பணவரம்பு ரூ75/- இலட்சம் மற்றும் அதற்கு மேல் மாநில அளவில்				ரூ.90.00 இலட்சங்கள்		9 மாதங்கள்	ரூ.90,000/-	TNHWCS Ltd.,	16.02.2017 முதல் 03.03.2017 வரை	03.03.2017 பிற்பகல் 15.00 மணி வரை	ரூ.15,000/- + வரி 5%							

3. விருப்பமுள்ள தகுதி வாய்ந்த ஒப்பந்தகாரர்கள் நேரிலோ அல்லது அவர்களுடைய அங்கிகாரம் பெற்ற முகவர்கள் மூலமாகவோ மேலாண்மை இயக்குனர் தமிழ்நாடு கைத்தறி நெசவாளர் கூட்டுறவு சங்கம் (வரையறுக்கப்பட்டது) பாலசுந்தரம் கட்டிடம், 350 பாந்தியன் சாலை, எழும்பூர், சென்னை 600 008. அவர்களின் அலுவலகத்தில் மேலே உள்ள அட்டவணை கட்டம் 8-ல்

தெரிவித்துள்ள எல்லா அலுவலக நாட்களிலும் அலுவலக நேரத்தில் ஒப்பந்தப் படிவங்களைப் பெற்றுக் கொள்ளலாம்.

4. ஒரு உறை ஒப்பந்தப்படிவங்களுக்கான விலை, விற்பனை வரி மற்றும் மதிப்பு கூட்டு வரி ஆகியன அட்டவணை பத்தி 10-ல் உள்ள மதிப்பிற்கு கோடிட்ட கேட்பு வரைவோலையாக தேசிய மயமாக்கப்பட்ட வங்கிகளில் அட்டவணை பத்தி-7 ல் குறிப்பிட்டுள்ள TNHWCS Ltd., பெயரில் பெறப்பட்டு, மேலாண்மை இயக்குனர் தமிழ்நாடு கைத்தறி நெசவாளர் கூட்டுறவு சங்கம் (வரையறுக்கப்பட்டது) பாலசுந்தரம் கட்டிடம், 350 பாந்தியன் சாலை, எழும்பூர், சென்னை 600 008. அவர்களின் முகவரியிட்ட விண்ணப்பத்துடன் சமர்ப்பித்து ஒப்பந்தப்படிவங்களைப் பெற வேண்டும்.
5. தகுதிகாண் படிவம் மற்றும் விலை விகித ஒப்பந்தப்புள்ளி படிவம் ஆகியன தபால் மூலமாகப் பெற விரும்பினால் மேற்கூறிய பத்தி 4-ல் குறிப்பிட்டுள்ளவாறு விண்ணப்பம் மற்றும் கோடிட்ட கேட்பு வரைவோலையாக கூடுதலாக ரூ.500/- க்கான ஒரு கோடிட்ட கேட்பு வரைவோலையை அதே TNHWCS Ltd., பெயரில் பெறப்பட்டு இணைத்து அனுப்பி பெற்றுக் கொள்ளலாம். ஆனால் தபால் மூலமாக அனுப்பப்படுவதில் ஏற்படும் கால தாமதம் அல்லது இழப்பிற்கு இவ்வலுவலகம் பொறுப்பேற்காது.
6. அதே போல் பூர்த்தி செய்த தகுதி காண் படிவம் மற்றும் விலை விகித ஒப்பந்தப்புள்ளி படிவம் நேரிலோ, பதிவுத் தபால் மூலமாகவோ, அட்டவணை பத்தி எண் 9-ல் குறிப்பிட்டுள்ள நாளில் 15.00 மணிக்குள்ளாக (இவ்வலுவலக நேரங்காட்டியின்படி) இவ்வலுவலகத்தில் சேர்ப்பிக்க வேண்டும்.
7. குறிப்பிட்ட நாள் மற்றும் நேரத்திற்குப் பின் பெறப்படும் பூர்த்தி செய்யப்பட்ட ஒரு உறை ஒப்பந்தப்புள்ளி படிவங்கள் எக்காரணத்தைக் கொண்டும் ஏற்கப்பட மாட்டா. அல்லது பதிவுத் தபால் மூலமாக அனுப்புவதில் ஏற்படும் கால தாமதத்திற்கு இவ்வலுவலகம் பொறுப்பேற்காது.

ஒப்பந்தக்காரர் அல்லது அவர்களால் அங்கீகரிக்கப்பட்ட முகவர்களால் மட்டுமே ஒப்பந்தப்புள்ளிகள் இவ்வலுவலகத்தில் நேரடியாக சமர்ப்பிக்க அனுமதிக்கப்படுவார்கள்.

8. எதிர்பாராத காணங்களால் ஒப்பந்தப்புள்ளி படிவங்கள் வழங்க நிர்ணயம் செய்யப்பட்ட கடைசி நாள் அரசு விடுமுறையாக அறிவிக்கப்பட்டால் தகுதிகாண் படிவம் மற்றும் விலை விகித ஒப்பந்தப்புள்ளி படிவம் ஆகியன அதற்கு அடுத்த வேலை நாளில் அதே நேரம் வரை இவ்வலுவலகத்தில் விண்ணப்பம் சமர்ப்பித்து பெற்றுக் கொள்ளலாம்.
9. முன்வைப்புத் தொகையும், தகுதி காண் படிவம் மற்றும் விலைப்புள்ளி படிவம் கொண்ட ஒரே உறையிலேயே வைக்கப்படல் வேண்டும் இல்லையெனில் ஒப்பந்தப்புள்ளி முற்றிலும் நிராகரிக்கப்படும்.
10. முன்வைப்புத் தொகையில்லாமல் பெறப்படும் பூர்த்தி செய்யப்பட்ட தகுதி காண் படிவங்கள் எக்காரணத்தைக் கொண்டும் ஏற்கப்படமாட்டாது அட்டவணை பத்தி 6-ல் குறிப்பிட்டுள்ள முன் வைப்புத் தொகையை தேசிய மயமாக்கப்பட்ட வங்கிகளிலிருந்து வழங்கப்படும் கோடிட்ட கேட்பு வரைவோலையாக மட்டும் அட்டவணை பத்தி 7ல் குறிப்பிட்டுள்ள TNHWCS Ltd., பெயரில் பெற்றுக்கொள்ளப்படும்.
11. பூர்த்தி செய்யப்பட்ட தகுதி காண் படிவம் மற்றும் விலை விகித ஒப்பந்தப்புள்ளி படிவம் ஆகியன மேலே உள்ள அட்டவணை பத்தி 9 ல் குறிப்பிட்டுள்ள நாளில் அன்று 15.00 மணி (அலுவலக நேரக்காட்டியின்படி) வரை மட்டும். மேலாண்மை இயக்குனர் தமிழ்நாடு கைத்தறி நெசவாளர் கூட்டுறவு சங்கம் (வரையறுக்கப்பட்டது) பாலசுந்தரம் கட்டிடம், 350 பாந்தியன் சாலை, எழும்பூர், சென்னை 600 008. அவர்களால் பெற்றுக் கொள்ளப்படும் பூர்த்தி செய்யப்பட்ட உறையில் தகுதி காண் படிவம் என குறிக்கப்பட்ட உறை மட்டுமே மேலே உள்ள அட்டவணை 9 ல் குறிப்பிட்டுள்ள தேதியில் அன்று 16.00 மணியளவில் (அலுவலக நேரக்காட்டியின்படி) மேலாண்மை இயக்குனர் தமிழ்நாடு கைத்தறி நெசவாளர் கூட்டுறவு சங்கம்



(வரையறுக்கப்பட்டது) சென்னை 600 008. அவர்களால் அங்கீகரிக்கப்பட்ட முகவர்கள் முன்னிலையில் முதலில் பிரிக்கப்படும்.

12. மேலாண்மை இயக்குனர் தமிழ்நாடு கைத்தறி நெசவாளர் கூட்டுறவு சங்கம் (வரையறுக்கப்பட்டது) சென்னை 600 008. அவர்களால் ஒப்பந்தப்புள்ளி பெறப்படுவதாக அறிவிக்கப்பட்ட நாள் எதிர்பாராதவிதமாக அரசு விடுமுறையாக அறிவிக்கப்படுமேயானால் பூர்த்தி செய்யப்பட்ட ஒரு உறை ஒப்பந்தப்புள்ளிகள் அதற்கு அடுத்த வேலை நாளில் ஏற்கனவே குறிப்பிட்டிருந்த அதே நேரத்தில் பெறப்பட்டு ஒப்பந்தப்புள்ளி உறை திறக்கப்படும்.
13. பெறப்பட்ட ஒரு உறை ஒப்பந்தப்புள்ளிகளை எக்காரணமும் தெரிவிக்காமல் ஏற்கவோ, அல்லது நிராகரிக்கவோ மேலாண்மை இயக்குனர் தமிழ்நாடு கைத்தறி நெசவாளர் கூட்டுறவு சங்கம் (வரையறுக்கப்பட்டது) சென்னை 600 008. அவர்களுக்கு முழு அதிகாரம் உண்டு.
14. கடந்த ஈராண்டுகளில் எந்த ஒப்பந்தப்புள்ளிகளிலும் பங்கேற்காமலோ, அல்லது ஒப்பந்தப்புள்ளி படிவங்கள் பெற்று ஒப்பந்தப்புள்ளிகளை மூன்று முறை சமர்ப்பிக்காதவராகவோ உள்ள ஒப்பந்தக்காரர்களின் பதிவு ரத்தானதாக கருதப்படும்.

#### **தகுதி பெறத் தேவையான அடிப்படை வரையறைகள்**

அ. விண்ணப்பதாரர் அல்லது நிறுவனம் அதே பெயரில் குறைந்த பட்சம் கடந்த மூன்று ஆண்டுகளாகத் தொடர்ந்து கட்டுமானப் பணிகளை நல்ல முறையில் நிறைவேற்றி வருபவராக இருத்தல் வேண்டும்.

ஆ. விண்ணப்பதாரர் அல்லது நிறுவனம் புதிய விதிமுறைகளின் கீழ் முதல் வகுப்பில் ரூ.75.00 இலட்சங்கள் மற்றும் அதற்கு மேல் பணி வரம்புடன் மாநில அளவில் ஒப்பந்தகாரராக தமிழ்நாடு பொதுப்பணித்துறையில் பதிவு பெற்றவராக இருத்தல் வேண்டும்.

இ. விண்ணப்பதாரர் அல்லது நிறுவனம் கடந்த மூன்று ஆண்டுகளில் ஏதாவது ஒரு ஆண்டில் ரூ.50.00 இலட்சங்கள் மற்றும் அதற்கு மேலும் கட்டட பணியினை மத்திய அல்லது

மாநில அரசுக்காக தனியொரு உடன்படிக்கையின் கீழ் நல்ல முறையில் செய்து முடித்திருத்தல் வேண்டும் சான்றிதழ் செயற்பொறியாளரினால் வழங்கப்பட்டிருக்க வேண்டும்.

ஈ. கடந்த ஐந்து ஆண்டுகளில் ஏதாவது ஒரு ஆண்டில் ரூ.100.00 இலட்சங்களுக்கு மேல் பணப்புழக்கம் உள்ளவராக விண்ணப்பதாரர் அல்லது நிறுவனம் இருத்தல் வேண்டும்.

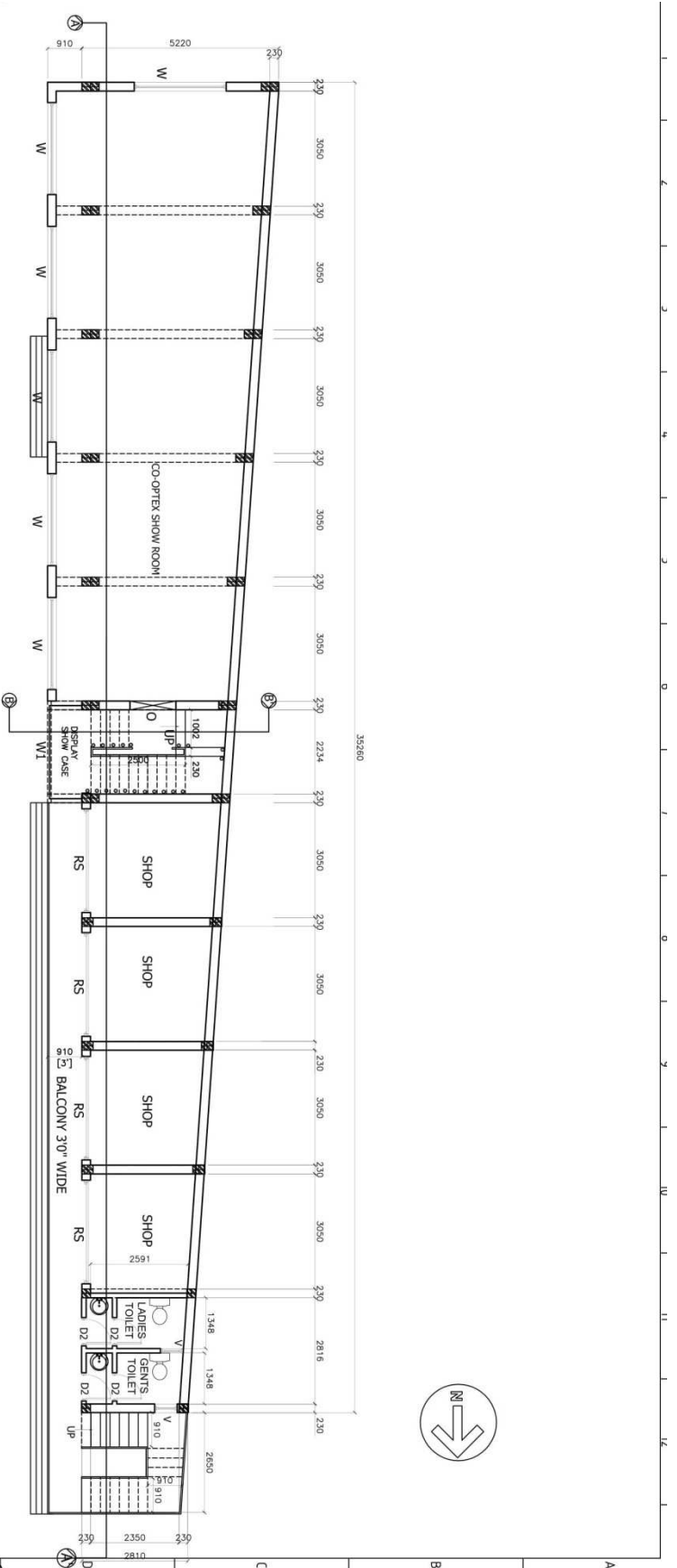
உ. கட்டுமானத் துறையில் நற்பெயர் பெற்றவராகவும், அனுபவமிக்கவராகவும் ஒப்பந்தப்பணிகளில் கடந்த காலத்தில் சிறப்பாக செயலாற்றியவராகவும் விண்ணப்பதாரர் அல்லது நிறுவனம் இருத்தல் அவசியம்.

ஊ. தகுதிகாண் படிவம் மற்றும் விலை விகித ஒப்பந்தப்புள்ளி படிவம் கோரி அனுப்பும் கடிதத்துடன் ஒப்பந்தக்காராகப் பதிவு பெற்றமைக்கான சான்று ஒத்த தன்மையிலான பணிகளில் பெற்ற முன் அனுபவத்திற்கான சான்றுகள், வருமான வரி கணக்கு செலுத்தியமைக்கான அத்தாட்சி நடப்பு காலத்திற்கான விற்பனை வரி நிலுவையில்லை அல்லது சரிப்பார்க்கப்பட்டமைக்கான சான்று ஆகியன தவறாமல் இணைக்கப்பட வேண்டும் அவ்வாறு இணைக்கப்படாமல் பெறப்படும் தகுதிகாண் படிவம் மற்றும் விலை விகித ஒப்பந்தப்புள்ளி படிவம் பெறுவதற்கான கோரிக்கைக் கடிதங்கள் நிராகரிக்கப்படும்.

கீழ்க்குறிப்பிட்டுள்ள இணைய தளத்தின் மூலமாகவும் ஒப்பந்தப்புள்ளி படிவங்கள் பெற்றுக் கொள்ளலாம்.

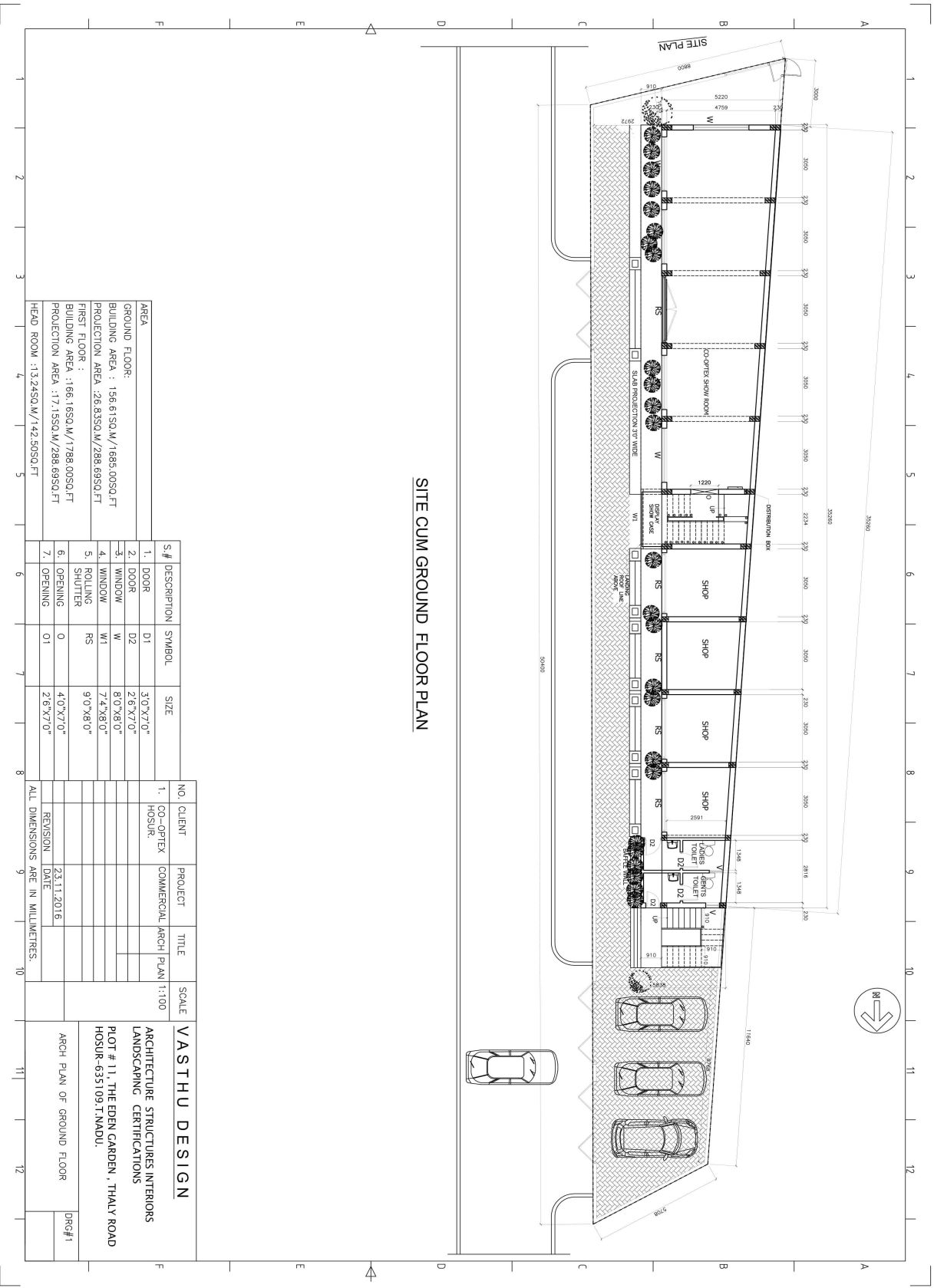
மேற்படி இணைய தளங்களின் மூலம் பெறப்படும் ஆவணங்களுக்கு மட்டும் விலை கிடையாது

மேலாண்மை இயக்குனர்  
தமிழ்நாடு கைத்தறி நெசவாளர் கூட்டுறவு  
சங்கம் (வரையறுக்கப்பட்டது)  
சென்னை 600 008.



FIRST FLOOR PLAN

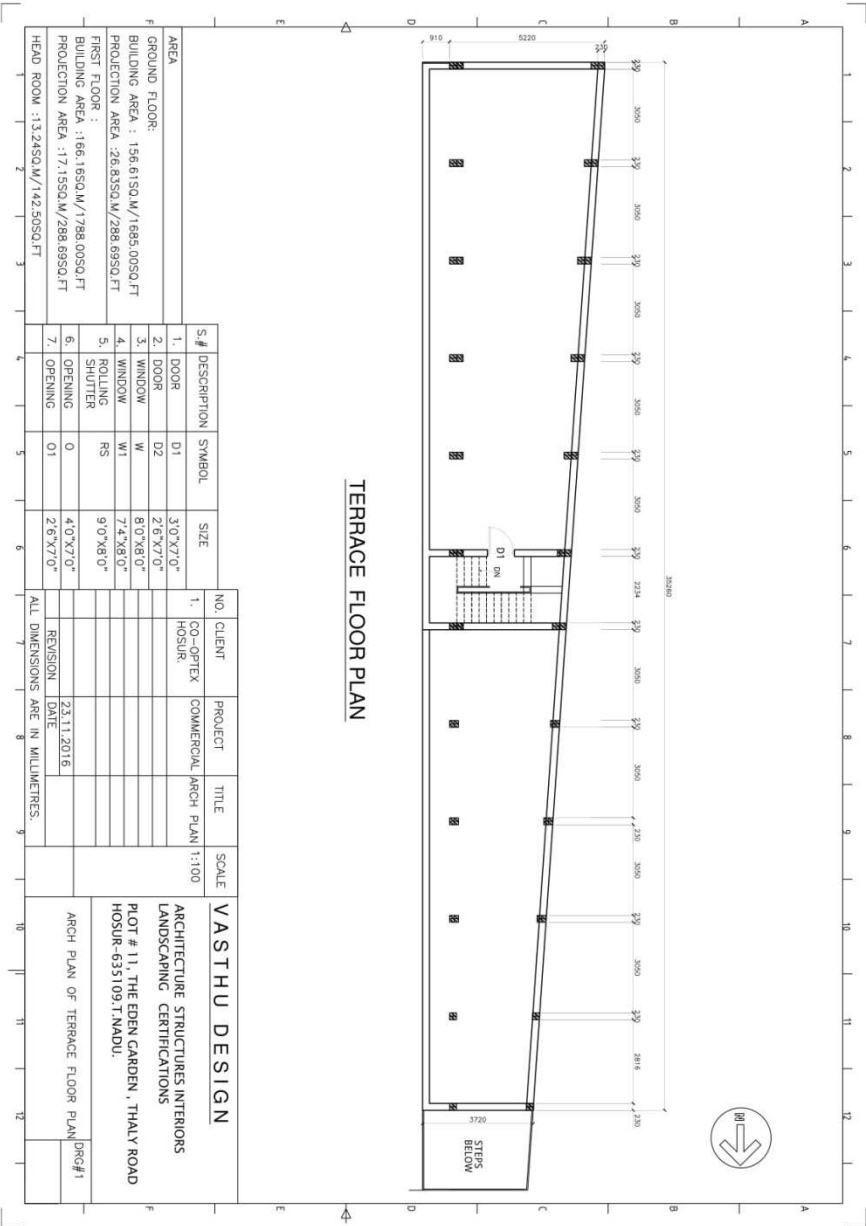
S.#	DESCRIPTION	SYMBOL	SIZE	NO.	CLIENT	PROJECT	TITLE	SCALE	VASTHU DESIGN		
1.	DOOR	D1	3'0"X7'0"	1.	CO-OPTEX HOSUR.	COMMERCIAL	ARCH PLAN	1:100	<b>ARCHITECTURE STRUCTURES INTERIORS</b> <b>LANDSCAPING CERTIFICATIONS</b> <b>PLOT # 11, THE EDEN GARDEN , THALY ROAD</b> <b>HOSUR-635109.T.NADU.</b>  <b>ARCH PLAN OF FIRST FLOOR</b>  DRG#1		
2.	DOOR	D2	2'6"X7'0"								
3.	WINDOW	W	8'0"X8'0"								
4.	WINDOW	W1	7'4"X8'0"								
5.	ROLLING SHUTTER	RS	9'0"X8'0"								
6.	OPENING	O	4'0"X7'0"								
7.	OPENING	O1	2'6"X7'0"								
HEAD ROOM : 13.24SQ.M/142.50SQ.FT				ALL DIMENSIONS ARE IN MILLIMETRES.							



SITE CUM GROUND FLOOR PLAN

S.#	DESCRIPTION	SYMBOL	SIZE	NO.	CLIENT	PROJECT	TITLE	SCALE
1.	DOOR	D1	3'0"X7'0"	1.	OO-OPTEX HOSUR.	COMMERCIAL ARCH	PLAN	1:100
2.	DOOR	D2	2'6"X7'0"					
3.	WINDOW	W	8'0"X8'0"					
4.	WINDOW	W1	7'4"X8'0"					
5.	ROLLING SHUTTER	RS	9'0"X8'0"					
6.	OPENING	O	4'0"X7'0"					
7.	OPENING	O1	2'6"X7'0"					
				ALL DIMENSIONS ARE IN MILLIMETRES.				
				REVISION DATE	23.11.2016			
				<b>VASTHU DESIGN</b> ARCHITECTURE STRUCTURES INTERIORS LANDSCAPING CERTIFICATIONS PLOT # 11, THE EDEN GARDEN, THALY ROAD HOSUR-635109, T.NADU.			ARCH PLAN OF GROUND FLOOR DRG#1	

AREA	SIZE
GROUND FLOOR:	
BUILDING AREA :	156.61SQ.M/1685.00SQ.FT
PROJECTION AREA :	26.83SQ.M/288.69SQ.FT
FIRST FLOOR :	
BUILDING AREA :	166.16SQ.M/1788.00SQ.FT
PROJECTION AREA :	17.15SQ.M/184.50SQ.FT
HEAD ROOM :	13.24SQ.M/142.50SQ.FT

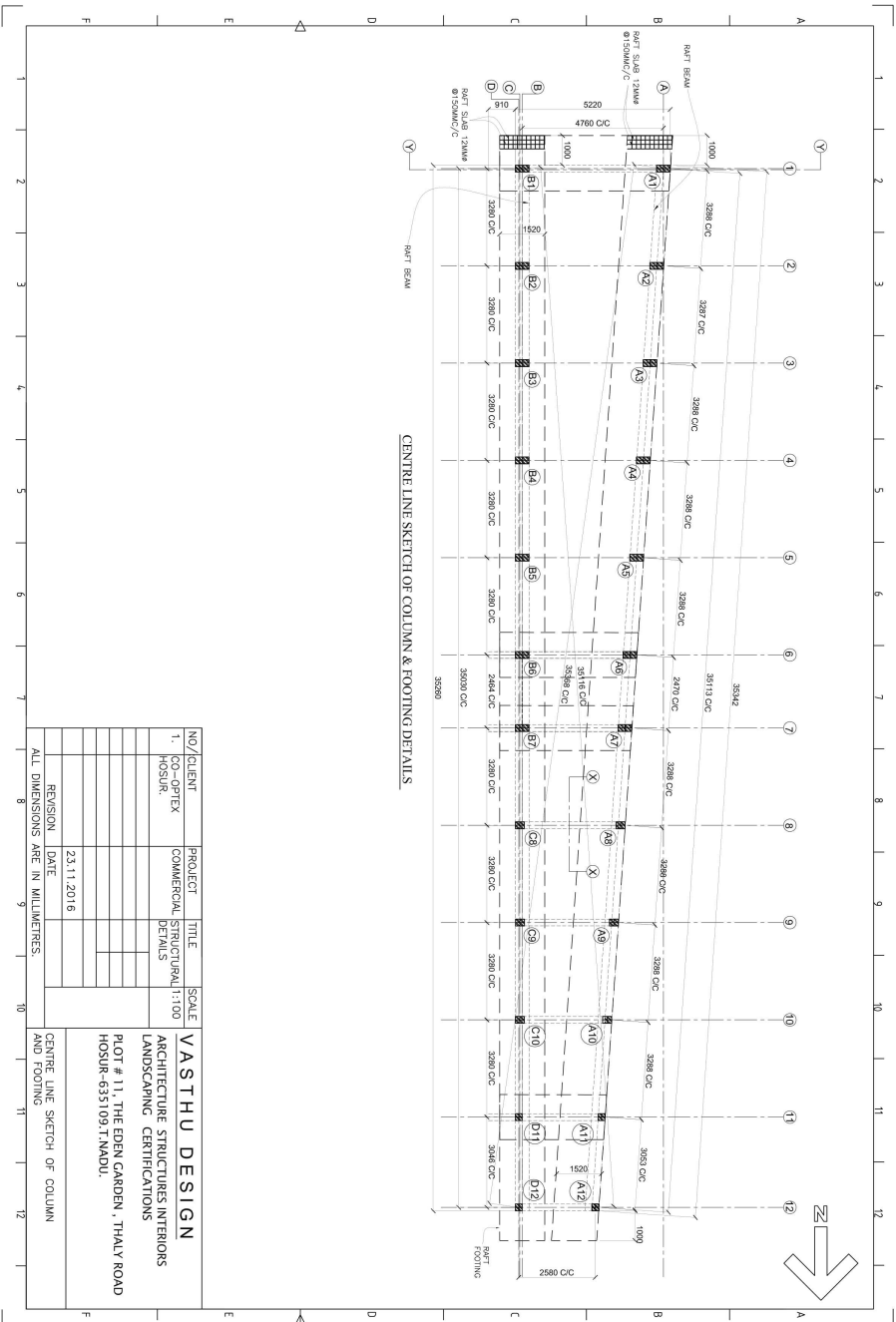


S.#	DESCRIPTION	SYMBOL	SIZE	NO.	CLIENT	PROJECT	TITLE	SCALE
1.	DOOR	D1	3'0"X7'0"	1.	CO-OPTEX	COMMERCIAL ARCH PLAN	1:100	<b>VASTHU DESIGN</b> ARCHITECTURE STRUCTURES INTERIORS LANDSCAPING CERTIFICATIONS PLOT # 11, THE EDEN GARDEN, THALY ROAD HOSUR-633109.T.NADU. ARCH PLAN OF TERRACE FLOOR PLAN DRG#1
2.	DOOR	D2	2'6"X7'0"					
3.	WINDOW	W1	8'0"X8'0"					
4.	WINDOW	RS	7'4"X8'0"					
5.	ROLLING SHUTTER		9'0"X8'0"					
6.	OPENING	O	4'0"X7'0"					
7.	OPENING	01	2'6"X7'0"					

AREA	DESCRIPTION	SYMBOL	SIZE	NO.	CLIENT	PROJECT	TITLE	SCALE
GROUND FLOOR:								
BUILDING AREA :	156.61SQ.M/1685.00SQ.FT							
PROJECTION AREA :	28.83SQ.M/298.69SQ.FT							
FIRST FLOOR :								
BUILDING AREA :	166.16SQ.M/1788.00SQ.FT							
PROJECTION AREA :	17.15SQ.M/298.69SQ.FT							
HEAD ROOM :	13.24SQ.M/142.50SQ.FT							

REVISION	DATE
1.	23.11.2016

ALL DIMENSIONS ARE IN MILLIMETRES.



NO./CLIENT	PROJECT	TITLE	SCALE
1. HOOSUR	COMMERCIAL	STRUCTURAL DETAILS	1:100

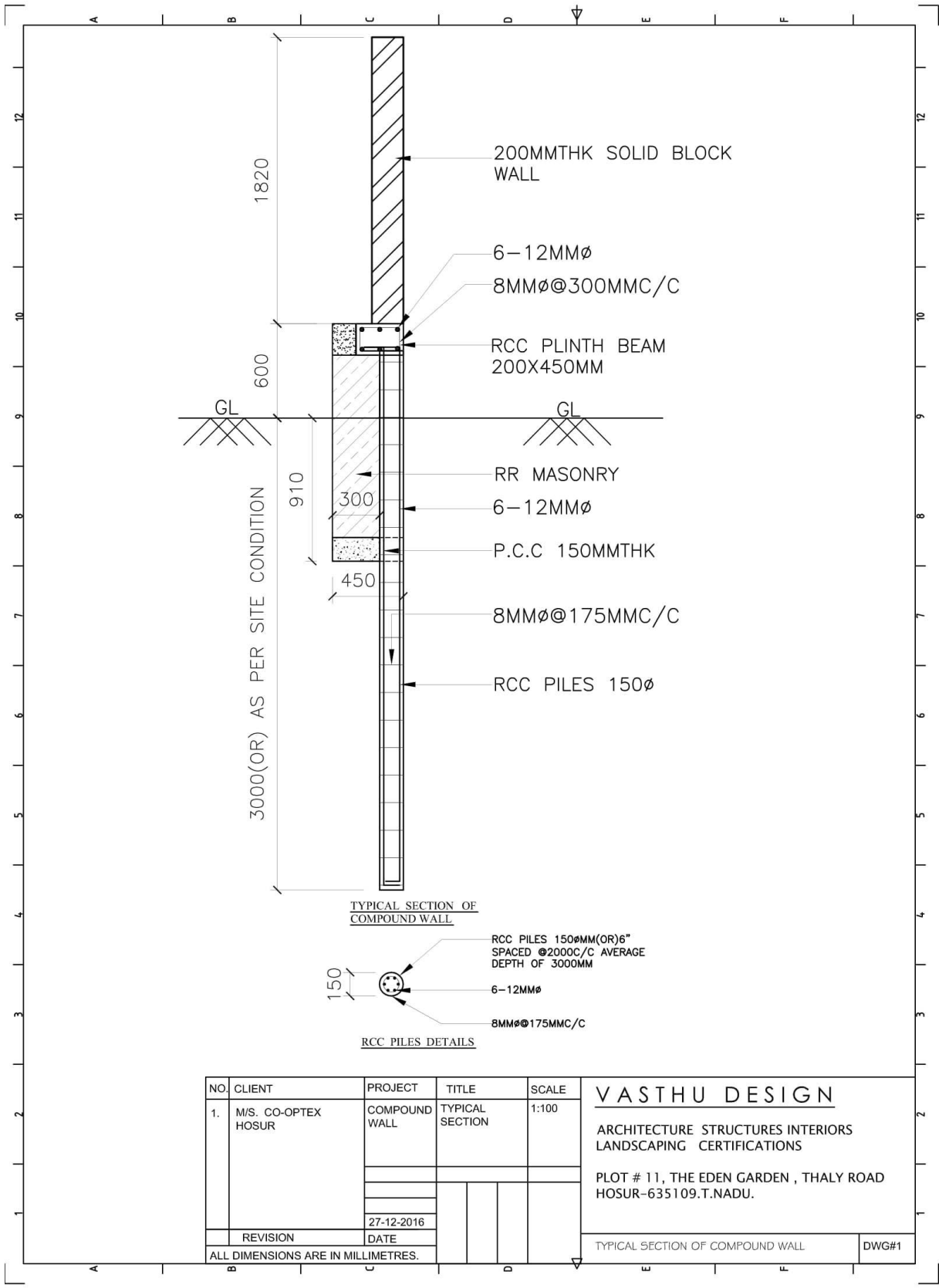
NO./CLIENT	PROJECT	TITLE	SCALE
1. HOOSUR	COMMERCIAL	STRUCTURAL DETAILS	1:100

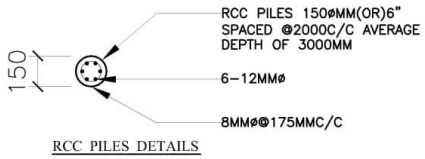
REVISION	DATE

**VASTHU DESIGN**  
 ARCHITECTURE STRUCTURES INTERIORS  
 LANDSCAPING CERTIFICATIONS  
 PLOT # 11, THE EDEN GARDEN, THALY ROAD  
 HOOSUR-635109, T.NADU.

ALL DIMENSIONS ARE IN MILLIMETRES.



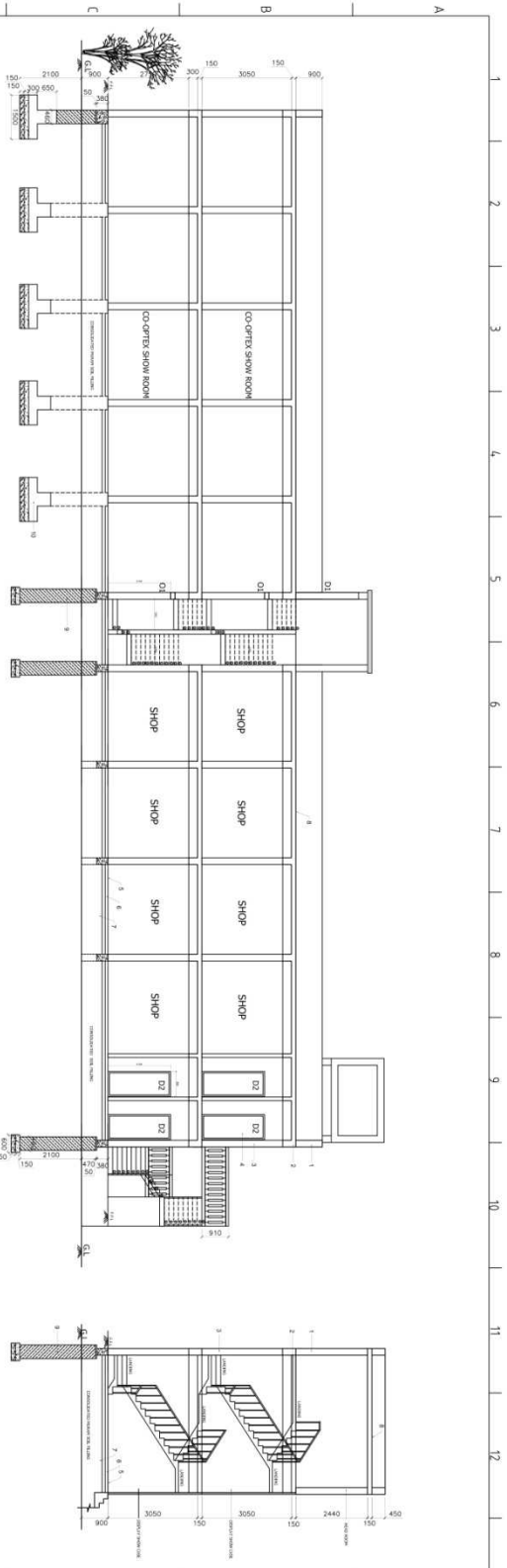
TYPICAL SECTION OF COMPOUND WALL



RCC PILES DETAILS

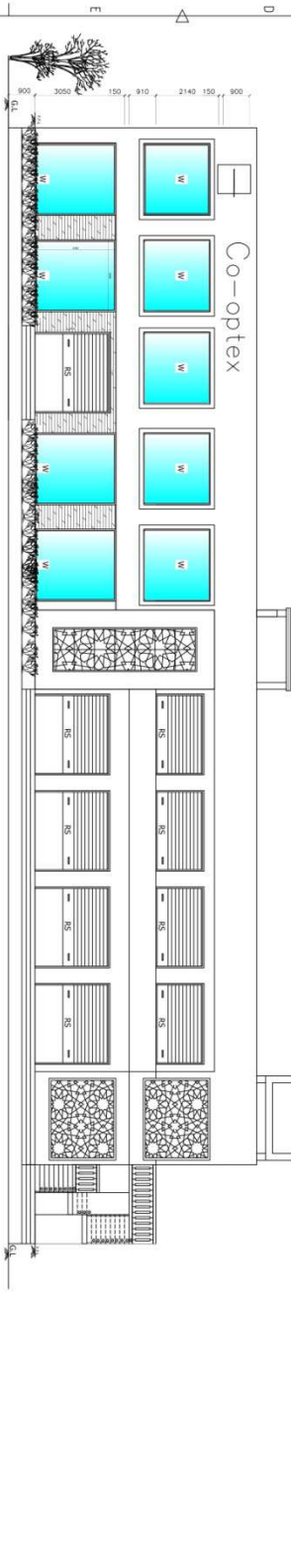
NO.	CLIENT	PROJECT	TITLE	SCALE	VASTHU DESIGN ARCHITECTURE STRUCTURES INTERIORS LANDSCAPING CERTIFICATIONS
1.	M/S. CO-OPTEX HOSUR	COMPOUND WALL	TYPICAL SECTION	1:100	
	REVISION	DATE			TYPICAL SECTION OF COMPOUND WALL
		27-12-2016			DWG#1

ALL DIMENSIONS ARE IN MILLIMETRES.



LONG SECTION AA'

VERTICAL SECTION BB'



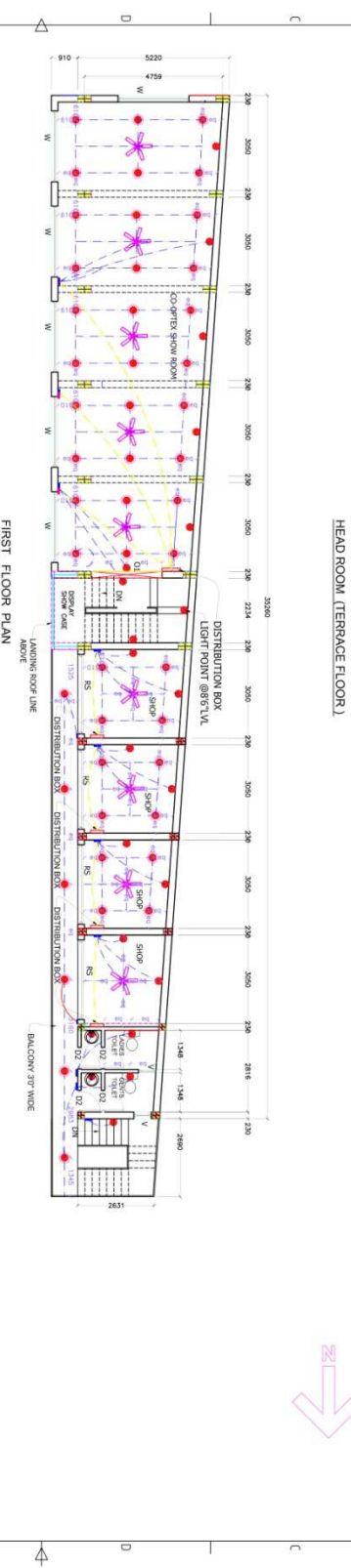
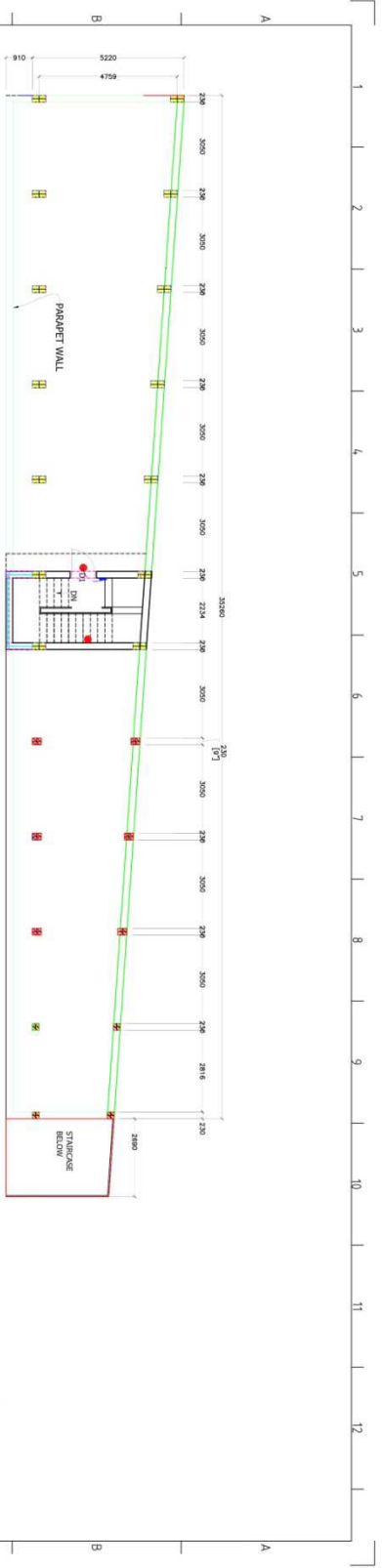
EAST ELEVATION

- SPECIFICATIONS**
- 1.PARAPET WALL IN CEMENT MORTAR 1:6.
  - 2.R.C 1:2.4 FOR LINTELS, SUNSHADES, COLUMNS,FLOOR SLABS & ROOF.
  - 3.BRICKWALL SUPERSTRUCTURE IN CM 1:6.
  - 4.ALUMINIUM DOORS, WINDOWS & VENTILATORE.
  - 5.FLOOR FINISHING IN VITRIFIED TILES 1:3 OVER P.C.C.1:8,10.
  - 6.SAND FILLING ABOVE SOIL FILLING.
  - 7.SOIL FILLING FOR BASEMENT 1.
  - 8.SAND FILLING ABOVE SOIL FILLING.
  - 9.R.R MASONRY IN CM 1:4.
  - 10.FOUNDATION TO DETAIL.

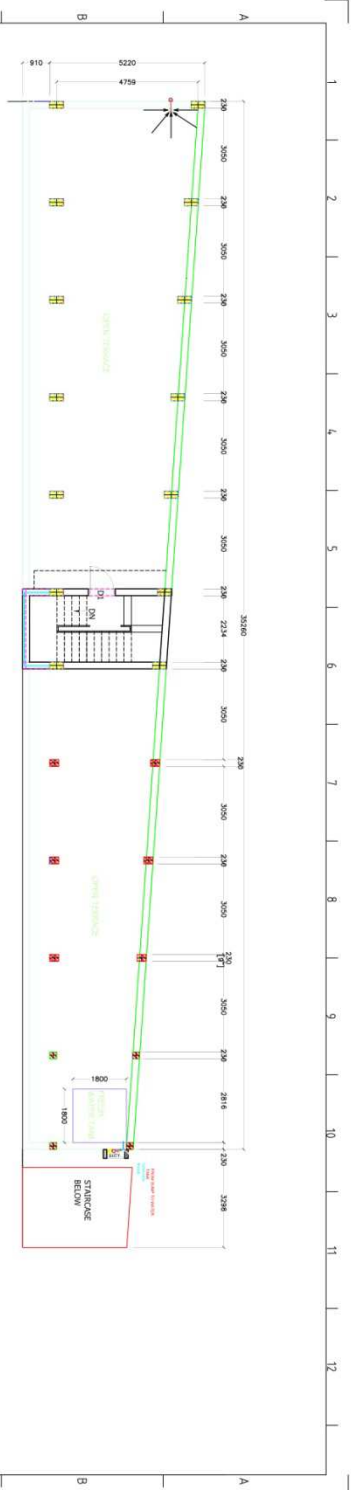
NO./	CLIENT	PROJECT	TITLE	SCALE
1.	CO-OPTEX HOSUR	COMMERCIAL	ELEVATION & SECTIONS	1:100
REVISION				
DATE				

**VASTHU DESIGN**  
 ARCHITECTURE STRUCTURES INTERIORS  
 LANDSCAPING CERTIFICATIONS  
 PLOT # 11, THE EDEN GARDEN , THALY ROAD  
 HOSUR-635109.T.NADU.  
 ELEVATION & SECTIONS

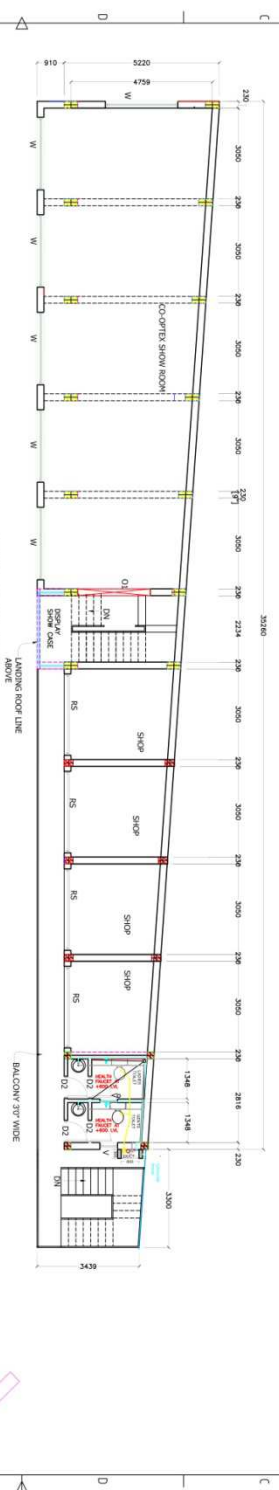




LEGEND:		NO./ CLIENT	PROJECT	TITLE	SCALE
* (pink star)	FAN	1.	CO-PTX	COMMERCIAL	ELECTRICAL
● (red circle)	LIGHT POINT @ 7'6" LVL	HOSUR.			1:100
● (blue circle)	SWITCH BOX @ 4'6" LVL				
● (green circle)	SWITCH BOX @ 2'6" LVL				
● (yellow circle)	PLUG POINT				
● (orange circle)	CEILING LIGHT				
● (purple circle)	DISTRIBUTION BOX				
— (red line)	ALL DIMENSIONS ARE IN MILLIMETRES				
	REVISION	DATE			
		22.11.2016			
<b>VASTHU DESIGN</b> ARCHITECTURE STRUCTURES INTERIORS LANDSCAPING CERTIFICATIONS PLOT # 11, THE EDEN GARDEN , THALY ROAD HOSUR, 653109/11, MADU. ELECTRICAL DRAWING - FIRST FLOOR & HEAD ROOM					
					DWG#Z



HEAD ROOM ( TERRACE FLOOR )



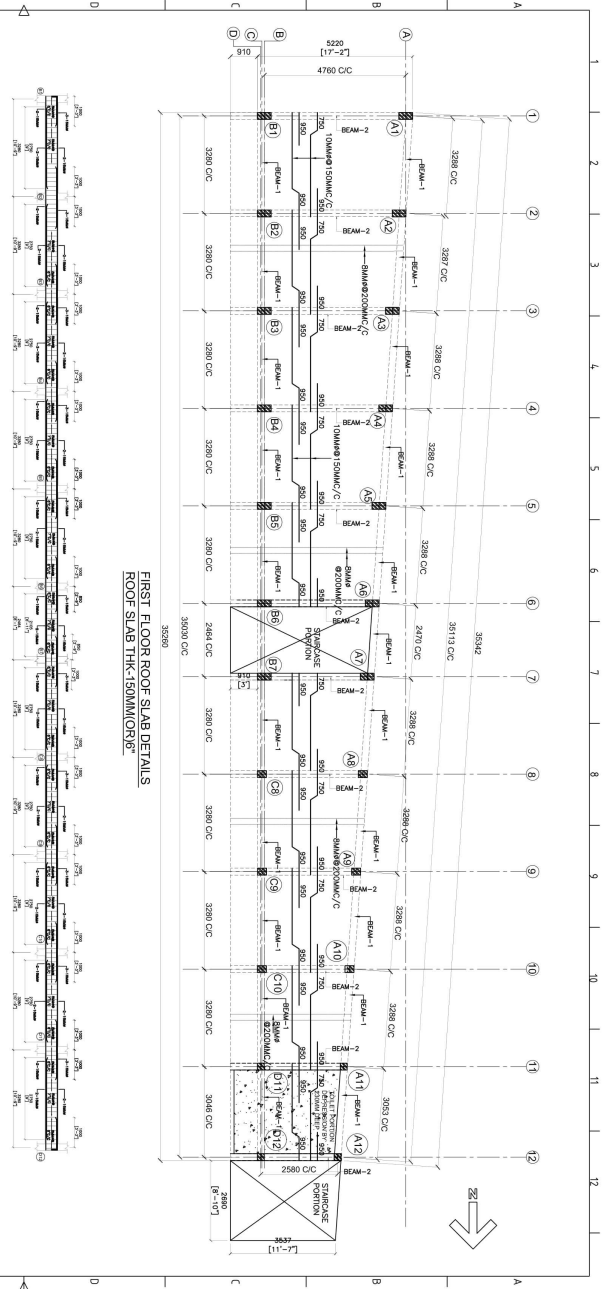
FIRST FLOOR PLAN

- FROM SQUARE WATER HEATER TO SUPPLY - (25MM)
- WATER PIPE (UO SUMP TO O.H.W.T 25MM)
- ROAM WATER PIPE (O.H.W.T TO SUPPLY - 25MM)
- WASTE WATER PIPE - (75MM)
- SOLID WASTE LINE - (100MM)
- RAIN WATER PIPE - (100MM)

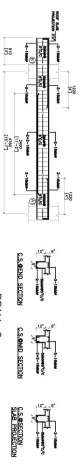
NO./ CLIENT	PROJECT	TITLE	SCALE
1. M/S. CO-OPTEK HOSEA	COMMERCIAL BNC	PLUMBING	1:100
<b>VASTHU DESIGN</b>			
ARCHITECTURE STRUCTURES INTERIORS LANDSCAPING CERTIFICATIONS			
PLOT # 11, THE EDEN GARDEN, THALY ROAD HOSEA-593103, TAMIL NADU.			
REVISION DATE 22.11.2014			
WATER SUPPLY & PLUMBING DETAILS			
			Dwg#2

ALL DIMENSIONS ARE IN MILLIMETRES

**FIRST FLOOR ROOF SLAB DETAILS  
ROOF SLAB THK-150MM MINORS**



**LONGITUDINAL SECTION OF BEAM-1**  
GRID NO.B1,B2,B3,B4,B5,B6,B7,C8,C9,C10,D11,K012  
A1,A2,A3,A4,A5,A6,A7,A8,A9,A10,A11,K&L2

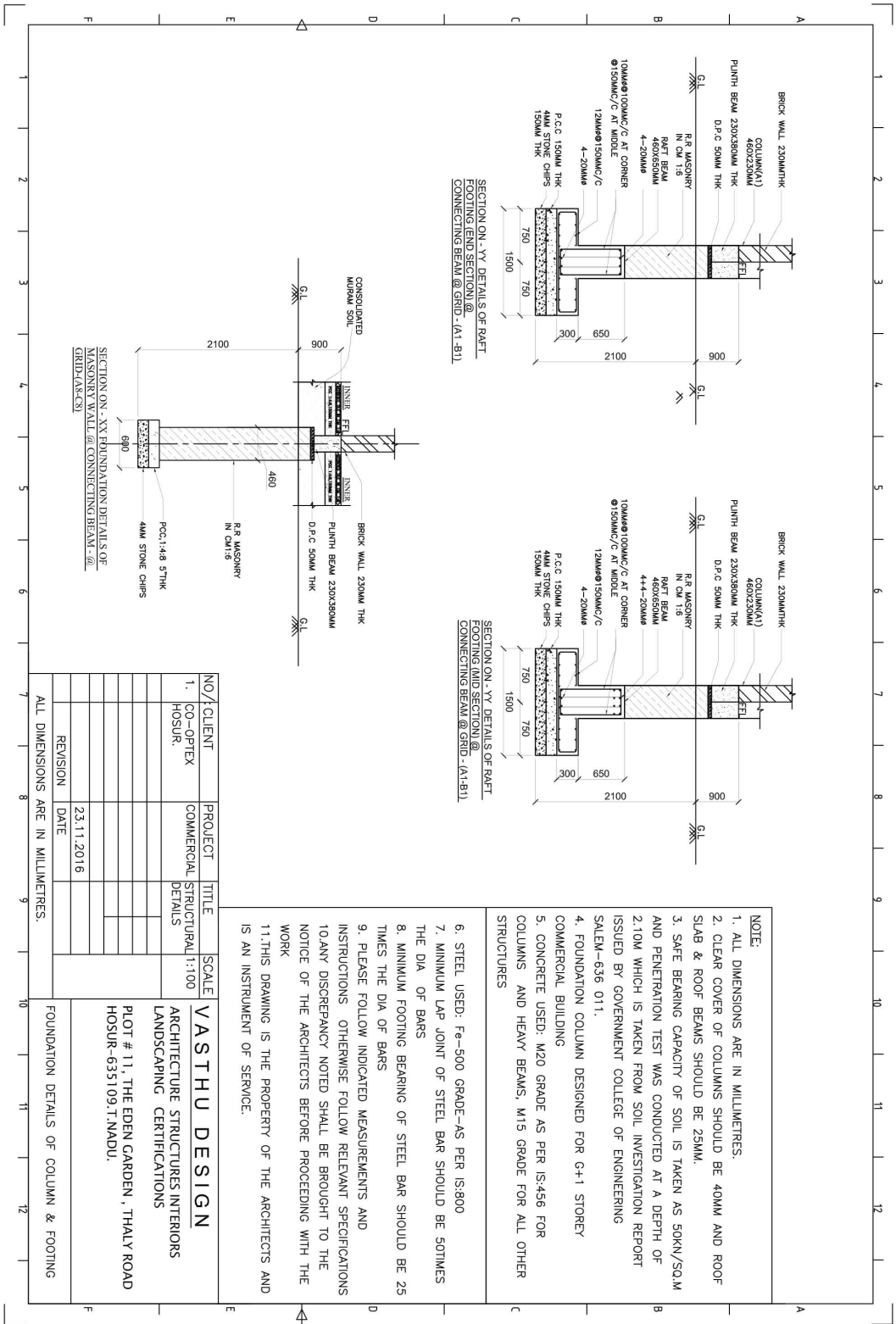


**LONGITUDINAL SECTION OF BEAM-2**  
GRID NO.B1,A1,B2-A2,B3-A3,B4-A4,B5-A5,B6-A6,  
B7-A7,C8-A8,C9-A9,C10-A10,D11-A11& D12-A12



- NOTE: DIMENSIONS ARE IN MILLIMETERS
1. CLASH CHECKS OF ALL SERVICES TO BE MADE
  2. CLASH CHECKS OF ALL SERVICES TO BE MADE
  3. CLASH CHECKS OF ALL SERVICES TO BE MADE
  4. MINIMAL LAP JOINT OF STEEL BAR SHOULD BE 300MM
  5. PROVIDE FOLLOW INDICATED DIMENSIONS AND
  6. PROVIDE FOLLOW INDICATED DIMENSIONS AND
  7. THIS DRAWING IS THE PROPERTY OF THE ARCHITECTS AND IS AN INSTRUMENT OF SERVICE.

NO./	CLIENT	PROJECT	TITLE	SCALE
1	GO-GATEX HOUSING	COMMERCIAL BUILDING	STRUCTURAL DETAILS	1:100
<b>VASTHU DESIGN</b>				
ARCHITECTURE STRUCTURES INTERIORS LANDSCAPING CONSULTANTS PLOT 11, THE FORN CANTON, THAU ROAD HOUSING SOCIETY, BANGALORE				
ROOF SLAB & ROOF BEAM DETAILS				
FIRST FLOOR				
REVISION DATE: 21/11/2018				
ALL DIMENSIONS ARE IN MILLIMETERS.				



NO./CLIENT PROJECT TITLE SCALE

1. CO-OPTEX COMMERCIAL STRUCTURAL 1:100

HOSUR: DETAILS

REVISION DATE 23.11.2016

ALL DIMENSIONS ARE IN MILLIMETRES.

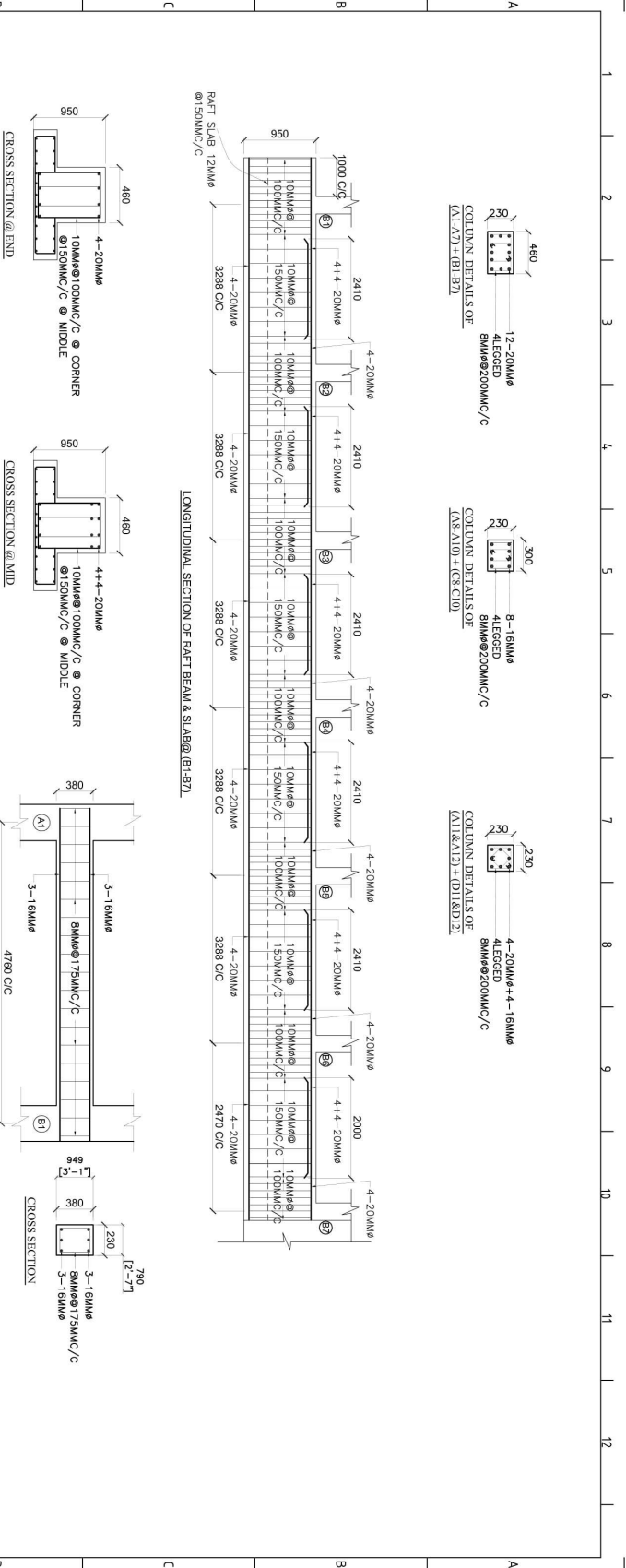
- NOTE:
- ALL DIMENSIONS ARE IN MILLIMETRES.
  - CLEAR COVER OF COLUMNS SHOULD BE 40MM AND ROOF SLAB & ROOF BEAMS SHOULD BE 25MM.
  - SAFE BEARING CAPACITY OF SOIL IS TAKEN AS 50KN/SQ.M AND PENETRATION TEST WAS CONDUCTED AT A DEPTH OF 2.10M WHICH IS TAKEN FROM SOIL INVESTIGATION REPORT ISSUED BY GOVERNMENT COLLEGE OF ENGINEERING SALEM-636 011.
  - FOUNDATION COLUMN DESIGNED FOR G+1 STOREY COMMERCIAL BUILDING
  - CONCRETE USED: M20 GRADE AS PER IS:456 FOR COLUMNS AND HEAVY BEAMS, M15 GRADE FOR ALL OTHER STRUCTURES
  - STEEL USED: Fe-500 GRADE-AS PER IS:800
  - MINIMUM LAP JOINT OF STEEL BAR SHOULD BE 50TIMES THE DIA OF BARS
  - MINIMUM FOOTING BEARING OF STEEL BAR SHOULD BE 25 TIMES THE DIA OF BARS
  - PLEASE FOLLOW INDICATED MEASUREMENTS AND INSTRUCTIONS OTHERWISE FOLLOW RELEVANT SPECIFICATIONS
  - ANY DISCREPANCY NOTED SHALL BE BROUGHT TO THE NOTICE OF THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK
  - THIS DRAWING IS THE PROPERTY OF THE ARCHITECTS AND IS AN INSTRUMENT OF SERVICE.

**VASTHU DESIGN**

ARCHITECTURE STRUCTURES INTERIORS  
LANDSCAPING CERTIFICATIONS

PLOT # 11, THE EDEN GARDEN, THALY ROAD  
HOSUR-635109, T.NANDU.

FOUNDATION DETAILS OF COLUMN & FOOTING



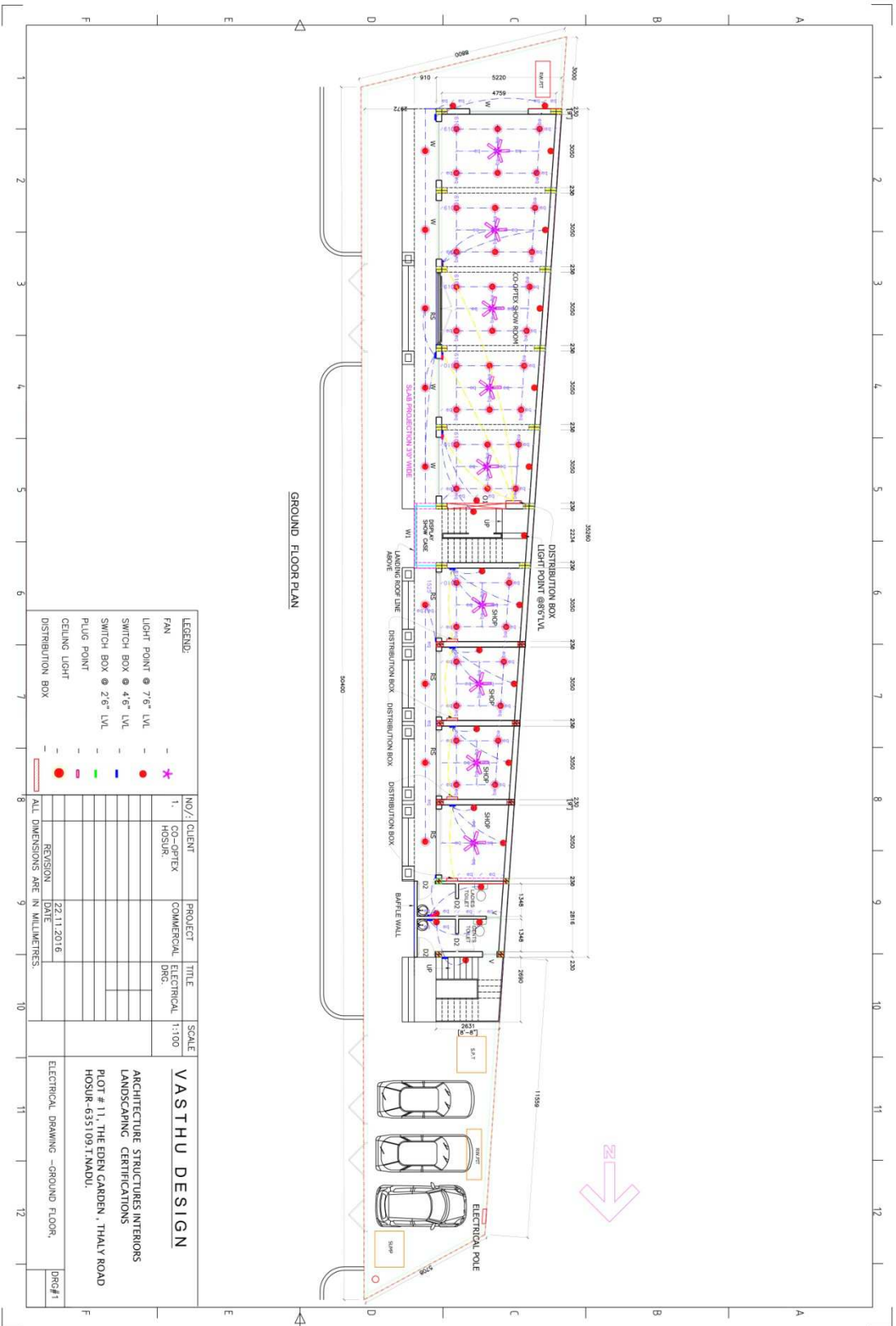
- NOTE:
1. ALL DIMENSIONS ARE IN MILLIMETRES.
  2. CLEAR COVER OF COLUMNS SHOULD BE 40MM AND ROOF SLAB & ROOF BEAMS SHOULD BE 25MM.
  3. SAFE BEARING CAPACITY OF SOIL IS TAKEN AS 50KN/SQ.M AND PENETRATION TEST WAS CONDUCTED AT A DEPTH OF 2.10M WHICH IS TAKEN FROM SOIL INVESTIGATION REPORT ISSUED BY GOVERNMENT COLLEGE OF ENGINEERING SALEM-636 011.
  4. FOUNDATION COLUMN DESIGNED FOR G+1 STOREY COMMERCIAL BUILDING
  5. CONCRETE USED: M20 GRADE AS PER IS:456 FOR COLUMNS AND HEAVY BEAMS, M15 GRADE FOR ALL OTHER STRUCTURES

6. STEEL USED: Fe-500 GRADE-AS PER IS:800
7. MINIMUM LAP JOINT OF STEEL BAR SHOULD BE 50TIMES THE DIA OF BARS
8. MINIMUM FOOTING BEARING OF STEEL BAR SHOULD BE 25 TIMES THE DIA OF BARS
9. PLEASE FOLLOW INDICATED MEASUREMENTS AND INSTRUCTIONS OTHERWISE FOLLOW RELEVANT SPECIFICATIONS 10 ANY DISCREPANCY NOTED SHALL BE BROUGHT TO THE NOTICE OF THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK
11. THIS DRAWING IS THE PROPERTY OF THE ARCHITECTS AND IS AN INSTRUMENT OF SERVICE.

ALL DIMENSIONS ARE IN MILLIMETRES.

NO./CLIENT	PROJECT	TITLE	SCALE
1. CO-OPLEX HOSUR	COMMERCIAL	STRUCTURAL DETAILS	1:100
REVISION	DATE		
	23.11.2016		

FOUNDATION DETAILS OF RAFT BEAM & SLAB AND PUNTH BEAM
PLOT # 11, THE EDEN GARDEN, THALY ROAD HOSUR-635109, T.NADU.



GROUND FLOOR PLAN

LEGEND:

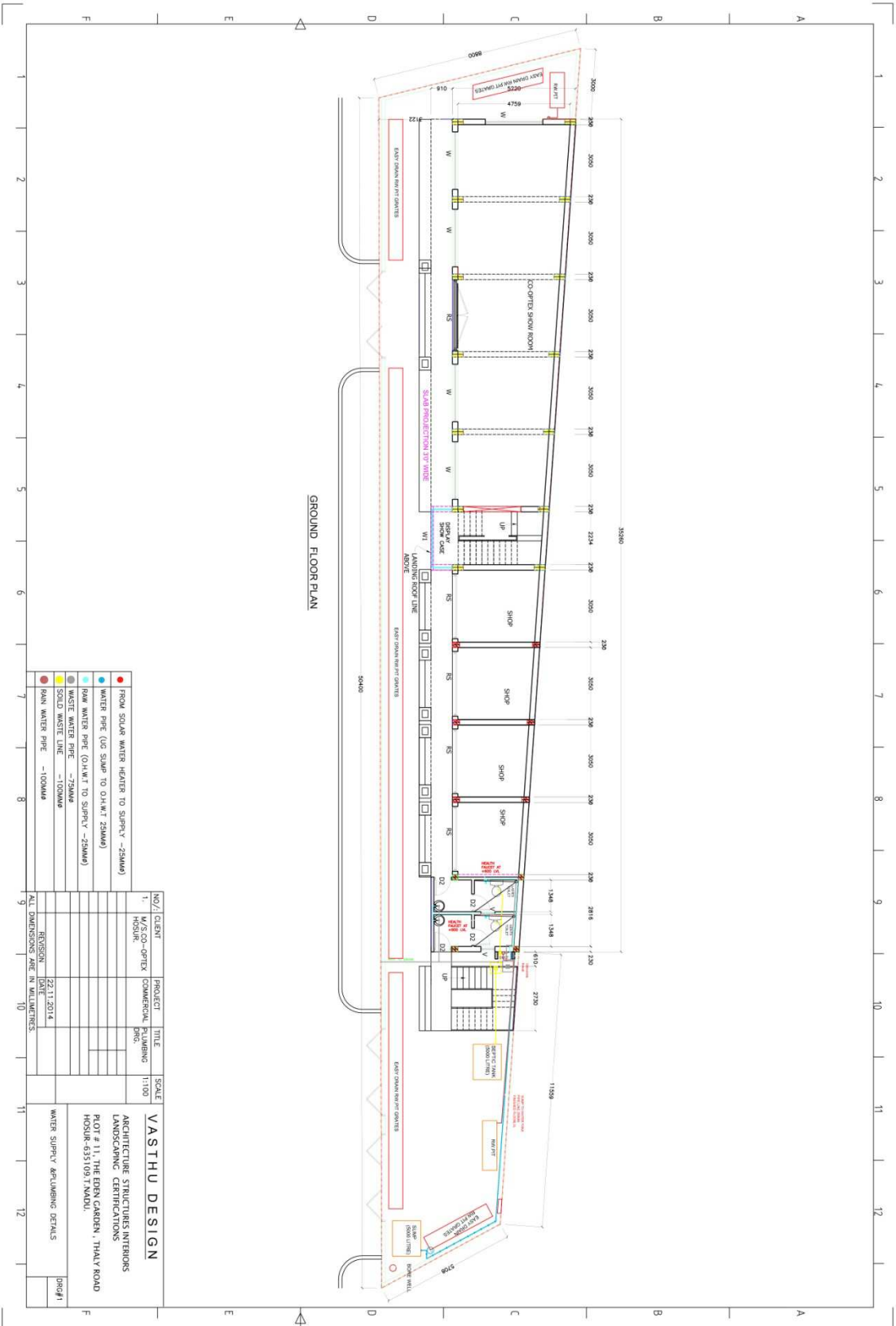
FAN	*
LIGHT POINT @ 7'-6" LVL	●
SWITCH BOX @ 4'-6" LVL	●
SWITCH BOX @ 2'-6" LVL	●
PLUG POINT	●
CEILING LIGHT	●
DISTRIBUTION BOX	□

NO./ CLIENT	PROJECT	TITLE	SCALE
1/ HO-SUR	COMMERCIAL	ELECTRICAL DRG	1:100

REVISION	DATE
	22.11.2016

ALL DIMENSIONS ARE IN MILLIMETRES.

**VASTHU DESIGN**  
 ARCHITECTURE STRUCTURES INTERIORS  
 LANDSCAPING CERTIFICATIONS  
 PLOT # 11, THE EDEN GARDEN, THALY ROAD  
 HO-SUR-635109.T.NADU.  
 ELECTRICAL DRAWING - GROUND FLOOR, DRG#1

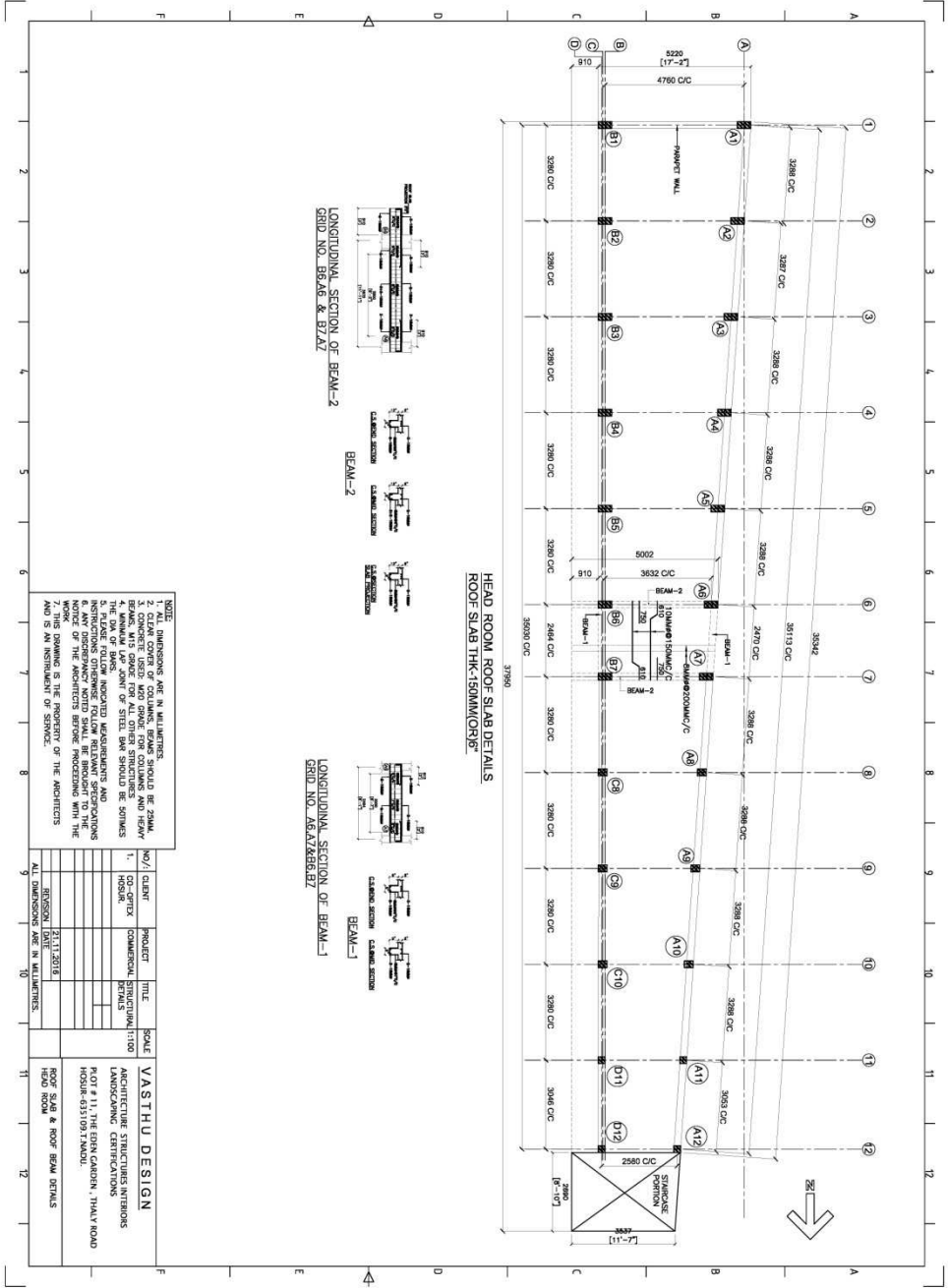


GROUND FLOOR PLAN

- FROM SOLAR WATER HEATER TO SUPPLY - 25MM
- WATER PIPE (GD SUPPLY TO O.H.W.T 25MM)
- RAW WATER PIPE (O.H.W.T TO SUPPLY - 25MM)
- WASTE WATER PIPE - 75MM
- SOLID WASTE LINE - 100MM
- RAIN WATER PIPE - 100MM

NO./	CLIENT	PROJECT	TITLE	SCALE
1	M/S.CO-OPTEX HOORUR	COMMERCIAL	PLUMBING PREP.	1:100
<b>VASTHU DESIGN</b>				
ARCHITECTURE STRUCTURES INTERIORS LANDSCAPING CERTIFICATIONS PLOT # 11, THE EDEN GARDEN, THALY ROAD HOORUR-635109, T.NADU.				
WATER SUPPLY & PLUMBING DETAILS				DWG#1
ALL DIMENSIONS ARE IN MILLIMETRES				

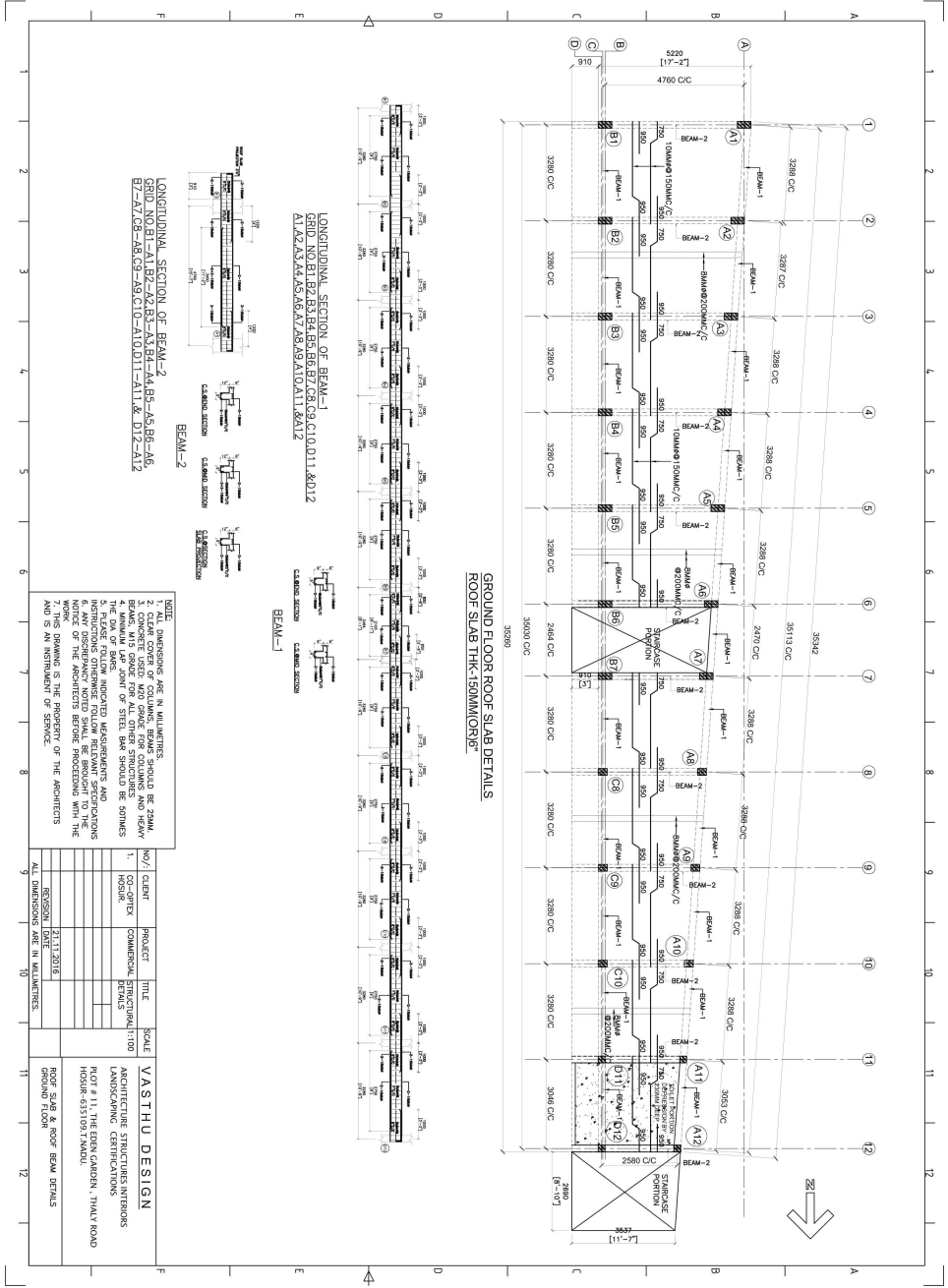




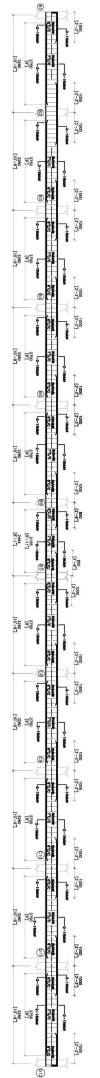
- NOTE:** DIMENSIONS ARE IN MILLIMETERS
1. CLASH CHECK OF COLUMN, BEAM SHOULD BE 25MM.
  2. CLASH CHECK OF COLUMN, BEAM SHOULD BE 25MM.
  3. CLASH CHECK OF COLUMN, BEAM SHOULD BE 25MM.
  4. MINIMUM LAP JOINT OF STEEL BAR SHOULD BE 500MM.
  5. PROVIDE FOLLOW INDICATED MANUFACTURERS AND SPECIFICATIONS.
  6. PROVIDE SINKING DETAIL AS PER ARCHITECT'S NOTICE OF THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK.
  7. THIS DRAWING IS THE PROPERTY OF THE ARCHITECTS AND IS AN INSTRUMENT OF SERVICE.

NO./	CLIENT	PROJECT	TITLE	SCALE
1.	CO-GRITZ HOUSING	COMMERCIAL	STRUCTURAL DETAILS	1:100
<b>VASTHU DESIGN</b>				
ARCHITECTURE STRUCTURES INTERIORS				
LANDSCAPING CONSULTANTS				
PLOT NO. 11, THE EON COLONY, THAKY ROAD				
HYDRABAD-503 001, INDIA.				
DATE: 21/11/2018				
DRAWN BY: S. S. S. S.				
CHECKED BY: S. S. S. S.				
APPROVED BY: S. S. S. S.				
ALL DIMENSIONS ARE IN MILLIMETERS.				
ROOF SLAB & ROOF BEAM DETAILS				

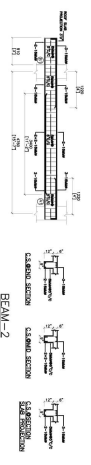




GROUND FLOOR ROOF SLAB DETAILS  
ROOF SLAB THK-150MM/10RS



LONGITUDINAL SECTION OF BEAM-1  
GRID NO.B1,B2,B3,B4,B5,B6,B7,C8,C9,C10,D11,K012  
A1,A2,A3,A4,A5,A6,A7,A8,A9,A10,A11,K&L12



LONGITUDINAL SECTION OF BEAM-2  
GRID NO.B1-A1,B2-A2,B3-A3,B4-A4,B5-A5,B6-A6  
B7-A7,C8-A8,C9-A9,C10-A10,D11-A11 & D12-A12

- NOTE: DIMENSIONS ARE IN MILLIMETERS
1. CLEAR COVER OF COLUMNS, BEAMS SHOULD BE 25MM.
  2. CONCRETE GRADE FOR ALL OTHER STRUCTURES AND FOUNDATIONS SHOULD BE M20.
  3. ALL REINFORCEMENT BARS SHOULD BE HOT ROLLED.
  4. MINIMUM LAP JOINT OF STEEL BAR SHOULD BE 30DMS.
  5. PROVIDE 10% OVERLAP FOR ALL REINFORCEMENT BARS.
  6. PROVIDE 10% OVERLAP FOR ALL REINFORCEMENT BARS.
  7. THIS DRAWING IS THE PROPERTY OF THE ARCHITECTS AND IS AN INSTRUMENT OF SERVICE.

NO./	CLIENT	PROJECT	TITLE	SCALE
1	GO-ORTEX HOUSING	COMMERCIAL	STRUCTURAL DETAILS	1:100
<b>VASTHU DESIGN</b>				
ARCHITECTURE STRUCTURES INTERIORS LANDSCAPING CERTIFICATIONS FLOOR PLAN THEFTS/CLASH/THREAT ROAD INSURANCE/3D/360/VR/AR/3D				
ROOF SLAB & ROOF BEAM DETAILS				
GROUND FLOOR				
ALL DIMENSIONS ARE IN MILLIMETERS				
21/11/2018				