



STATE BANK OF INDIA

TENDER DOCUMENT

FOR

**TENDER FOR INTERIOR FURNITURE,
ELECTRICAL, AND HVAC WORKS OF
SMECC BRANCH (COMPOSITE WORKS)
AT 2ND FLOOR ABOVE SME OKHLA
BRANCH 233, OKHLA INDUSTRIAL
ESTATE- PHASE-3 NEW DELHI.**

ISSUED TO: All Empaneled composite Contractors in composite category above 50 Lakhs and above

CLIENT:

STATE BANK OF INDIA
SMECC BRANCH VARDHMAN TOWER
NEHRU PLACE NEW DELHI

ARCHITECT:

THE GRID
E-326, GREATER KAILASH-II,
NEW DELHI-110048
MOB. NO.: 9810135852

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Notice Inviting Tender

State Bank of India invites online Tenders from the Empanelled composite Contractors (Above 50 Lakhs) for the ***TENDER FOR INTERIOR FURNITURE ELECTRICAL, AND HVAC WORKS (COMPOSITE WORKS) AT 2ND FLOOR PREMISES OF ABOVE SME OKHLA BRANCH 233, OKHLA INDUSTRIAL ESTATE PHASE-3 N. DELHI.***

Details of tenders are as under:

1.	Name of Work	:	<i>TENDER FOR INTERIOR FURNITURE ELECTRICAL, AND HVAC WORKS (COMPOSITE WORKS) of SMECC Branch AT 2ND FLOOR PREMISES OF ABOVE SME OKHLA BRANCH 233, OKHLA INDUSTRIAL ESTATE PHASE-3 N. DELHI.</i>
2.	Time allowed for completion	:	<i>90 Days from date of handing over of the site.</i>
3.	Earnest Money Deposit (1% of Estimated cost)	:	<i>Rs. 85000/- (Rupees Eighty Five Thousand Only) by crossed Bank Draft / Banker's Cheque drawn in favour of State Bank of India payable at DELHI.</i>
4.	Initial Security Deposit	:	<i>2% of the total value of the contract including Earnest Money.</i>
5.	Pre- Bid Meeting	:	<i>N/a.</i>
6.	Last date and time of receipt of Tenders	:	<i>26th Feb 2025 upto 3.00 p.m.</i>
7.	Address at which the Tenders are to be submitted	:	<i>Technical Bid: STATE BANK OF INDIA, SMECC BRANCH VARDHMAN TOWER NEHRU PLACE NEW DELHI Price Bid: In hard copy in separate sealed envelope as a part of Price Bid as well as Online.</i>
8.	Date and time of opening of Tenders	:	<i>26th Feb 2025 at 3.30 p.m. Technical Bid: In hard copy. Price Bid: In hard copy in separate sealed envelope as a part of Price Bid as well as Online which will be opened after scrutiny of Technical Bid</i>
10.	Place of opening Tenders	:	<i>STATE BANK OF INDIA, SMECC BRANCH VARDHMAN TOWER NEHRU PLACE NEW DELHI</i>
11.	Date and Time for E- Reverse Auction Only for Technically Qualified Contractors)		The short listed bidders after the technical evaluation stage will participate in the reverse auction conducted by M/s. Antares Systems Limited. • Date and time of reverse auction: To be informed later.
12.	Defects Liability Period	:	<i>12 months from the date of handing over of the project to the satisfaction of Bank.</i>
13.	Validity of Offer	:	<i>90 days from the date of opening the Tenders.</i>

14.	Liquidated Damages	:	<p><i>At the rate of 0.5% of the Contract Value per week which subject to a maximum of 5% of the accepted Contract Value.</i></p> <p><i>No tenders will be issued in the delay period.</i></p>
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Mode of Submission of Tender: The tender shall be submitted in both physical and online in two cover system in accordance with the procedure detailed herein below. Specified documents shall be sealed in envelopes of appropriate size each of which shall be sealed.

- 1) First Envelope marked **Cover 1** shall contain Earnest Money Deposit along with Covering Letter and Processing Fee.
- 2) Second Envelope marked **Cover 2** shall contain only the duly signed and stamped priced Bill of Quantities.
- 3) Envelope marked **Cover 3** shall be of adequate size and shall contain envelopes marked **Covers 1 & 2** and shall be properly sealed. This envelope shall be endorsed on the outside face as under:

" TENDER FOR INTERIOR FURNITURE ELECTRICAL, AND HVAC WORKS 2ND FLOOR PREMISES OF ABOVE SME OKHLA BRANCH 233, OKHLA INDUSTRIAL ESTATE PHASE-3 N. DELHI.

The envelope marked **Cover 3** containing the tender documents as per instructions mentioned above shall be submitted in the office of **AGM SMECC BRANCH VARDHMAN TOWER NEHRU PLACE NEW DELHI**

Envelope marked **Cover 1** containing Earnest Money Deposit along with Covering Letter and Cost of Tender Document, will be opened if the Earnest Money Deposit or Processing Fee is not found as prescribed, the tender shall be rejected.

In case the date of opening of tenders is declared as a holiday, the tenders will be opened on the next working day at the same time.

State Bank of India has the right to accept / reject any or all tenders without assigning any reasons.

THE GRID
(For and behalf of State Bank of India)

SIGNATURE OF THE TENDERER

INSTRUCTIONS TO THE TENDERERS

1.0 Scope of Work

Sealed tenders are invited by State Bank of India for the ***TENDER FOR INTERIOR FURNITURE ELECTRICAL, AND HVAC WORKS (COMPOSITE WORKS) AT 2ND FLOOR PREMISES OF ABOVE SME OKHLA BRANCH 233, OKHLA INDUSTRIAL ESTATE PHASE-3 N. DELHI.***

1.1 Site and its Location

The proposed work is to be carried out at ***2ND FLOOR PREMISES OF ABOVE SME OKHLA BRANCH 233, OKHLA INDUSTRIAL ESTATE PHASE-3 N. DELHI.***

Tender Documents

2.1 The work has to be carried out strictly according to the conditions stipulated in the tender consisting the following documents and the most workmen like manner.

- Instructions to Tenderers
- General Conditions of Contract
- Special Conditions of Contract
- Additional Specifications
- Drawings
- Price Bid

2.2 The above documents shall be taken as complementary and mutually explanatory of one another but in case of ambiguities or discrepancies, shall take precedence in the order given below:

- Price Bid
- Additional Specifications
- Technical Specifications
- Drawings
- Special Conditions of Contract
- General Condition of Contract
- Instruction to Tenderers

2.3 Complete set of tender documents including relative drawings can be downloaded from e-tendering portal of the e-tendering service provider engaged by SBI.

2.4 The tender documents are not transferable.

3.0 Site Visit

3.1 The tenderer must obtain himself on his own responsibility and his own expenses all information and data which may be required for the purpose of filling this tender document and enter into a contract for the satisfactory performance of the work. The tenderer is requested satisfy himself regarding the availability of water, power, transport and communication facilities, the character quality and quantity of the materials, labour, the law and order situation, climatic conditions, liaison requirements with local authorities/ authorities maintaining the campus, security guarding the campus, traffic regulations in and around the site etc;

The tenderer will be fully responsible for considering the financial effect of any or all the factors while submitting his tender.

4.0 **Earnest Money**

- 4.1 The tenderers are requested to submit the Earnest Money of **Rs. 85000/- (Rupees Eighty Five Thousand Only)** in the form of Demand Draft or Bankers' Cheque in favour of State Bank of India payable at **DELHI** drawn on any Bank in India.
- 4.2 EMD in any other form other than as specified above will not be accepted. Tender not accompanied by the EMD in accordance with clause 4.1 above shall be rejected.
- 4.3 No interest will be paid on the EMD.
- 4.4 EMD of unsuccessful tenderers will be refunded/ returned within 30 days of award of Contract.
- 4.5 EMD of successful tenderer will be retained as a part of security deposit.

5.0 **Initial Security Deposit**

The successful tenderer will have to submit a sum equivalent to 2% of contract value less EMD, by means of Demand Draft drawn in favour of State Bank of India payable at **DELHI** within a period of 7 days of acceptance of tender.

6.0 **Security Deposit**

- 6.1 Total security deposit shall be 5% of contract value. Out of this 2% of contract value is in the form of initial security deposit, which includes the EMD. Balance 3% shall be deducted from the running account bill of the work at the rate of 10% of the respective running account bills i.e., deduction from each running bill account will be 10% till total 3% of contract value is reached. 50% of the total security shall be paid to the contractors on the basis of ARCHITECT's certifying the virtual completion. The balance 50% would be paid to the contractors after the defects liability period as specified in the contract provided he has carried out all the work and attended to all the defects in accordance with the condition of the contract and clearance, if any, of the observations of the CTE of CVC.
- 6.2 No interest shall be paid to the amount retained by the Bank as Security Deposit.

7.0 **Signing of Contract Documents**

The successful tenderer shall be bound to implement the contract by signing an agreement and conditions of contract attached herewith within 7 days from the receipt of intimation of acceptance of his tender by the Bank. However, the written acceptance of the tender by the Bank will constitute a binding agreement between the Bank and successful tenderer whether such formal agreement is subsequently entered into or not.

8.0 **Completion Period**

Time is essence of the contract. The work should be completed in all respects in accordance with the terms of contract within a period of **105 Days** from the date of handing over of the site.

9.0 **Validity of Tender**

Tenders shall remain valid and open for acceptance for a period of ninety days from the date of opening price bid. If the tenderer withdraws his/her offer during the validity period or makes modifications in his/her original offer which are not acceptable to the Bank without prejudice to any other right or remedy the Bank shall be at liberty to forfeit the EMD.

10.0 Liquidated Damages

The liquidated damages shall be 0.5% per week subject to a maximum of 5% of the accepted Contract Value.

11.0 Rate and Prices:

- 11.1 The tenderers shall quote their rates for individual items both in words and figures. In case of discrepancy between the rate quoted in words and figures the unit rate quoted in words will prevail. If no rate is quoted for a particular item the contractor

shall not be paid for that item when it is executed.

The amount of each item shall be calculated and the requisite total is given. In case of discrepancy between the unit rate and the total amount calculated from multiplication of unit rate and the quantity the unit rate quoted will govern and the total amount will be corrected.

- 11.2.1 The tenderers need not quote their rates for which no quantities have been given. In case the tenderers quote their rates for such items those rates will be ignored and will not be considered during execution.
- 11.2.2 The tenderers should not change the units as specified in the tender. If any unit is changed the tenders would be evaluated as per the original unit and the contractor would be paid accordingly.
- 11.3 The tenderer should not change or modify or delete the description of the item. If any discrepancy is observed he should immediately bring to the knowledge of the Bank.
- 11.4 Each page of the BOQ shall be signed by the authorized person and cutting or over writing shall be duly attested by him.
- 11.5 Each page shall be totaled and the grand total shall be given.
 - 11.5.1 The rate quoted shall be firm and shall include all costs, allowances, taxes, levies etc. and deduction at source for Income Tax; Work Contract Tax etc. will be made as per statutory rules.
 - 11.5.2 The contractor shall be required to conduct necessary tests of the water brought from tube well or any other outside source, from approved laboratory.
 - 11.5.3 The contractor is required to comply with all act of the Government relating to labour and the rules and regulations made there under from time to time and to submit at the proper times all particulars and statements required to be furnished to the appropriate authorities.

To
Asstt. General Manager
State Bank of India
SMECC
OKHLA

Dear Sir,

Reg.: TENDER FOR INTERIOR FURNITURE ELECTRICAL, AND HVAC WORKS (COMPOSITE WORKS) 2ND FLOOR PREMISES OF ABOVE SME OKHLA BRANCH 233, OKHLA INDUSTRIAL ESTATE PHASE-3 N. DELHI.

1. I / We refer to the tender notice issued by you for Interior Furnishing Electrical & HVAC works and allied works in connection with the above.
2. I / We hereby offer to perform, provide, execute, complete and maintain the works in conformity with the drawings, designs, conditions of contracts, specifications, schedule of quantities relating to the works for the sum of Rs..... at the respective rates quoted in the schedule of quantities.
3. I / We have satisfied myself / ourselves as to the site conditions, examined the drawings and all aspects of the tender conditions, subject to above, I / We do hereby agree, should this tender be accepted in whole or in part, to:
 - a. Abide by and fullfill all the terms and provisions of the said conditions annexed here to,
 - b. Complete the works within **90 Days** as per the work programme enclosed with the tender in two or three shifts if considered necessary by the Employer at no extra cost to the Employer.
4. I / We have deposited an earnest money of **earnest money of Rs. 85000/- (Rupees Eighty Five Thousand Only)** in the form of Demand Draft / Banker's Cheque drawn in favour of State Bank of India payable at **DELHI** respectively which, I / We note, will not bear any interest and is liable for forfeiture.
 - I. If our offer is withdrawn within the validity period of acceptance by the Employer.
Or
 - II. If the contract agreement is not executed by us within 7 days from the date of receipt of the letter of acceptance.
Or
 - III. If we fail to pay the initial security deposit as stipulated.
Or
 - IV. If the work is not commenced within 3 days after issue of work order.
5. I / We understand that you are not bound to accept the lowest or any tender you receive.

The names of **DIRECTORS** of our Firm are:

1. _____
2. _____
3. _____
4. _____

Yours faithfully,

Signature

Designation

Name of Partner / Director of the Firm, authorized to sign or name of person having power of attorney to sign the contract. (Certified true copy of power of attorney should be attached)

Signature and address of witnesses:

a. Signature

Name

Address

b. Signature.....

Name

Address

AGREEMENT

This agreement made on the _____ day of _____ Two Thousand _____ BETWEEN State Bank of India a corporation constructed under the State Bank of India Act, 1955 and having its **TENDER FOR INTERIOR FURNITURE ELECTRICAL, AND HVAC WORKS 2ND FLOOR PREMISES OF ABOVE SMECC OKHLA BRANCH 233, OKHLA INDUSTRIAL ESTATE PHASE-3 N. DELHI.** and many other places, (hereinafter called "the Employer") of the one part and M/s _____ through its _____ having its registered office at _____ (hereinafter called "the Contractor") of the other part.

WHEREAS the Employer is desirous of executing Certain Works to be carried out *i.e.* **TENDER FOR INTERIOR FURNITURE ELECTRICAL, AND HVAC WORKS (COMPOSITE WORKS) 2ND FLOOR PREMISES OF ABOVE SMECC OKHLA BRANCH 233, OKHLA INDUSTRIAL ESTATE PHASE-3 N. DELHI.**

as per Schedule-I, to this agreement and has caused Drawings, Bills of Quantities and Specification describing the work to be done, prepared by **M/s THE GRID, E-326, Greater Kailash-II, New Delhi-110048** (hereinafter referred as "Architects").

AND WHEREAS the said Drawings, the Bills of Quantities marked pages _____ to _____ (inclusive) and the Specifications as stated have been signed by or on behalf of the parties hereto:

AND WHEREAS the Contractor has agreed to execute the work upon the Conditions of Tender and the Conditions of Contract and further subject to the Special Conditions set forth in Schedule-II hereto attached (hereinafter collectively referred to as "the said Conditions") as per the said Drawings and as described in the said Specification and included in the said Bills of Quantities for the sum of Rupees _____

NOW IT IS HEREBY AGREED AS FOLLOWS:

1. In consideration of the sum of Rupees _____ to be paid at the time and in the manner set forth in the said Conditions, the Contractor shall upon and subject to the said Drawings and described in the said Specification and Bills of Quantities.
2. The Employer shall pay to the Contractor the said sum of Rs. _____
_____ or such other sum as shall become payable hereunder at the times and in the manner specified hereinafter.
3. The term "Architects" in the said conditions shall mean **M/s THE GRID, E-326, Greater Kailash-II, New Delhi-110048** or in the event of their ceasing to be Architects for the purposes of this Contract, such other persons as shall be nominated for that purpose by the Employer, not being a person to whom the contractor shall object for reasons considered to be sufficient by the Employer mentioned in the said Conditions. Provided always that no persons subsequently appointed to be Architect under this Contract shall be entitled to disregard or overrule any decision or approval or direction given or expressed by the SBI for the time being.
4. The said Conditions, Specifications and Priced Bills of Quantities shall be read and construed as forming part of this agreement, and the parties hereto shall respectively abide by and submit themselves to the conditions and stipulations and perform the agreement on their parts respectively in such Conditions, Specifications and Priced Bills of Quantities contained.
5. This agreement is subject to jurisdiction of courts in **DELHI** only.

6. The **SMECC BRANCH VARDHMAN TOWER NEHRU PLACE NEW DELHI** shall exercise powers on behalf of the said Employer for the purpose of the Contract Agreement.
7. Whereas both the parties agree to sign the following annexure Annexed to this Agreement in token of their acceptance.
- (i) Agreement
 - (ii) General Conditions of contract.
 - (iii) Special Condition of Contract.
 - (iv) Safety Codes.
 - (v) Specifications.
 - (vi) Material Testing & Their Frequency.
 - (vii) List of Approved Makes/ Brands
 - (viii) Priced Bill of Quantities.
 - (ix) Drawings.
8. The Bank shall pay the contractor such sum as shall become payable hereunder at the times and in the manner specified in the said Conditions mentioned in the General Conditions of Contract.
9. Whereas the Contractor hereby undertakes and agrees to carry out and complete the works within **105 Days** from the date of handing over site or 15 days from the date of issue of letter of acceptances, whichever is later. The Contractor agrees and has deposited the sum of Rs. _____ by way of Initial Security Deposit for due fulfillment of this Contract for the Works. It is agreed that the Security Deposit shall be deducted from each running bills and refunded to the contractor as per clause 2 of the General Conditions of the Contract Annexed herewith.
10. Whereas it is agreed that the earnest money amounting to **Rs. 85000/- (Rupees Eighty Five Thousand Only)** deposited by the Contractor in the form of Demand Draft along with the tender shall be forfeited in full in case the Contractor does not remit the Initial Security Deposit within the stipulated period of the start of the works by the stipulated date mentioned in the award letter.
11. Whereas Shri _____ is the accredited representative(s) of the Contractor who would be responsible for taking instructions from the Employer in relation to the Works. The Contractor agrees to pay Sales Tax or any other Tax on material or finished works like Works Contract Tax, Turnover Tax etc. including Income Tax in respect of this Contract of the Works and the Employer will not entertain any claim whatsoever in this report nor the Employer shall be responsible to pay any Tax as mentioned above. If due to non – payment of any of the aforesaid Tax or other Taxes connected with the Works, the Contractor suffers any loss or damages occurred to the Contractor and the Employer will be entitled to claim damages from the contractor for non completion of the Work within **12 calendar months** stipulated in Para 9, above.
12. Whereas the Contractor hereby declares the list of all the relative working with the Employer which is annexed herewith.

OR

Whereas the Contractor declares that none of his relative is working with the Employer.

OR

Whereas the Contractor declares that he has associated himself with the agencies of the appropriate classes of person for Sanitary and Water Supply Installation etc. or any other specialized job to complete the works.

The Plans, Drawings, Specifications, Contract Documents and the Documents above mentioned shall form basis of this Contract and the decision **AGM SMECC BRANCH VARDHMAN TOWER NEHRU PLACE NEW DELHI** for the time being as mentioned in the Conditions of Contract in reference to all matters of dispute as to material, workmanship or account and as to the intended interpretation of the clauses of the Agreement or any of the document attached hereto shall be final and binding on both parties and may be made rule of the court.

The work comprises of the **FOR INTERIOR FURNITURE ELECTRICAL, AND HVAC WORKS 2ND FLOOR PREMISES OF ABOVE SMECC OKHLA BRANCH 233, OKHLA INDUSTRIAL ESTATE PHASE-3 N. DELHI.**

13. as mentioned above and all subsidiary and other works connected therewith on the same site as may be ordered to be done from time to time by **SBI/ARCHITECT** for the time being even though such works may not have been shown on the, Plans or described in the said Specifications or Schedule of Quantities of various classes of Work to be done.
14. The Employer through the **AGM SMECC BRANCH VARDHMAN TOWER NEHRU PLACE NEW DELHI** reserves himself the right of altering the Plans, Drawings and nature of Work of adding to or omitting any items of work or having portions of the same carried out departmentally or otherwise and such alterations or variations shall be carried out without prejudice to this Contract.
15. All disputes arising out of or in any way connected with this agreement shall be deemed to have arisen in Ghaziabad and only the courts of Ghaziabad shall have jurisdiction to determine the same.
16. The several parts of this Contract have been read to us and fully understood by us.
In Witness whereof the parties above named have executed these presents today and year first hereinabove written.

Signed, Sealed and Delivered by:

Authorised Representative of Employer

Authorised Representative of Contractor

SCHEDULE I

TENDER FOR INTERIOR FURNITURE ELECTRICAL, AND HVAC WORKS 2ND FLOOR PREMISES OF ABOVE SMECC OKHLA BRANCH 233, OKHLA INDUSTRIAL ESTATE PHASE-3 N. DELHI.

all as described in Tender and Drawings inclusive hereto as Specifications.

SCHEDULE II

The following Letters/ Correspondence form a part of Agreement:

- 1.
- 2.
- 3.

As witness our hands the day and year first written above,

In presence of

Signature:

Name:

Occupation:

Address:

Signature by the said Employer

Name:

Designation:

Address:

In presence of

Signature:

Name:

Occupation:

Address:

Signature by the said Contractor

Name:

Designation:

Address:

GENERAL CONDITIONS OF CONTRACT

1.0 Definitions:

"Contract means the documents forming the tender and the acceptance there of and the formal agreement executed between State Bank of India (client) and the contractor, together with the documents referred therein including these conditions, the specifications, designs, drawings and instructions issued from time to time by the Bank and all these documents taken together shall be deemed to form one contract and shall be complementary to one another.

1.1 In the contract the following expressions shall, unless the context otherwise requires, have the meaning hereby respectively assigned to them.

1.1.1 'SBI/ Bank' shall mean State Bank of India (client) having its Corporate Centre at State Bank Bhavan, Madame Cama Road, Mumbai-400 021 and includes the client's representatives, successors and assigns.

'Architects/Consultants' shall mean **M/s THE GRID, E-326, Greater Kailash-II, New Delhi-110048**. 'Site Engineer' shall mean an Engineer appointed by SBI as their representative to give instructions to the contractors.

1.1.2 'The Contractor' shall mean the individual or firm or company whether incorporated or not, undertaking the works and shall include legal personal representative of such individual or the composing the firm or company and the permitted assignees of such individual or firms of company.

The expression 'works' or 'work' shall mean the permanent or temporary work described in the "Scope of work" and / or to be executed in accordance with the contract and includes materials, apparatus, equipment, temporary supports, fittings and things of all kinds to be provided, the obligations of the contractor hereunder and work to be done by the contractor under the contract.

1.1.3 'Engineer' shall mean the representative of the **SBI**.

1.1.4 'Drawings' shall mean the drawings prepared by the Architect and issued by the Architect and referred to in the specifications and any modifications of such drawings as may be issued by the Architect from time to time. 'Contract Value' shall mean the value of the entire work as stipulated in the letter of acceptance of tender subject to such additions thereto or deductions there from as may be under the deductions there from as may be made under the provision herein after contained.

1.1.5 'Specifications' shall mean the specifications referred to in the tender and any modifications thereof as may time to time be furnished or approved by the Architect. "Month" means calendar month.

1.1.6 "Week" means seven consecutive days.

1.1.7 "Day" means a calendar day beginning and ending at 00 Hrs. and 24 Hrs. respectively.

2.0 Total Security Deposit

Total Security Deposit comprise of

Earnest Money Deposit

Initial Security Deposit

Retention Money

a) Earnest Money Deposit:

The tenderer shall furnish EMD of **Rs. 85000/- (Rupees Eighty Five Thousand Only)** in the form of Demand Draft drawn in favour of State Bank of India payable at

Noida on any Scheduled Bank. No tender shall be considered unless the EMD is so deposited in the required form. No interest shall be paid on this EMD. The EMD of the unsuccessful tenderer shall be refunded after the decision to award the contract is taken without interest. The EMD shall stand absolutely forfeited if the tenderer revokes his tender at any time the period when he is required to keep his tender open acceptance by the SBI or after it is accepted by the SBI the contractor fails to enter into a formal agreement or fails to pay the initial security deposit as stipulated or fails to commence the work within the stipulated time.

b) Initial Security Deposit (ISD)

The amount of ISD shall be 2% of accepted value of tender including the EMD in the form of D/D drawn on any scheduled Bank and shall be deposited within 7 days from the date of acceptance of tender.

c) Retention Money:

Besides the ISD as deposited by the contractor in the above said manner the retention money shall be deducted from the running account bill at the rate of 10% of the gross value of work done by the contractor and claimed in each bill provided the total security deposit i.e. the ISD plus Retention Money shall both together not exceed 5% of the contract value. 50% of the total security deposit shall be refunded to the contractor without any interest on issue of Virtual Completion certificate by the SBI. The balance 50% of the total security deposit shall be refunded to the contractors without interest within fifteen days after the end of defects liability period provided the contractor has satisfactorily attended to all defects in accordance with the conditions of contract including site clearance.

d) Language

The language in which the contract documents shall be drawn shall be in English.

3.0 Errors, Omissions and Discrepancies

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

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

4.0 Scope of Work:

The contractor shall carryout complete and maintain the said work in every respect in strictly accordance with this contract and with the directions of and to the satisfaction of the Bank to be communicated through the Architect. The Architect at the directions of the Bank from time to time issue further drawings and / or written instructions, details directions and explanations which are hereafter collectively referred to as SBI's instructions in regard to the variation or modification of the design, quality or quantity of work or the addition or omission or substitution of any work. Any discrepancy in the drawings or between the BOQ and / or specifications. The removal from the site of any material brought thereon by the contractor and any substitution of any other materials therefore the removal and / or re-execution of any work executed by him. The dismissal from the work of any person employed / engaged thereupon.

5.0 i) Letter of Acceptance:

Within the validity period of the tender, the Bank shall issue a letter of acceptance either directly or through the Architect by registered post or otherwise depositing at

the address of the contractor as given in the tender to enter into a Contract for the execution of the work as per the terms of the tender. The letter of acceptance shall constitute a binding contract between the SBI and the contractor.

ii) Contract Agreement:

On receipt of intimation of the acceptance of tender from the SBI / Architect the successful tenderer shall be bound to implement the contract and within **seven days** thereof he shall sign an agreement in a non-judicial stamp paper of appropriate value.

6.0 Ownership of Drawings:

All drawings, specifications and copies thereof furnished by the SBI through Architect are the properties of the SBI. They are not to be used on other work.

7.0 Detailed Drawings and Instructions:

The SBI through Architect shall furnish with reasonable promptness additional instructions by means of drawings or otherwise necessary for the proper execution of work. All such drawings and instructions shall be consistent with the contract documents, true developments thereof and reasonably inferable there from.

The work shall be executed in conformity therewith and the contractor prepare a detailed program schedule indicating therein the date of start and completion of various activities on receipt of the work order and submit the same to the SBI through the Architect.

8.0 Copies of Agreement

Two copies of agreement duly signed by both the parties with the drawings shall be handed over to the contractors.

9.0 Liquidated Damages:

If the contractor fails to maintain the required progress in terms of clause 30 of GCC or to complete the work and clear the site including vacating their office on or before the contracted or extended date or completion without justification in support of the cause of delay, he may be called upon without prejudice to any other right of remedy available under the law to the SBI on account of such breach to pay a liquidated damages at the rate of 0.5% of the contract value per week which is subject to a maximum of 5% of the contract value.

10.0 Materials, Appliances and Employees

Unless or otherwise specified the contractor shall provide and pay for all materials, labour, water, power, tools, equipment transportation and any other facilities that are required for the satisfactory execution and completion of the work. Unless or otherwise specified all materials shall be new and both workmanship and materials shall be of best quality. The contractor shall at all times enforce strict discipline and good order among his employees and shall not employ on the work any unfit person or anyone not skilled in the work assigned to him. Workman whose work or behavior is found to be unsatisfactory by the SBI / Architect he shall be removed from the site immediately.

11.0 Permits, Laws and Regulations:

Permits and licenses required for the execution of the work shall be obtained by the contractor at his own expenses. The contractor shall give notices and comply with regulations, laws, and ordinances rules, applicable to the contract. If the contractor observes any discrepancy between the drawings and specifications, he shall promptly notify the Architect in writing under intimation of the SBI. If the contractor performs any act which is against the law, rules and regulations he shall meet all the costs arising there from and shall indemnify the SBI any legal actions arising there from.

12.0 Setting out Work:

The contractor shall set out the work and shall be responsible for the true and perfect setting out of the same and for the correctness of the positions, levels, dimensions, and alignment of all parts thereof and get it approved by the Architect before

proceeding with the work. If at any time any error in this respect shall appear during the progress of the works, irrespective of the fact that the layout had been approved by the Architect the contractor shall be responsible for the same and shall at his own expenses rectify such error, if so, required to satisfaction of the SBI/ Architect.

13.0 Protection of Works and Property:

The contractor shall continuously maintain adequate protection of all his work from damage and shall protect the SBI's properties from injury or loss arising in connection with contract. He shall make good any such damage, injury, loss, except due to causes beyond his control and due to his fault or negligence.

He shall take adequate care and steps for protection of the adjacent properties. The contractor shall take all precautions for safety and protections of his employees on the works and shall comply with all applicable provisions of Govt. and local bodies safety laws and building codes to prevent accidents, or injuries to persons or property on, about or adjacent to his place of work. The contractor shall take insurance covers as per clause 26.0 at his own cost. The policy may take in joint names of the contractor and the SBI and the original policy may be lodged with the SBI.

14.0 Inspection of Work:

The SBI/ Architect or their representatives shall at all reasonable times have free access to the work site and/ or to the workshop, factories, or other places where materials are lying or from where they are obtained and the contractor shall give every facility to the SBI/ Architect and their representatives necessary for inspection and examination and test of the materials and workmanship. No person unless authorised by the SBI except the representative of Public authorities shall be allowed on the work at any time. The proposed work either during its construction stage or its completion can also be inspected by the Chief Technical Examiner's organisation a wing of Central Vigilance Commission.

15.0 Assignment and Subletting

The whole of work included in the contract shall be executed the contractor and he shall not directly entrust and engage or indirectly transfer, assign or underlet the contract or any part or share thereof or interest therein without the written consent of the SBI through the Architect and no undertaking shall relieve the contractor from the responsibility of the contractor from active superintendence of the work during its progress.

16.0 Quality of Materials, Workmanship & Test

All materials and workmanship shall be best of the respective kinds described in the contract and in accordance with Architect instructions and shall be subject from time to time to such tests as the Architect may direct at the place of manufacture or fabrication or on the site or an approved testing laboratory. The contractor shall provide such assistance, instruments, machinery, labour, and materials as are normally required or examining measuring sampling and testing any material or part of work before incorporation in the work before incorporation in the work or testing as may be selected and required by the Architect.

ii) Samples

All samples of adequate numbers, size, shades and pattern as per specifications shall be supplied by the contractor without any extra charges. If certain items proposed to be used are of such nature that samples cannot be presented or prepared at the site detailed literature / test certificate of the same shall be provided to the satisfaction of the Architect. Before submitting the sample / literature the contractor shall satisfy himself that the material / equipment for which he is submitting the sample / literature meet with the requirement of tender specification. Only when the samples are approved in writing by the Architect the contractor shall proceed with the procurement and installation of the particular material / equipment. The approved samples shall be signed by the Architect for identification and shall be kept on record at site office until the completion of the work for inspection / comparison at any time. The Architect shall take reasonable time to approve the sample. Any delay that

might occur in approving the samples for reasons of its not meeting the specifications or other discrepancies inadequacy in furnishing samples of best qualities from various manufacturers and such other aspects causing delay on the approval of the materials / equipment etc. shall be to the account of the contractor.

iii) **Cost of Tests**

The cost / expenditure required for the tests shall be borne by the contractor if such test is intended by or provided for in the specification or BOQ.

iv) **Costs of Tests not provided for**

If any test is ordered by the Architect which is either

If so intended by or provided for or (in the cases above mentioned) is not so particularized, or though so intended or provided for but ordered by the Architect to be carried out by an independent person at any place other than the site or the place of manufacture or fabrication of the materials tested or any Government / approved laboratory, then the cost of such test shall be borne by the contractor.

17.0 Obtaining Information Related to Execution of Work

No claim by the contractor for additional payment shall be entertained which is consequent upon failure on his part to obtain correct information as to any matter affecting the execution of the work nor any misunderstanding or the obtaining incorrect information or the failure to obtain correct information relieve him from any risks or from the entire responsibility for the fulfillment of contract.

18.0 Contractor's Superintendence

The contractor shall give necessary personal superintendence during the execution of the works and as long, thereafter, as the SBI/ Architect may consider necessary until the expiry of the defects liability period stated hereto.

19.0 Quantities

- i) The Bill of Quantities (BOQ) unless or otherwise stated shall be deemed to have been prepared in accordance with the Indian Standard Method of Measurements and quantities. The rate quoted shall remain valid for variation of quantity against individual item to any extent subject to maximum variation of the contract value by 25%. The entire amount paid under Clause 20, 21 hereof as well as amounts of prime cost and provisional sums, if any, shall be excluded.

Variation exceeding 25%: The items of work executed in relation to variation exceeding 25% shall be paid on the basis of provisions of clause 22 (e) hereof.

20.0 Works to be measured

The Architect may from time to time intimate to the contractor that he required the work to be measured and the contractor shall forthwith attend or send a qualified representative to assist the Architect in taking such measurements and calculations and to furnish all particulars or to give all assistance required by any of them. Such measurements shall be taken in accordance with the Mode of measurements detailed in the specifications. The representative of the Architect shall take joint measurements with the contractor's representative and the measurements shall be entered in the measurement book. The contractor or his authorized representative shall sign all the pages of the measurement book in which the measurements have been recorded in token of his acceptance. All the corrections shall be duly attested by both representatives. No over writings shall be made in the M book should the contractor not attend or neglect or omit to depute his representative to take measurements then the measurements recorded by the representative of the Architect shall be final. All authorized extra work, omissions and all variations made shall be included in such measurement.

21.0 Variations

No alteration, omission or variation ordered in writing by the SBI/ Architect shall vitiate the contract. In case the SBI / Architect thinks proper at any time during the progress of works to make any alteration in, or additions to or omissions from the

works or any alteration in the kind or quality of the materials to be used therein, the SBI/ Architect shall give notice thereof in writing to the contractor or shall confirm in writing within seven days of giving such oral instructions the contractor shall alter to, add to, or omit from as the case may be in accordance with such notice, but the contractor shall not do any work extra to or make any alterations or additions to or omissions from the works or any deviation from any of the provisions of the contract, stipulations, specifications or contract drawings without previous consent in writing of the SBI/ Architect and the value of such extras, alterations, additions or omissions shall in all cases be determined by the SBI/ Architect and the same shall be added to or deducted from the contract value, as the case may be.

22.0 Valuation of Variations

No claim for an extra shall be allowed unless it shall have been executed under the authority of the Architect with the concurrence of the SBI as herein mentioned. Any such extra is herein referred to as authorised extra and shall be made in accordance with the following provisions.

- a)
 - i) The net rates or prices in the contract shall determine the valuation of the extra work where such extra work is of similar character and executed under similar conditions as the work priced herein.
 - ii) Rates for all items, wherever possible should be derived out of the rates given in the priced BOQ.
- b) The net prices of the original tender shall determine the value of the items omitted, provided if omissions do not vary the conditions under which any remaining items of works are carried out, otherwise the prices for the same shall be valued under sub-clause (c) hereunder.
- c) Where the extra works are not of similar character and /or executed under similar conditions as aforesaid or where the omissions vary the conditions under which any remaining items or works are carried out, then the contractor shall within 7 days of the receipt of the letter of acceptance inform the Architect of the rate which he intends to charge for such items of work, duly supported by analysis of the rate or rates claimed and the Architect shall fix such rate or prices as in the circumstances in his opinion reasonable and proper, based on the market, rate.
- d) Where extra work cannot be properly measured or valued the contractor shall be allowed day work prices at the net rates stated in the tender of the BOQ or, if not, so stated then in accordance with the local day work rates and wages for the district; provided that in either case, vouchers specifying the daily time (and if required by the SBI/ Architect) the workman's name and materials employed be delivered for verifications to the SBI/ Architect at or before the end of the week following that in which the work has been executed.
- e) It is further clarified that for all such authorised extra items where rates cannot be derived from the tender, the Contractor shall submit rates duly supported by rate analysis worked on the market rate basis" for material, labour, hire / running charges of equipment and wastage etc. plus 15% towards establishment charges, contractor's overheads and profit. Such items shall not be eligible for escalation.

23.0 Final Measurement

The final measurement, valuation and payment in respect of the contract shall be completed within six months of the virtual completion of the work.

24.0 Virtual Completion Certificate (VCC)

On successful completion of entire works covered by the contract to the full satisfaction of the SBI/ Architect, the contractor shall ensure that the following works have been completed to the satisfaction of the SBI/ Architect.

- a) Clear the site of all scaffolding, wiring, pipes, surplus materials, contractor's labour, equipment and machinery.
- b) Demolish, dismantle and remove the contractor's site office, temporary works, structures including labour sheds/camps and constructions and other items and things whatsoever brought upon or erected at the site or any land allotted to the contractor by the SBI and not incorporated in the permanent works.

- c) Remove all rubbish, debris etc. from the site and the land allotted to the contractor by the SBI/ Architect and shall clear, level and dress, compact the site as required by the SBI/ Architect.
- d) Shall put the SBI in undisputed custody and possession of the site and all land allotted by the SBI.
- e) Shall hand over the work in a peaceful manner to the SBI.
- f) All defects / imperfections have been attended and rectified as pointed out by the SBI/ Architect to the full satisfaction of SBI/ Architect.

Upon the satisfactory fulfillment by the contractor as stated above, the contractor shall be entitled to apply to the Architect is satisfied of the completion of the work. Relative to which the completion certificate has been sought, the Architect shall within fourteen (14) days of the receipt of the application for virtual completion certificate, issue a VCC in respect of the work for which the VCC has been applied.

This issuance of a VCC shall be without prejudice to the SBI's rights and contractor's liabilities under the contract including the contractor's liability for defects liability period nor shall the issuance of VCC in respect of the works or work at any site be construed as a waiver of any right or claim of the SBI against the contractor in respect of works or work at the site and in respect of which the VCC has been issued.

25.0 Work by other Agencies

The SBI reserves the rights to use premises and any portion of the site for execution of any work not included in the scope of this contract which it may desire to have carried out by other persons simultaneously and the contractor shall not only allow but also extend reasonable facilities for the execution of such work, the contractor, however, shall not be required to provide any plant or material for the execution of such work except by special arrangement with the SBI. Such work shall be carried out in such manner as not to impede the progress of the works included in the contract.

26.0 Insurance of Works

26.1 Without limiting his obligations and responsibilities under the contract, the contractor shall insure in the joint names of the SBI and the contractor against all loss of damages from whatever cause arising other than the excepted risks, for which he is responsible under the terms of contract and in such a manner that the SBI and contractor are covered for the period stipulated in clause 28 of GCC and are also covered during the period of maintenance for loss or damage arising from a cause, occurring prior to the period of maintenance for loss or damage arising from a cause, occurring prior to the commencement of the period of maintenance and for any loss or damage occasioned by the contractor in the course of any operations carried out by him for the purpose of complying with his obligations under clause.

- a) The works for the time being executed to the estimated current Contract value thereof, or such additional sum as may be specified together with the materials for incorporation in the works at their replacement value.
- b) The constructional plant and other things brought on to the site by the contractor to the replacement value of such constructional plant and other things.
- c) Such insurance shall be effected with an insurer and in terms approved by the SBI which approval shall not be unreasonably withheld and the contractor shall whenever required produce to the SBI/ Architect the policy of insurance and the receipts for payment of the current premiums.

26.2 Damage to Persons and Property

The contractor shall, except if and so far as the contract provides otherwise indemnify the SBI against all losses and claims in respect of injuries or damages to any person or material or physical damage to any property whatsoever which may arise out of or in consequence of the execution and maintenance of the works and against all claims proceedings, damages, costs, charges and expenses whatsoever in respect of or in relation thereto except any compensation of damages for or with respect to:

- a) The permanent use or occupation of land by or any part thereof.
- b) The right of SBI to execute the works or any part thereof on, over, under, in or through any lands.
- c) Injuries or damages to persons or properties which are unavoidable result of the execution or maintenance of the works in accordance with the contract.
- d) Injuries or damage to persons or property resulting from any act or neglect of the contractor, their agents, employees or other contractors not being employed by the contractor or for or in respect of any claims, proceedings, damages, costs, charges and expenses in respect thereof or in relation thereto or where the injury or damage was contributed to by the contractor, his servants or agents such part of the compensation as may be just and equitable having regard to the extent of the responsibility of the SBI/ Architect, their employees, or agents or other employees, or agents or other contractors for the damage or injury.

26.3 Contractor to Indemnify SBI

The contractor shall indemnify the SBI against all claims, proceedings, damages, costs, charges and expenses in respect of the matters referred to in the matters referred to in the provision sub-clause 26.2 of this clause.

26.4 Contractor's Superintendence

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

26.5 Third Party Insurance

26.5.1 Before commencing the execution of the work the contractor but without limiting his obligations and responsibilities under clause 26.0 of GCC shall insure against his liability for any material or physical damage, loss or injury which may occur to any property including that of SBI, or to any person, including any employee of the SBI/ Architect, by or arising out of the execution of the works or in the carrying out of the contract, otherwise than due to the matters referred to in the provision to clause 26.0 thereof.

26.5.2 Minimum amount of Third Party Insurance

Such insurance shall be effected with an insurer and in terms approved by the SBI which approval shall not be reasonably withheld and for at least the amount stated below. The contractor shall, whenever required produce to the SBI/ Architect the policy or policies of insurance cover and receipts for payment of the current premiums.

26.5.3 The minimum insurance cover for physical property, injury, and death is Rs. 5 lacs per occurrence with the number of occurrences limited to four. After each occurrence contractor will pay additional premium necessary to make insurance valid for four occurrences always.

26.6 Accident or Injury to Workman

The SBI shall not be liable for or in respect of any damages or compensation payable at law in respect or in consequence of any accident or injury to any workmen or other person in the employment of the contractor or any sub-contractor, save and except an accident or injury resulting from any act or default of the SBI or their agents, or employees. The contractor shall indemnify and keep indemnified SBI against all such damages and compensation, save and except as aforesaid, and against all claims, proceedings, costs, charges and expenses whatsoever in respect thereof or in relation thereto.

26.6.1 Insurance against Accidents etc. to Workmen

The contractor shall insure against such liability with an insurer approved by the SBI during the whole of the time that any persons are employed by him on the works and shall, when required, produce to the Architect such policy of insurance and receipt for payment of the current premium. Provided always a that, in respect of any persons employed by any sub-contractor the contractor's obligation to insure as aforesaid under this sub-clause shall be satisfied if the sub contractor shall be insured against the liability in respect of such persons in such manner that SBI in indemnified under the policy but the contractor shall require such sub-contractor to produce to the Architect when such policy of insurance and the receipt for the payment of the current premium.

26.6.2 Remedy on Contractor's failure to Insure:

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

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

27.0 Commencement of Works:

The date of commencement of the work will be reckoned as the date of handing over site or three days from the date of issue of letter of acceptance of the tender by the SBI whichever is later.

28.0 Time for Completion

Time is essence of the contract and shall be strictly observed by the contractor. The entire work shall be completed within a period of **105 Days** from the date of commencement. If required in the contract or as directed by the SBI/ Architect, the contractor shall complete certain portions of work before completion of the entire work. However the completion date shall be reckoned as the date by which the whole work is completed as per the terms of the contract.

29.0 Extension of Time

If, in the opinion of the Architect, the work be delayed for reasons beyond the control of the contractor, the Architect may submit a recommendation to the SBI to grant a fair and reasonable extension of time for completion of work as per the terms of contract. If the contractor needs an extension of time for the completion of work or if the completion of work is likely to be delayed for any reasons beyond the due date of completion as stipulated in the contract, the contractor shall apply to the SBI through the Architect in writing in detail and his justification if any, for the delays. The Architect shall submit their recommendations to the SBI in the prescribed format for granting extension of time. While granting extension of time the contractor shall be informed the period-extended time which will qualify for levy of liquidated damages. For the balance period in excess of original stipulated period and duly sanctioned extension of time by the SBI the provision of liquidated damages as stated under clause 10.0 of Instructions to the Tenderers shall become applicable. Further the contract shall remain in force even for the period beyond the due date of completion irrespective whether the extension is granted or not.

30.0 Rate of Progress

Whole of the materials, plant and labour to be provided by the contractor and the mode, manner and speed of execution and maintenance of the works are to be of a kind and conducted in a manner to the satisfaction of the Architect, should the rate of progress of the work or any part thereof be at any time be in the opinion of the Architect too slow to ensure the completion of the whole of the work by the contractor in prescribed time or extended time for completion the to expedite progress so as to complete the works by the prescribed time or extended time. Such communications from the Architect neither shall relieve the contractor from fulfilling obligations under the contract nor will he be entitled to raise any claims arising out of such directions.

31.0 Work during Nights and Holidays

Subject to any provision to the contrary contained in the contract no permanent work shall save as herein provided be carried on during the night or on holidays without the permission in writing of the Architect, save when the work is unavoidable or absolutely necessary for the saving of life or property or for the safety of the work in which case the contractor shall immediately advise the Architect. However the provisions of the clause shall not be applicable in the case of any work which becomes essential to carry by rotary or double shifts in order to achieve the progress and quality of the part of the works being technically required / continued with the prior approval of the Architect at no extra cost to the SBI.

All work at night after obtaining approval from competent authorities shall be carried out without unreasonable noise and disturbance.

32.0 No Compensation or Restriction of Work.

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

Provided that the contractor shall be paid the charges on the cartage only of materials actually and bonafide brought to the site of the work by the contractor and rendered surplus

as a result of the abandonment, curtailment of the work or any portion thereof and then taken back by the contractor, provided however that the Architect shall have in such cases the option of taking over all or any such materials at their purchase price or a local current rate whichever is less.

“In case of such stores having been issued for SBI stores and returned by the contractor to stores, credit shall be given to him at the rates not exceeding those at which were originally issued to the contractor after taking into consideration and deduction for claims on account of any deterioration or damage while in the custody of the contractor and in this respect the decision of Architect shall be final.

33.0 Suspension of Work

- i) The contractor shall, on receipt of the order in writing of the Architect (whose decision shall be final and binding on the contractor) suspend the progress of works or any part thereof for such time and in such manner as Architect may consider necessary so as not to cause any damage or injury to the work already done or endanger the safety thereof for any of following reasons.
 - a) One account any default on the part of the contractor, or
 - b) for proper execution of the works or part thereof for reasons other than the default of the contractor, or for safety of the works or part thereof.
 - c) The contractor shall, during such suspension, properly protect and secure the works to the extent necessary and carry out the instructions given in that behalf by the SBI/

Architect.

- ii) If the suspension is ordered for reasons (b) and (c) sub-para (i) above: the contractor shall be entitled to an extension of time equal to the period of every such suspension. No compensation whatsoever shall be paid on this account.

34.0 Action when the whole Security Deposit is forfeited

In any case in which under any clause or clauses of this contract, the Contractor shall have rendered himself liable to pay compensation amounting to the whole of his security deposit the SBI shall have the power to adopt any of the following course as they may deem best suited to the interest of the SBI.

- a) To rescind the contract (of which rescission notice in writing to the contractor by the Architect shall be conclusive evidence) and in which case the security deposit of the contractor shall be forfeited and be absolutely at the disposal of SBI.
- b) To employ labour paid by the SBI and to supply materials to carry out the work, or any part of the work, debiting the contractor with the cost of the labour and materials (the cost of such labour and materials as worked out by the Architect shall be final and conclusive against the contractor) and crediting him with the value of the work done, in all respects in the same manner and at the same manner and at the same rates as if it had been carried out by the contractor under the terms of this contract the certificate of Architect as to the value of work done shall be final and conclusive against the contractor.
- c) To measure up the work of the contractor, and to take such part thereof as shall be unexecuted, out of his hands, to give it to another contractor to complete in which case any expenses which may be incurred in excess of the sum which would have been paid to the original contractor, if the whole work had been executed by him (of the amount of which excess the certificates in writing of the Architect shall be final and conclusive) shall be borne by original contractor and may be deducted from any money due to him by SBI under the contract or otherwise, or from his security deposit or the proceeds of sale thereof, or sufficient part thereof. In the event of any of above courses being adopted by the SBI the contractor shall have no claim to compensation for any loss sustained by him by reasons of his having purchased or procured any material or entered into any engagements or make any advances on account of, or with a view to the execution of the work or the performance of the contract and in case the contract shall be rescind under the provision aforesaid, the contractor shall not be entitled to recover or to be paid any sum or any work thereto for actually performed under this contract, unless, and until the Architect will have certified in writing the performance of such work and the value payable in respect thereof, and he shall only be entitled to be paid the value so certified.

35.0 Owner's Right to Terminate the Contract

If the contractor being an individual or a firm commit any 'Act of Insolvency' or shall be adjusted an insolvent or being an incorporated company shall have an order for compulsory winding up voluntarily or subject to the supervision of Govt. and of the Official Assignee of the liquidator in such acts of insolvency or winding up shall be unable within seven days after notice to him to do so, to show to the reasonable satisfaction of the SBI that he is able to carry out and fulfill the contract, and to give security therefore if so required by the SBI.

Or if the contractor (whether an individual firm or incorporated Company) shall suffer execution to be issued or shall suffer any payment under this contract to be attached by or on behalf of any of the creditors of the contractor.

Or shall assign or sublet this contract without the consent in writing of the SBI through the Architect or shall charge or encumber this contract or any payment due to which may become due to the contractor thereunder:

- a) Has abandoned the contract; or
- b) Has failed to commence the works, or has without any lawful excuse under these conditions suspended the progress of the works for days after receiving from the SBI through the Architect written notice to proceed, or

- c) Has failed to proceed with the works with such diligence and failed to make such due progress as would enable the works to be completed within the time agreed upon, or has failed to remove the materials from the site or to pull down and replace work within seven days after written notice from the SBI through the Architect that the said materials were condemned and rejected by the Architect under these conditions; or has neglected or failed persistently to observe and perform all or any the acts, matters or things by this contract to be observed and performed by the contractor for seven days after written notice shall have been given to the contractor to observe or perform the same or has to the detriment of good workmanship or defiance of the SBI's or Architect's instructions to the contrary subject any part of the contract. Then and in any of said cases the SBI and or the Architect, may notwithstanding any previous waiver, after giving seven days notice in writing to the contractor, determine the contract, but without thereby affecting the powers of the SBI or the Architect or the obligation and liabilities of the contractor the whole of which shall continue in force as fully as if the contract had not been so determined and as if the works subsequently had been executed by or on behalf of the contractor. And further the SBI through the Architect their agents or employees may enter upon and take possession of the work and all plants, tools, scaffoldings, materials, sheds, machineries lying upon the premises or on the adjoining lands or roads use the same by means of their own employees or workmen in carrying on and completing the work or by engaging any other contractors or persons to complete the work and the contractor shall not in any way interrupt or do any act, matter or thing to prevent or hinder such other contractor or other persons employed for completing and finishing or using the materials and plant for the works.

When the works shall be completed or as soon thereafter as convenient, the SBI or the Architect shall give a notice in writing to the contractor to remove his surplus materials and plants and should the contractor fail to do so within 14 days after receipt thereof by him the SBI sell the same by public auction after due publication, and shall adjust the amount realised by such auction. The contractor shall have no right to question any of the act of the SBI incidental to the sale of the materials etc.

36.0 Certificate of Payment

The contractor shall be entitled under the certificates to be issued by the Architect to the contractor within 14 working days from the date of certificate to the payment from SBI from time to time. The SBI shall recover the statutory recoveries towards Income tax, Work contract tax as per the prevailing bye laws and other dues including the retention amount from the certificate of payment.

Provided always that the issue of any certificate by the Architect during the progress of works or completion shall not have effect as certificate of satisfaction or relieve the contractor from his liability under clause.

The Architect shall have power to withhold the certificate if the work or any part thereof is not carried out to their satisfaction.

The Architect may by any certificate make any corrections required in previous certificate.

The SBI shall modify the certificate of payment as issued by the Architect from time to time while making the payment.

The contractor shall submit interim bills only after taking actual measurements and property recorded in the measurement books

The contractor shall not submit interim bills when the approximate value of work done by him is less than **Rs. 30 lacs** and the minimum interval between two such bills/ final bill shall be **30 days**.

The final bill may be submitted by contractor within a period of one month from the date of virtual completion and Architect shall issue the certificate of payment within a period of two months. The SBI shall pay the amount within a period of three months from the date of issue of certificate provided there is no dispute in respect of rates and quantities.

The contractor shall submit the interim bills in the prescribed format with all details.

37.0 Settlement of Disputes and Arbitration

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

- ii) If the contractor considers that he is entitled to any extra payment or compensation in respect of the works over and above the amounts admitted as payable by the Architect or in case the contractor wants to dispute the validity of any deductions or recoveries made or proposed to be made from the contract or raise any dispute, the contractor shall forthwith give notice in writing of his claim, or dispute to the **AGM SMECC BRANCH VARDHMAN TOWER NEHRU PLACE NEW DELHI** and endorse a copy of the same to the ARCHITECT, within 30 days from the date of disallowance thereof or the date of deduction or recovery. The said notice shall give full particulars of the claim, grounds on which it is based and detailed calculations of the amount claimed and the contractor shall not be entitled to raise any claim nor shall the Bank be in any way liable in respect of any claim by the contractor unless notice of such claim shall have been given by the contractor to the **AGM SMECC BRANCH VARDHMAN TOWER NEHRU PLACE NEW DELHI** in the manner and within the time as aforesaid. The contractor shall be deemed to have waived and extinguished all his rights in respect of any claim not notified to the **AGM SMECC BRANCH VARDHMAN TOWER NEHRU PLACE NEW DELHI** in writing in the manner and within the time aforesaid.
- iii) **AGM SMECC BRANCH VARDHMAN TOWER NEHRU PLACE NEW DELHI** shall give his decision in writing on the claims notified by the contractor. The contractor may within 30 days of the receipt of the decision of the **AGM SMECC BRANCH VARDHMAN TOWER NEHRU PLACE NEW DELHI** submit his claims to the conciliating authority namely the **Circle Development Officer, SBI, New Delhi** for conciliation along with all details and copies of correspondence exchanged between him and the Regional Manager.
- iv) If the conciliation proceedings are terminated without settlement of the disputes, the contractor shall, within a period of 30 days of termination thereof shall give a notice to the concerned **Chief General Manager of the Bank** for appointment of an arbitrator to adjudicate the notified claims failing which the claims of the contractor shall be deemed to have been considered absolutely barred and waived.
- v) Except where the decision has become final, binding and conclusive in terms of the contract, all disputes or differences arising out of the notified claims of the differences arising out of the notified claims of the contractor as aforesaid and all claims of the Bank shall be referred for adjudication through arbitration by the Sole Arbitrator appointed by the **Chief General Manager of the Bank**, It will also be the objection to any such appointment that the Arbitrator so appointed is a Bank Officer and that he had to deal with the matters to which the Contract relates in the course of his duties as Bank Officer. If the arbitrator so appointed is unable or unwilling to act or resigns his appointment or vacates his office due to any reason whatsoever another sole arbitrator shall be appointed in the manner aforesaid by the **Chief General Manager of the Bank**, Such person shall be entitled to proceed with the reference from the stage at which it was left by his predecessor.

It is a term of this contract that the party invoking arbitration shall give a list of disputes with amounts claimed in respect of each dispute along with the notice for appointment of arbitrator.

It is also a term of this contract that no person other than a person appointed by **Chief General Manager of the Bank**, as aforesaid should act as arbitrator.

The conciliation and arbitration shall be conducted in accordance with the provisions

of the Arbitration & Conciliation Act 1996 or any statutory modification or re-enactment thereof and the rules made there under.

It is also a term of the contract that if any fees are payable to the arbitrator these shall be paid equally by both the parties. However, no fees will be payable to the arbitrator if he is a Bank Officer.

It is also a term of the contract that the arbitrator shall be deemed to have entered on the reference on the date he issues notice to both the parties calling them to submit their statement of claims and counter statement of claims. The venue of the arbitration shall be such place as may be fixed by the arbitrator in his sole discretion. The fees, if any, of the arbitrator shall, if required to be paid before the award is made and published, be paid half and half by each of the parties. The cost of the reference and of the award (including the fees, if any of the arbitrator) shall be in the discretion of the arbitrator who may direct to any by whom and in what manner, such costs or any part thereof, shall be paid and fix or settle the amount of costs to be so paid.

38.0 Water Supply

The contractor shall make his own arrangements for water required for the work and nothing extra will be paid for the same. This will be subject to the following conditions.

That the water used by the contractor shall be fit for construction purposes to the satisfaction of the Architect.

The contractor shall make alternative arrangements for the supply of water if the arrangement made by the contractor for procurement of water in the opinion of the Architect is unsatisfactory.

The contractor shall construct temporary well / tube well in SBI land for taking water for construction purposes only after obtaining permission in writing from the SBI. The contractor has to make his own arrangement for drawing and distributing the water at his own cost. He has to make necessary arrangements. To avoid any accidents or damages caused due to construction and subsequent maintenance of the wells. He has to obtain necessary approvals from local authorities, if required, at his own cost. He shall restore the ground to its original conditions after wells are dismantled on completion of work or hand over the well to the SBI without any compensation as directed by the Architect.

39.0 Power Supply

The contractor shall make his own arrangements for power and supply / distribution system for driving plant or machinery for the work and for lighting purpose at his own cost. The cost of running and maintenance of the plants are to included in his tender prices. He shall pay all fees and charges required for the power supply and include the same in his tendered rates and hold the owner free from all such costs. He has to obtain necessary approval from the appropriate authorities, if required.

40.0 Treasure Trove etc.

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

41.0 Method of Measurement

Unless otherwise mentioned in the schedule of quantities or in mode of measurement, the measurement will be on the net quantities or work produced in accordance with up to date. Rules laid down by the Bureau of Indian Standards. In the event any dispute / disagreement the decision of the Architect shall be final and binding on the contractor.

42.0 Maintenance of Registers

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

- i) Register for Cement / Paint / Lead / Specific Materials

- ii) Register for Steel
- iii) Register for Secured Advance
- iv) Register for Bulkage of Sand
- v) Register for Silt Test
- vi) Register for Sieve Analysis for Fine Aggregate
- vii) Register for Sieve Analysis for Course Aggregate
- viii) Register for Slump Test.
- ix) Register for Concrete Cube Test.
- x) Register for Hindrance to Work.
- xi) Register for Consumption of Cement
- xii) Register for Running Account Bill
- xiii) Register for Labour

43.0 Force Majeure

- 43.1 Neither contractor nor SBI shall be considered in default in performance of their obligations if such performance is prevented or delayed by event such as but not to war, hostilities revolution, riots, civil commotion, strikes, lockout, conflagrations, epidemics, accidents, fire, storms, floods, droughts, earthquakes or ordinances or any act of god or for any other cause beyond the reasonable control of the party affected or prevented or delayed. However a notice is required to be given within 30 days from the happening of the even with complete details, to the other party to the contract, if it is not possible to serve a notice, within the shortest possible period without delay.
- 43.2 As soon as the cause of force majeure has been removed the party whose ability to perform its obligations has been affected, shall notify the other such cessation and the actual delay incurred in such affected activity adducing necessary evidence in support thereof.
- 43.3 From the date of occurrence of a case of force majeure obligations of the party affected shall be suspended during the continuance of any inability so caused. With the cause itself and inability resulting there from having been removed, the agreed time of completion of the respective obligations under this agreement shall stand extended by a period equal to the period of delay occasioned by such events.
- 43.4 Should one or both parties be prevented from fulfilling the contractual obligations by a state of force majeure lasting to a period of 6 months or more the two parties shall each other to decide regarding the future execution of this Agreement.

44.0 Local Laws, Acts, Regulations:

The contractor shall strictly adhere to all prevailing labour laws inclusive of contract labour (regulation and abolition act of 1970) and other safety regulations. the contractor shall comply with the provision of all labour legislation including the latest requirements of all the Acts, laws, any other regulations that are applicable to the execution of the project.

- i) Minimum wages Act 1948 (Amended)
- ii) Payment of wages Act 1936 (Amended)
- iii) Workmen's compensation Act 1923 (Amended)
- iv) Contact labour regulation and abolition act 1970 and central rules 1971 (Amended)
- v) Apprentice act 1961 (Amended)
- vi) Industrial employed (standing order) Act 1946 (Amended)
- vii) Personal injuries (Compensation insurance) act 1963 and any other modifications
- viii) Employees' provided fund and miscellaneous provisions Act 1952 and amendment thereof.
- ix) Shop and establishment act
- x) Any other act or enactment relating thereto and rules framed there under

from time to time.

45.0 Accidents

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

Signature of Contractor & Seal

SPECIAL CONDITIONS OF CONTRACT

1.0 Scope of Work

The scope of work is to carry out ***TENDER FOR INTERIOR FURNITURE ELECTRICAL, AND HVAC WORKS 2ND FLOOR PREMISES OF ABOVE SME OKHLA BRANCH 233, OKHLA INDUSTRIAL ESTATE PHASE-3 N. DELHI.***

2.0 Address of Site

The site is located at ***2ND FLOOR PREMISES OF ABOVE SME OKHLA BRANCH 233, OKHLA INDUSTRIAL ESTATE PHASE-3 N. DELHI.***

3.0 Dimension and Levels

All dimensions and levels shown on the drawing shall be verified by the contractor on the site and he will be held responsible for the accuracy and maintenance of the entire dimension and the levels. Figured dimensions are in all cases to be accepted and no dimension shall be scaled. Large-scale details shall take precedence over small – scale drawing. In case of discrepancy the contractor shall ask for clarification from the ARCHITECT before proceeding with the work.

4.0 Notice of Operation

The contractor shall not carryout any important operation without the consent in writing from the Architect.

5.0 Construction Records

The contractor shall keep and provide to the Architect. full and accurate records of the dimension and positions of all new work and any other information necessary to prepare complete drawings recording details of the work as constructed.

6.0 Safety of adjacent Structures and Trees

The contractor shall provide and erect to the approval of the Architect. such supports as may be required to protect effectively all structures and protective guards to trees which may be endangered by the execution of the works or otherwise take such permanent measures as may be required by the Architect. to protect the trees and structures.

7.0 Temporary Works

Before any temporary works are commenced, the contractor shall submit at least 7 days in advance to the Architect. for approval complete drawings of all temporary works he may require for the execution of the works. The contractor shall carry out the modifications relating to strength, if required by the Architect. may require in accordance with the conditions of contract at his own cost. The contractor shall be solely responsible for the stability and safety of all temporary works an unfinished works and for the quality of the permanent works resulting from the arrangement eventually adopted for their execution.

8.0 Temporary Roads

The contractor shall provide access roads to the site from the nearest main road at no extra cost and as directed by the Architect. The contractor shall also responsible for proper maintenance of this access road and would take all care to see that existing services, if any, are maintained in working order at his own cost. The laying and maintaining the temporary roads within the site area shall be the contractor's responsibility and the contractor shall take such measures that are necessary and as directed by the Architect.

9.0 Water, Power and Other Facilities

a) The rate quoted by the contractor shall include all expenses that are required for providing all the water required for the work and the contractor shall make his own arrangements for the supply of good quality water suitable for the construction and good quality drinking water for their workers. If necessary, the contractor has to sink

a tube well / open well and bring water by means of tankers at his own cost for the purpose. The SBI will not be liable to pay any charges in connection with the above.

The rate quoted in the tender shall include the expenses for obtaining and maintaining power connections and shall pay for the consumption charges.

The contractors for other trades directly appointed by the SBI shall be entitled to take power and water connections from the temporary water and power supply obtained by the contractor. However, the concerned contractor shall make their own arrangements to draw the supply and pay directly the actual consumption charges at mutually agreed rates between them. All municipal charges for drainage and water connection for construction purposes shall be borne by the contractor and charges payable for permanent connections, if any, shall be initially paid by the contractor and the SBI will reimburse the amount on production of receipts.

b) The SBI as well as the Architect shall give all possible assistance to the contractors to obtain the requisite.

c) Permission from the various authorities, but the responsibility for obtaining the same in time shall be of the contractor.

10.0 Office Accommodation

a) The contractor shall provide and maintain all necessary offices, workshops, stores, shelters, sanitary facilities, canteens and other temporary structures for themselves in connection with the work at the site own cost after getting the approval from the Architect.

b) All temporary buildings and facilities as mentioned above shall be removed on completion of the work or at any other earlier date as directed by the Architect.

All the expenses for obtaining statutory approvals and maintenance of the above facilities as well as running expense shall be borne by the contractor at no extra cost. It is also the responsibility of the contractor to obtain statutory approvals for providing the above facilities.

11.0 Facilities for Contractors' Employees

The contractor shall make his own arrangement for the housing and welfare of his staff and workmen including adequate drinking water facilities. The contractor shall also make his arrangements at his own cost for transport where necessary for his staff and workmen to and from site of work at his own cost.

12.0 Lighting of Works

The contractor shall at all times provide adequate and approved lighting as required for the proper execution and supervision and inspection of works.

13.0 Fire Fighting Arrangements

i) The contractor shall at all times provide suitable arrangements for the fighting at his own cost. For this purpose he shall provide requisite number of fire extinguishers and adequate number of buckets, some of which are of be always kept filled with sand and some with water. These equipments shall be provided at suitable prominent and easily accessible places and shall be properly maintained.

ii) Any deficiency in the fire safety or unsafe conditions shall be corrected by the contractor at his own cost and to the approval of the relevant authorities. The contractor shall make the following arrangements at his own cost but not limited to the following :

a) Proper handling, storage and disposal of combustible materials and waste.

b) Worked operations which can create fire hazards.

c) Access for the fire fighting equipments.

d) Types, number and location of containers for the removal of surplus materials and rubbish.

e) Type size, number and location of fire extinguishers or other fire fighting equipment.

f) General housekeeping.

14.0 Site Order Book.

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

15.0 Site Meetings

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

16.0 Disposal of Refuse

The contractor shall cart away all debris, refuse etc. arising from the work from the site and deposit the same as directed by the SBI/ Architect at his own cost. It is the responsibility of the contractor to obtain from the locate authorities concerned to the effect that all rubbish arising out of contractor's activities at the construction site or any other off-site activities borrow pits has been properly disposed off.

17.0 Contractor to Verify Site Measurement

The contractor shall check and verify all site measurements whenever requested by other specialist contractors of other sub contractors to enable them to prepare their own shop drawings and pass on the information with sufficient promptness as will not in any way delay the works.

18.0 Displaying the Name of the Work

The contractor shall put up a name board of suitable size as directed by the Architect indicating therein the name of the project and other details as given by the Architect at his own cost remove the same on completion of work.

19.0 Bar Bending Schedule

The contractor shall prepare a detailed bar bending schedule for all reinforced concrete works and got them approved by the Architect well in advance.

20.0 As Built Drawings

- i) For the drawing issued to the contractor by the Architect. The Architect will issue two sets of drawings to the contractor for the item for which some changes have been made. From the approved drawings as instructed by the SBI. The Contractor will make the changes made on these copies and return these copies to the Architect for their approval. In case any revision is required or the corrections are not properly marked the Architect will point out the discrepancies to the contractor. The contractor will have to incorporate these corrections and /or attend to discrepancies either on the copies as directed by the Architect and resubmit to him for approval. The Architect will return one copy duly approved by him.
- ii) For the drawings prepared by the Contractor, the Contractor will modify the drawing prepared by him wherever the changes are made by the SBI. And submit two copies of such modified drawings to the Architect for approval. The Architect will return one copy of the approved drawing to the Contractor.

21.0 Approved Make

The Contractor shall provide all materials from the list of approved makes at his own cost. The Architect may approve any make / agency within the approved list as given in the tender after inspection of the sample / mock up.

22.0 Procurement of Materials

The Contractor shall make his own arrangements to procure all the required materials for the work. All wastage's and losses in weight shall be to the contractors account.

23.0 Excise Duty, Taxes, Levies etc.

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

24.0 Acceptance of Tender

The SBI shall have the right to reject any or all tenders without assigning any reason. They are not to bound to accept the lowest or any tender and the tenderer shall have no right to question the acts of the SBI. However, the adequate transparency would be maintained by the SBI.

Signature of Contractor & Seal

TIMBER

As per IS 1708-1969

Test Required & Procedure	Frequency	Acceptance Criteria
1	2	3
<p>1. Moisture Content and Specific Gravity Test preparation and procedure:</p> <p>a) Measurement and weight: Prior to each test, the dimensions of each test specimen shall be measured correct to 0.01 cm and the specimen shall be weighed correct to 0.001 gm.</p> <p>b) Control of moisture content: Before the preparation of the test specimens for testing in the seasoned condition, the material shall be brought practically to constant weight by storage under controlled conditions at 27° C ± 2° C temperature and 65 ± 5% relative humidity. This is expected to bring the moisture content at 12% but if it is not exactly 12% it is permitted to test in the neighbourhood of 12% and results shall be adjusted to 12% moisture content. The test shall be made under such conditions that large changes in moisture content do not occur.</p> <p>c) Control of temperature: To avoid significant changes in strength properties all test specimen shall be tested within the temperature range of 27° ± 2° C. The temperature at the time of test shall be recorded.</p>		
	<p>For every Ten cum or part thereof.</p>	<p>The loss in weight expressed as a percentage of the oven dry weight shall be taken as the moisture content of the specimen. The formula for calculation shall be as given below:</p> <p>Percentage moisture content = $\frac{WI - WO}{WO} \times 100$</p> <p>WI = Weight of sample at test in gms. WO = Oven dry wt. of sample in gms.</p> <p>Moisture content shall not exceed following values</p> <p>i) Timber for frames = 14%</p> <p>ii) Timber for planking shutters etc. = 12%</p>

Test Required & Procedure	Frequency	Acceptance Criteria
1	2	3

d) Rate of loading: The rate of loading of the test machine used shall not vary by more than + 20% from the specified speed for a given test. The load shall be applied continuously without interruption at the required speed throughout the test. The approximate percentage of sapwood if any, by volume, is estimated for all the test specimens and recorded. The number of the growth rings for 3 cm length shall be counted in the radial direction on each of the cross-section of such piece and the average shall be recorded as number of rings/cms for each specimen tested.

The drying shall be considered to be complete when the variation between last two weighing shall

Immediately after each mechanical test, disc approx. 2.5 cm in length and of full section as the test piece, shall be taken normally at the place of failure, failing which, at the central portion of the test specimen. In the case of shear test, the detached portion of the section approximately 5x5 cm shall be taken for determination of moisture content.

The sample shall be weighed and then dried in an oven at a temperature of 103 + 20 °C.

The weight shall be recorded at regular intervals.

WOODEN PANEL DOOR SHUTTERS

Conforming to IS 2202 (Part I) 1983

Test Required & Procedure	Frequency	Acceptance Criteria
1	2	3

1. Physical Test

Physical Verification-

- i) Name of the manufacturer or trade mark.
- ii) Thickness of door shutter.
- iii) Whether ISI Certification Mark exists.

One from each lot.

A specimen shall be considered to have passed the test if no de-lamination has occurred in the glue lines in the plywood and if no single de-lamination. More than 50 mm in length and more than 3 mm in depth has occurred in the assembly glue lines between the plywood faces and the stile and rail.

2. Glue Adhesion Test -

Procedure- Two square sections, 150 mm X 150 mm shall be cut from the corners of the door. These corner sections as cut from the door, shall be immersed in boiling water at 100° C for four hours, then dried at a temperature of 270° + 20° C and relative humidity of 65 ± 5% for 24 hours. At the end of the drying period the samples shall be examined for de-lamination. Glue lines in all the four exposed edges of the plywood on both faces of a specimen and the glue lines between the plywood faces and the stile and rail shall be examined for de-lamination.

READY MIXED PAINTS

Test Required & Procedure	Frequency	Acceptance Criteria
1	2	3

1. Drive Time

Procedure: The material shall be brushed or sprayed as required on a 150 x 150 mm mild steel panel prepared and allowed to air dry or stored under specified drying conditions.

The material shall be examined after specified intervals, for the following conditions:

- i) Surface dry
- ii) Hard dry

iii) **Tack free:** The procedure of test on the dried film of the panel after specified period as follows:

Place the panel in one pan of a suitable balance and counterpoise it with weights. Place a further weight of 2.25 kg and press on the dried film surface of the panel with the thumb till the two pans are balanced. Hold for one minute and then slowly release. No sign of stickiness to the thumb shall be apparent and the thumb impression, if produced, shall be such as can be wiped away with dry cotton wool.

On test each lot,
(All containers of same size and same batch of manufacture constitute a lot)

No sign of stickiness to the thumb shall be apparent.

Test Required & Procedure	Frequency	Acceptance Criteria
1	2	3
<p>-</p> <p>2. Consistency-</p> <p>Procedure: Insert a clean metal rod or palette knife into the original container and examine the nature of the setting.</p> <p>3. Finish-</p> <p>Procedure: The material, when applied on an mild steel panel by brushing or spraying, which ever is specified to give a dry film weight commensurate with the weight per 10 litres of the material and allowed to dry in a vertical position under specified conditions, shall dry to hard, firmly adherent, flexible and smooth film, free from sagging and wrinkling with a matt, semi-glossy or glossy surface in accordance with the requirement of the material specification.</p> <p>4. Residue on Sieve-</p> <p>Outline: The material is mixed with a suitable solvent and passed through a 63 micron IS sieve. Not less than 20 gms. of the material taken from under the top skin shall be tested.</p> <p>Procedure: Accurately weigh the required quantity of the material and transfer to a 250 ml beaker</p>	<p>using either 20 ml of petroleum hydrocarbon solvent 145/205 (100 aromatic).</p>	<p>The material shall not be cake hard inside the container and shall be in such a condition that stirring easily produces a smooth uniform paint suitable for application.</p> <p>The film produced shall be of normal capacity and in no way inferior to a film prepared in the same manner and at the same time from the approved sample, when examined not earlier than 48 hours and not later than 100 hours after application. In case of failure, the test shall be repeated by keeping the painted panel under standard atmospheric condition.</p>

Test Required & Procedure	Frequency	Acceptance Criteria
1	2	3

-
 (Conforming to IS: 1745-1961) or 20 ml of a mixture containing equal parts by volume of petroleum hydrocarbon solvent and benzene. Wet a 63 micron IS sieve on both sides with the solvent. Mix the material and the solvent in the beaker thoroughly, breaking up all lumps without grinding action, with the flattened end of a stirring rod. Transfer the contents of the beaker to the sieve using wash bottle containing the solvent. Remove with the camel-hair brush any small particles of pigment that may be retained on the stirring rod or the walls of the beaker. Wash the residue left on the sieve with the solvent and gently brush with a camel-hair brush until the solvent passing through the sieve is clear and free from solid particles. When the washing is complete, dry the sieve for one hour at 100 + 2° C. Cool and transfer the residue with the help of the camel-hair brush to a weighed watch glass and determine the weight of residue.

5. Water Content

Outline of the method: The material is heated under reflux with an organic solvent which is immiscible with water. The carrier liquid distils into a graduated receiver carrying with it water which then separates to form the lower layer,

Test Required & Procedure	Frequency	Acceptance Criteria
1	2	3

-
the excess carrier liquid overflowing from the trap and returning to the still.

Procedure: Weigh 100 g. of the material in the flask, add 100 ml of dry petroleum hydrocarbon solvent (boiling point 75 to 85° C) and IMI of dry ethyacetate (conforming to IS:229-1964) or acetate (conforming to IS:231-1957) and thoroughly mix the contents of the flask. Pour petroleum hydrocarbon solvent into the receiver upto the level of the side tube. Attach the flask to Dean and stark condensing and collecting system and heat the flask at such a rate that the condensate falls from the end of the condenser at a rate of two to five drops per second. Continue the distillation unit condensed water is no longer visible in any part of the apparatus except at the bottom of the graduated tube and until the volume of water collected remains constant. Remove the persistent ring of condensed water in the rate of distillation by a few drops per second.

6. Weight per Litre

Outline of the method: The calibrated cylinder or CNP is filled with the material and weighed.

Test Required & Procedure	Frequency	Acceptance Criteria
1	2	3

-
Procedure: Weigh the cylinder or cup when empty and then fill to the brim with the material. Assuming that the volume of the contents is 50 ml or 100 ml, calculate and express as kg per 10 litres.

7. Lead Restriction

Outline of the method: Determination of lead in lead restricted paints is carried out by precipitating the lead as sulphide from the separated pigment, which is finally oxidized to lead monoxide.

Procedure: Shake about one gram of the ground pigment obtained, accurately weighed, continuously for one hour at room temperature with 1000 times its weight of an aqueous solution of hydrochloric acid containing 0.25 percent by weight of hydrogen chloride.

Allow the mixture to stand for one hour and then filter. Precipitate the lead salt contained in the clear filtrate as lead sulphide, filter, that the lead sulphide in air to convert it into lead sulphate, weigh calculate as lead monoxide (PbO) and express the result as percentage on the dry weight of the material taken for test.

PARTICLE BOARDS

Test Required & Procedure	Frequency	Acceptance Criteria
1	2	
<p>Identification (Physical Verification)</p> <p>Each particle board shall be legibly marked near any of its edge with the following.</p> <ol style="list-style-type: none"> 1. Name of the manufacturer or trade mark. 2. Designation of particle board. 3. Thickness and date of manufacture. 4. Whether I.S.I. Certification marks exists. 5. Dimensional Tolerance <ol style="list-style-type: none"> a) Length \pm 8 mm b) Width \pm 8 mm c) Thickness <ol style="list-style-type: none"> i) Boards upto and including 25mm thick \pm 5.0%] ii) Boards above 25mm thick \pm 2.5%. <p>Edges of the board shall be straight with a tolerance of 3 mm. the persistent ring of condensed water in the rate of distillation by a few drops per second.</p>	<p>One from each lot</p>	<p>Density – The density of each sample shall not vary from the mean density by more than + 10%.</p> <p>Moisture content : The average value of the moisture content shall be between 7 to 16%.</p> <p>Water absorption : The value of water absorption shall not exceed 25% for two hrs, soaking and 50% for 20 hrs. soaking.</p> <p>Exterior grade (I) : These particle boards shall not delaminate after 3 hrs. boiling in water at 100'C.</p> <p>Interior Grade (Gr.II) : These particle boards shall not disintegrate and / or shall not detaminate after 24 hrs. immersion in water at 27% \pm 2'C.</p> <p>Swelling water : Swelling in thickness in % of original thickness for 2 hrs. immersion shall be determined and the same shall not be more than 5%. The Swelling in thickness due to surface absorption in two hours shall not be more than 5%.</p>

SPECIFICATIONS OF INTERIOR & FURNISHING WORKS

1. General:

- 1.1 Without forgoing the requirements of the Conditions of Tender and the Conditions of Contract the works in general shall conform to the "Latest Specifications" published by CPWD, New Delhi and the "Specifications for Works" stated in this tender. In case of items not covered by the General Specifications referred above, reference shall be made to the appropriate I.S. Code. If there is any difference in the particular specifications of individual item of work and the description of item as given in the Schedule of Quantity, the latter shall prevail. In case of any work for which there is no specification in I.S. Specifications or in the specifications forming part of tender documents or in case there is any variation, such work shall be carried out in all respects in accordance with the instructions to be issued by the ARCHITECTs. The term Department shall mean the Employer. Any reference to ISI shall also mean reference to its successor Bureau of Indian Standards. All corrections to "Latest Specifications" or revisions of I. S. shall be deemed to apply to this contract.
- 1.2 Materials bearing ISI certification mark shall be given highest preference for use in the works.
- 1.3 Where the Contractor is required to do, perform, execute (etc.) any work or service or the like, it shall be deemed to be at his own cost. Absence of terms providing supplying, installing, fixing, etc. shall not even remotely entitle the Contractor to any additional payment thereof.
- 1.4 The rates accepted in the Schedule of Quantities apply to all floors, heights, depths, leads, lifts, spans, sizes, shapes, locations, etc. unless a distinction has been included in the very Schedule.
- 1.5 The Specifications and the Schedules may have been divided into various sub-heads for convenience only. This does not limit applicability of one to the other nor it absolves the Contractor of his responsibility to complete any trade/item of work as reasonably inferred from one or more of such sub-heads.
- 1.6 The Schedule of Quantities is not necessarily based on "Schedule of Rates" later/earlier versions. Hence the Schedule of Quantities shall be read and construed according to explanations given herein and intentions gathered therefrom. A mere parallel drawn from the said Schedule of Rates shall therefore not form a basis for a variation and, or additional payment.
- 1.7 All work under this contract is deemed to be performed above subsoil water level. However, removal of water collected from rains and the like shall be treated as part of contractual risk/obligation.
- 1.8 Screws, bolts, nuts, washers, hold fasts, lugs, anchors, clamps, plugs, suspenders, brackets, straps and fasteners of the like are deemed to be included in the rates of various items unless the Schedule of Quantities expressed a different intention.
- 1.9 Resetting any displacements, making good holes/chases and such other incidental jobs are included in rates of respective items for which these are required.

2.0 Concrete Work (Plain or Reinforced):

- 2.1 Centering, shuttering, staging, form work, strutting, propping (their provision and removal) shall not be paid for separately unless exclusion thereof is specifically described in the item.
- 2.2 The rates of concrete work do not include rendering or plastering but hacking and preparing surface for receiving the finishes shall be done as early as possible.
- 2.3 Any chamfers, grooves, drips, etc. which are generally and customarily required shall be provided in the concrete work integrally or otherwise without extra charges as directed by the Architect.

3.0 Steel Work:

- 3.1 The measurement of railing shall be the length of top wood/steel section as per situation along the centre line.
- 3.2 Painting in relation to steel work shall be two or more coats of approved synthetic enamel plus a

coat or primer including preparation of surfaces, fillers etc. The priming coat shall be measured & paid separately in the relevant item.

3.3 Circular work, bends, stepping are not payable extra.

3.4 The steel work in single sections of R.S. Joists, flats, Tees Angles fixed independently with or without connecting plate, is described in these clauses.

(a) Fabrication

The steel section as specified shall be straightened and cut square to correct lengths and measured with a steel tape. The cut ends exposed to view shall be finished smooth. No two pieces shall be welded or otherwise jointed to make up the required length of a member.

All straightening and shaping to form, shall be done by pressure. Bending or cutting shall be carried out in such a manner as not to impair the strength of the metal.

(b) Painting

All surfaces which are to be painted, oiled or otherwise treated shall be dry and thoroughly cleaned to remove all loose rust. Surfaces not in contact but inaccessible after shop assembly, shall receive the full specified protective treatment before assembly. This does not apply to the interior of sealed hollow sections. Part to be encased in concrete shall not be painted or oiled. A priming coat of approved steel primer i.e. Red Oxide Zinc chrome primer conforming to IS: 2074 shall be applied before any member of steel structure are placed in position or taken out of workshop.

(c) Welding

Welding shall generally be done by electric arc process as per IS: 816 and IS: 823. The electric arc method is usually adopted and is economical. Where electricity for public is not available generators shall be arranged by the contractor at his own cost unless otherwise specified. Gas welding shall only be resorted to using oxyacetylene flame with specific approval of the Architect. Gas welding shall not be permitted for structural steel work. Gas welding requires heating of the members to be welded along with the welding rod and is likely to create temperature stresses in the welded members. Precautions shall therefore be taken to avoid distortion of the members due to these temperatures stresses.

The work shall be done as shown in the shop drawings which should clearly indicate various details of the joints to be welded, type of welds, shop and site welds as well as the types of electrodes to be used. Symbol for welding on plane and shops drawings shall be according to IS: 813.

As far as possible every efforts shall be made to limit the welding that must be done after the structure is erected so as to avoid the improper welding that is likely to be done due to heights and difficult positions on scaffolding etc. apart from the aspect of economy. The maximum dia of electrodes for welding any work shall be as per IS: 814 and appendix B' of IS: 823. Joint surfaces which are to be welded together shall be free from loose mill scale, rust, paint, grease or other foreign matter, which adversely affect the quality of weld and workmanship.

4.0 Flooring:

4.1 The rates of cement concrete flooring and marble chips flooring are exclusive of dividing strips for formation of panels.

4.2 Borders, margins, bands, nosings, etc. are not payable extra. Treads shall be measured as floors, risers as skirtings. However, areas of returns (finished thickness), nosing shall be added respective items.

4.3 No extra shall be paid for cutting of glazed tiles or for wastage thereof.

4.4 Marble/Kota stone slabs shall be of selected quality, hard & sound and shall be approved by the Architect. The thickness of the slabs shall be as specified in the description of the item. Tolerance of 2mm shall be allowed for the thickness. In respect of length & breadth of slabs (Where flooring to be laid) a tolerance of 5mm shall be allowed. Every slab shall be cut to the required size and shape, top waviness shall be removed, the sides (edges) shall be removed,

the sides (edges) shall be table rubbed with coarse sand or machine rubbed before paving. All angles of the tiles shall be true equal and free from chipping and the surface shall be true and plane.

- 4.5 Marble slab/kota slab shall be cleaned, wetted and mopped before laying.
- 4.6 Polishing shall be done by machine in four different courses. Ist course shall be of rubbing with carborundum stone No. 60, the second with No. 120, and the third with No. 320 to get even and smooth surface without pinholes. Where ever use of machine is not feasible to work, polishing shall be done by hand with No. 60, No. 80 and with No. 120 carborundum stone respectively. Lastly oxalic acid shall be dusted over the surface @ 33 gm per square meter sprinkled with water and rubbed hard with namdah block (pad of wooden rags).
- 4.7 Marble chips, kota stone, marble (all floors, skirting, risers, dado, counter tops, treads) shall finally be polished with approved floor wax polish as directed at no extra cost.
- 4.8 Marble (counter tops) shall be of full width and in single piece upto length of 1.5m. Granite for name-plate shall be in one single piece.

5.0 Finishing:

- 5.1 Items of plastering apply to all locations including rough sides of walls, curved surfaces, all heights, etc. without limiting generally of para 1.4.
- 5.2 Preparation of surfaces including raking out joints, hacking, brushing, watering, etc. is included.
- 5.3 Drip mouldings shall not be payable extra.
- 5.4 Grooves shall be provided in plaster as directed by Architect at corners of ceiling slabs around the columns & beams at no extra cost.
- 5.5 Strips of G.I. chicken mesh 250mm wide shall be provided in plaster at all junctions (which are flush) between masonry/columns, masonry/beams.

6.0 Wood Work:

- 6.1 The areas of doors & windows shutters shall be measured to the nearest cm in closed position covering the rebates of the frame but excluding the gap between the shutter and the frame. Over lap of two shutters shall not be measured. All work shall be measured for finished dimensions. No allowance shall be made for dimensions supplied beyond those specified. Length of each piece shall be measured overall nearest to 1 cm, so as to include projections for tenons, scraves or mitres, width and thickness shall be measured to the nearest mm.
- 6.2 Where painting, polishing has been included in the item the same shall be executed as per Architect's directions. Painting shall be two or more coats of approved synthetic enamel plus a coat of fire resistant primer to wood work as approved by Architect and shall conform to BS-476 part 7 for class I surface spread of flame. Preparations of surfaces, fillars, etc. are included. This primer shall also be applied before polishing (i.e. French Spirit Polish). The fire resistant primer shall be measured & paid separately in the relevant item.
- 6.3 All flush door shutters shall have teak lipping on all edges as directed with extra thickness of lipping of meeting edges of double shutter doors.
Glasses 5.5mm thick or 4mm thick shall respectively weigh not less than 13.75 Kg/sqm. Or 10 Kg/sqm.
Bends, stepping and circular shapes in railings are integral part of the rate.
The widths of various rails & styles shall be as described in the items or shown in the drawing. All aluminum section & fittings used shall be ISI marked. All screws for fixing of fittings/fixtures shall be of matching finish.
In case of composite units (M.S. frame + teak wood shutter) the hold fasts shall be added or fixed with counter sunk machine screws. Also the M.S. frames shall have necessary holes and

other arrangement for receiving/fixing of fittings

7.0 Plaster of Paris Punning (P. O. P.)

If the plaster surface is to be finished with plaster of paris punning, the surface shall be combed slightly with the wire brushes or nails before it is completely set to form key for plaster of Paris punning. The surface shall be thoroughly cleaned of dust then only damped but not soaked before the application of plaster of paris punning. The Gypsum for preparing punning shall be approved quality. It shall be dry and free from lumps and shall be suitably packed in watertight bags or containers. Paste shall be prepared by adding required quantum of water and it shall be used before it sets. No dropping paste shall be used in the work. Punning shall be applied to the prepared surface with steel trowel to a thickness required to make the surface produce perfectly smooth and even surface working from top to bottom. It shall then be sand papered to give a smooth and even surface. Any unevenness shall be made good by applying putty, made of plaster of paris mixed with water, then sand papering the same after it is dry. Pilling in plaster shall be made good with plaster of paris mixed with colour to be used. The surface shall then be rubbed down again with a fine grade sand paper and made smooth. The surface shall be allowed to dry thoroughly before the regular coat of paint is applied. The measurement shall be in square metre.

8.0 Plastic Emulsion Paint:

Plastic emulsion paint shall be of approved manufacturer and shall generally conform to IS-5411 (Part-I)-1969.

The colour and shade of the emulsion shall be got approved by the Architect. Double scaffolding shall be used, ladden if used shall be tied with old gunny bags at top to prevent damage or scratches to the walls. The instructions of the manufacturer shall be followed, in application of priming and finishing coats. Turpentine or any other solvent shall not be used for thinning the paint.

Minimum 3 coats of paint shall be applied inclusive of primer coat. If a proper and even surface is not obtained to the satisfaction of the ARCHITECTS in 3 coats, Contract shall carry out additional coats of painting to approval at his expenses. Care shall be taken that dust or other foreign material does not settle or disfigure the various coats. The measurement shall be in square metre.

9.0 Miscellaneous:

The work of cupboard/cabinets shall be done as per drawings. The depth of cupboards shall be as shown in drawings. The work includes holdfasts and other accessories usually required for complete installation. All inner surfaces shall be painted & outer face polished as per Architect's approval.

All exposed cut ends of boards shall be provided with hardwood lippings.

Kail wood to be used shall be of the best available quality.

The joints in cement concrete pavements/roads shall be formed as per design and pattern. The joints shall be cleaned and neatly filled with 'A' grade sealing compound. Side kerbs shall be made in situ to design and volume paid for in the same item. Required side forms shall not be paid separately.

For whitewashing, colour washing, distemping on sand faced plaster or on rough cast plaster with stone aggregate upto 10mm, only flat single surface will be measured and paid.

In the case of R.C.C. Jallies upto 50mm thick only single flat surface will be considered for each side of painting.

TECHNICAL SPECIFICATIONS FOR ELECTRICAL INSTALLATION WORK

SCOPE OF WORK:-

The Electrical Contractor's scope of work covers the following:-

Supply, testing prior to installation, testing after installation of electric meter/s and other installation and commissioning the complete Electrical Installation work associated with power supply system, lighting and domestic appliances, concealed wiring network as directed, earthing and lightning protection system, installing Heavy Gauge PVC / Black enamelled H.G. threaded conduits suitable for heavy mechanical stresses, concealed / open in slabs, walls / shafts, as required for Electrical wiring, telephones network and TV cable system for distribution in flats, basement, stilts etc., installing telephone and T.V. outlet boxes as required including fish wire. Telephone wires and co-axial cable for T.V. outlets from the shafts as directed, alternate Emergency Power Panel including stand-by Diesel Generator Set and power supply network from this alternate stand-by D.G.Set, installation of fixtures and fittings issued by the Client or as ordered in B.O.Q. after testing, including holding their safe custody until handing over of the installation to the Clients, power supply to Domestic water pumps, fire pumps and any other related works for completion of the Building for its occupancy, Liaisoning with Electric Supply Company and / or Concerned Authorities and getting the installation approved by them and installation of electric meter/s is also included in the scope of Contractors work.

DRAWINGS, SPECIFICATION AND DEVIATIONS:-

The drawings and specification lay down minimum standards of equipment and workmanship. Should the tenderer wish to depart from the provision of the specification and drawings either on account of manufacturing practice or for any other reasons, he should clearly draw attention in his tender to the proposed points of departure and submit such information, drawings and specifications as will enable the relative merits of the deviations to be fully appreciated. In the absence of such information on the deviations, it will be deemed that the tenderer is fully satisfied with intents of the specification and drawings and their compliance with the statutory requirements, all the relevant I.S.Codes, I.E. Rules, Local Codes as governed by the Concerned Electric Supply Company, N.E.C. Electrical Inspector, etc.

The Contractor shall prepare fabrication and working drawings as well as concealed / open conduits layout drawings which will be got approved from the Architect / Clients / Consultants prior to execution and all work shall be to the approved working drawings. Approval of these drawings does not relieve the Contractor of his responsibility to meet the intents of specifications. All such drawings for approval are to be submitted in triplicate to the Owner / Consultants / Architects.

After virtually completing the work, the Contractors should submit AS BUILT drawings of all systems in triplicate along with his Final Bill.

SCOPE:-

The Scope of work shall cover the supply, installation and commissioning of all the power panels, incorporating circuit breakers, switch fuse units, busbars, interconnections, earthing etc., meeting the requirements shown in equipment schedule and the drawings.

Entire works shall comply with the latest issue of following standards, rules, codes of practice, unless specified otherwise in the specific requirements.

STANDARDS:-

The following standards and rules shall be applicable:-

- | | |
|--------------|---|
| IS : 2516 : | Specification for A.C. circuit breakers. |
| IS : 4047 : | Specification for heavy duty air breaker switch gear and fuses for Voltage not exceeding 1000 V. |
| IS : 3072 : | Code of practice for installation and Maintenance of Switch gear. |
| IS : 3106 : | Code of practice for selection, installation and maintenance of fuses (Voltage not exceeding 650 V). |
| IS : 4237 : | General requirements for switch gear and control gear for voltage not exceeding 1000 V. |
| IS : 2607 : | Air break isolators for voltage not exceeding 1000 V. |
| IS : 8623 : | Specification for factory built assemblies of switch gear and Control gear for voltage upto and including 1000 V. A.C. and 1200 V. D.C. |
| IS : 375 : | Marking arrangement of switch gear bus-bars main connections and auxiliary wiring. |
| IS : 694 : | PVC insulated copper wires for 650 / 1100 Volts grade. |
| IS : 1554 : | PVC insulated (heavy duty) electric cables for working voltages upto and including 1100 Volts. |
| IS : 3961 : | Recommended current rating for cables. |
| IS : 732 : | Codes of practice for electrical wiring. |
| IS : 2274 : | Installation (system voltage not exceeding 650 Volts). |
| IS : 12360 : | Voltage bands for electrical installation. |

- IS : 2309 : Protection of building and allied structures against lightning.
- IS : 4648 : Guide for electrical layout in Residential Building.
- IS : 1646 : Fire Safety of Buildings.
- IS : 5216 : Guide for Safety Procedures and Practices in Electrical Work.
- IS : 3043 : Code of practice for earthing.
- IS : 3202 :)
- IS : 4047 :) Climate proofing of electrical equipement.
- IS : 2147 :) Heavy duty air-break switches and
- IS : 4064 :) Composite units of air-break switches.
) and fuses for voltages not exceeding
IS : 4237) 1000 Volts.
- IS : 6875 :)
- IS : 2208 :) HRC cartridge fuse domestic and similar purpose.
- IS : 5133(I) :) Boxes for enclosures of electrical accesscries.
- IS : 3854 :) Heavy duty air-break switches and
- IS : 3452 :) Switches for domestic and similar purpose.
- IS : 371 :) Three terminals ceiling roses.
- IS : 4615 :)
- IS : 1293 :)
-) Switch socket outlet.
- IS : 4160 :)
- IS : 4343 :)
- IS : 8828 : Miniature air-break circuit breaker for A.C. circuits.
- IS : 2312 : Exhaust Fans.
- IS : 374 : Ceiling fans and regulators.
- IS : 2082 :)
- IS : 3725 :) Storage types electrical water heaters.
- IS : 2266 : Call bells and buzzers for indoor use.

IS : 1913 :) Luminaires, ballasts, maintenance and safety requirements.

IS : 10322 :)

IS : 2713 : Tubular poles for overhead power lines & street lights.

IS : 2551 : Danger notice plates.

IS : 2509 :)

) Regid PVC conduits for electrical wiring.

IS : 3419 :)

IS : 9537, Part II : Rigid M.S. conduits.

IS : 3480 : Flexible steel conduits for electrical wiring.

TD-S-113-18 Code of practice by India Telephone – Department.

ITD-S/WS- :)

144C,) Insulation and conductor resistance of telephone

BS : 6746 :) wires and cables.

IS : 4984 :) HDPE pipe and fittings.

ITD-S/WS- :)

113B,) PVC insulated, colour coded, twisted into pairs,

BS : 6746 :) laid-up taped and overall.

CBL : 7000 :)

BS : 6746 :) PVC sheathed telephone cables.

IS : 1554 :)

MUMBAI Revised code of practice for telephone wiring of multistoreyed
TELEPHONES Buildings – 1985.

Codes of practise of Indian Standards or relevant British Standards in the absence of Indian Electricity Act and Rules National Electrical Code, Local Regulation prevalent in **MP**. or the state which work-site exists, Regulations of Fire Insurance – Tariff Advisory Committee, Regulations and Standards of Mahanagar Telephone Nigam Ltd., etc.

SYSTEM DETAILS:

Entire electrification work and its associated accessories shall be designed for the system data given hereunder.

Rated System Voltage	:	415 Volts (+/-) 10%, 3 – Phase, 4 Wire.
Rated System Frequency	:	50 Hz (+/-) 3%
Rated System Fault level	:	35 MVA at 415 Volts symmetrical.
Highest System Voltage	:	456 Volts r.m.s. line to line at 415 Volts.
Rated Lighting Control System Voltage	:	250 Volts, 1 – Phase, 2 Wire and earth, 50 Hz
System Earthing	:	Effectively earthed neutral.

All material and its associated accessories shall also be designed to withstand for the desired services due to fluctuations in supply voltage and variation in frequency as permissible under Indian Electricity Act and Rules.

Meter Room Works :

150 mm. dia. R.C.C. pipe/s shall be provided for laying of Electric Supply Company's power cables from outside of plinth protection upto a chamber in the meter room. In case the distance from the outer edge of the plinth protection upto the chamber in meter room is more than 2 meters additional pipes shall be laid and all the pipes shall be properly laid and jointed with collars etc. the pipe at the end of the plinth protection shall at the level of 600 mm. below the ground level.

One end of the R.C.C. pipe inside the meter room shall open in a brick masonry chamber of size 300 mm. x 600 mm. and 300 mm. deep.

One no. 8 SWG G.I. Wire shall be laid in the R.C.C. pipe for pulling the power cables.

One / two / three / four light point/s shall be provided in the meter room, the control switches for which shall be near the door but inside, from the wiring provided for the staircase lights. A teak wood plank of 20 mm. thick and varnished (with two coats) on all sides shall be provided in the meter room for fixing of Electric Supply Co s Bus System, Cutouts, I.C. cutouts for individual meters and ELMCBs for flats, cable end box to terminate main incoming supply cables shall be provided for the S.F. unit with suitable cable glands. On the outgoing side of S.F. unit a 3 phase and neutral busbar chamber shall be provided. The busbars rating shall be 50% more than the capacity of the S.F.U. controlling it.

The lead wired to individual meters and cutouts shall be taken out from this busbar chamber. Each load distribution on all phases and the proper colour code is to be observed for lead wire. Lugs shall be crimped at both ends of these lead wires for termination.

Wherever the energy meters are to be fixed in the wooden meter box / cabinet, the same shall me made out of 50 mm. x 25 mm. wooden frame and 20 mm. thick wooden planks on all sides and metal grill shall be fixed on the front door (side). The door shall have locking arrangement and lock with keys shall be

provided. The meter box shall be fixed to the wall and before polishing / painting, anti-termite treatment shall be given to it. Polishing / painting, has to be done to all the sides of the box / cabinet.

The meter box shall accommodate main S.F.U. for terminating incoming cable, T.P.N. Bus chamber and other switch gears like I.C. cutouts main switches, ELMCBs energy meters etc. All meters, switches etc., shall be interconnected with wires of size suitable for the connected load / meter capacities as directed.

All wiring in the meter room related to metering etc. shall be carried out with single core PVC stranded copper wires of adequate size, fixed on the T.W. Plank with brass clips and brass takes. Earth wire shall be provided with the lead wires for connecting earth terminates of meters, main switches etc.

The Contractor shall submit the layout drawing of the meter room wherein all the above items shall be shown. This layout shall be got approved by the Contractor from the Clients as well as from the Electric Supply Co. In the meter room, outgoing from the meters will be taken to the main switch, ELMCB, the outgoing from which either cables or copper wires, as specified, will lead to the respective destinations as specified.

All codes and standards mean the latest, wherever not specified otherwise, the installation shall generally follow the I.S. codes of practice of the relevant Standard Codes of Practice in the absence of corresponding Indian Standard.

Switch fuse units and disconnects :

Switch fuse units shall have quick-make, quick-break silver plated preferable double break contacts, with operating mechanism suitable for rotary operation in the case of cubical mounting. All switches shall be rated according to equipment schedule or drawings, and shall withstand the system prospective fault current let through. Cam operated rotary switches with higher rating S.F. units shall be heavy duty type conforming to IS : 4047.

Fuses shall be HRC cartridge type conforming to IS:2208 with a breaking capacity corresponding to system fault level. Fuses shall be line type with visible indication. Screw type diazed fuses are not acceptable for any rating.

All disconnects shall consists of switch units quick-make, quake-break type with silver plated contacts. The switches shall preferably have double breaks. All switches shall be mounted in sheet steel enclosures, which in turn is mounted on suitable angle iron frame work. In wet location switches shall have cast iron enclosures Disconnects shall have minimum breaking capacity.

Cubical Boards :

All boards shall be combination of 14 & 16 SWG sheet steel, free standing, extensible totally enclosed. Dust-tight, vermin-proof cubical, flush dead front and modular construction suitable for 3 phase, 415 V, 4 Wire, 50 Hz system. All boards shall be accessible form the front for the maintenance of switches, Bus-bars, cable terminations, meters etc. Cables shall be capable of entering the board both from top as well as from bottom. All panels shall be machine pressed, with punched openings for meters etc. All sheet steel shall be rust inhibited through a process of degreasing, acid pickling, phase hating etc. The panels shall be finished with two coats of synthetic enamel paint of approved colour over one coat of red oxide primer.

Engraved plastic labels shall be provided indicating the feeder details including the size of the incoming / outgoing cables, capacity and danger signs.

Earthing :

All switches panels shall be provided with an earth bar as specified earthing of the switch boards shall be through the equipment earthing system provided in the building.

All meters shall be calibrated and tested through secondary injection tests.

All field tests shall be witnessed by Clients representatives, lost certificates shall be furnished by the Contractors.

Installation :

All panels shall be supported on MS Channels incorporated in the panel during the fabricating. All such supports shall be coated with primer followed by two coats of approved synthetic enamel colour paint. After completion of the work, all panels shall be touched up for damaged painting. All work shall be carried out as per IS: codes, I.E. Rules, NEC.

All panels shall be megged at phase and phase to Neutral using 1000 V meggar with all outgoing feeders in closed position. The meggar value should not be less than 2.50 mega ohms between phases and 1.50 mega ohms between phase and neutral.

Fabrication drawings of all panels shall be submitted by the Contractor to the Clients in triplicate and they shall proceed for fabrication after Clients approval.

Testing and Inspection :

All switch boards shall be factory inspected before finishing and dispatch, with the Clients representatives.

Certificate for all routine and type tests for circuit-breakers in accordance with IS:2516-1963 shall be furnished from the manufactures. In addition, all panels shall be megged phase to phase and phase to Neutral, using 1000 V meggar with all the switchgear in closed position. The meggar value should not be less than 2.50 mega ohms between phases and 1.50 mega ohms between phase and Neutral.

Distribution Board :

Scope :

The scope of work shall cover supply, installation, testing and commissioning of lighting and power distribution boards. Associated civil work required for the erection of the D.B.S. is also included in the scope of this contract.

Standards :

The following standards and rules shall be applicable :

- 1) IS : 2675 – 1983 : Enclosed distribution fuse boards and cutouts for Voltage not exceeding 1000 V
- 2) IS : 375 – 1963 : Marking and arrangement of switchgear busbars main connections and auxillary wiring.
- 3) IS : 8828 – 1978 : Miniature circuit-breakers.
- 4) IS : 2607 – 1976 : Air-break isolators for Voltage not exceeding 1000 V.
- 5) IS : 9926 – 1981 : Fuse wire used in rewirable type Elec. fuses upto 650 V.
- 6) Indian Electricity Act 1910 and Amendments issued there under.

All codes and standard mean the latest, where not specified otherwise, the installation shall generally follow Indian Standards Codes of Practice and the relevant British Codes of Practice in the absence of Indian Standard.

Distribution boards along with the controlling M.C.B.s, Fuse or Isolator as shown be fixed in an M.S. Box, suitable for recessed mounting and in wall. D.B.S. should be factory made from the standard “approved” manufactures and not fabricated by the tenderer. D.B.S. shall be made of 16 SWG sheet duly rust inhibited through a process of degreasing, acid pickling, phosphating and spray painted or powder coated to an approved colour over a coat of red oxide primer. Three phase boards shall have phase barriers and wire channel on three sides. Neutral bars shall be solid tinned copper bars with tapped holes and chase headed screws. For three phase D.B.S. 3 Nos. independent neutral bars shall be provided.

There shall be earth busbar of adequate size provided separately to terminate all outgoing circuit earth wire conduit knockouts shall be provided as required / shown on drawings and entire board shall be rendered dust and vermin proof and shall have conduit knockout entry.

MCBs shall have quick make and break non-welding self wiping alloy contacts both on the manual and automatic operation. Each pole of the breaker shall be provided with inverse time thermal overload and instantaneous over current tripping elements, with tripping must be on all the poles and operating handle must be common. Breakers must conform to MBS 3871 with facility for locking in off position. Pressure clamp terminals for stranded / solid conductor insertion are acceptable upto 4 sq.mm. aluminium of 2.5 sq.m.. copper conductors and for higher conductor sizes the terminal shall be suitably shrouded. Wherever MCB isolators are specified they are without tripping elements.

Distribution Boards shall have MCBs as shown on the drawing / schedule. D.B.S. shall meet with the requirements of IS:2675 and marking arrangement of Bus-bars shall be accordance with IS: 375, Bus-bars

shall be suitable for incomer switch rating and sized for a temperature rise of 35 Centigrade over the ambient temp. circuit diagram indicating the distribution shall be pasted on the inside of the DB s instructed. One earthing terminal for single phase and two terminals for 3 phase D.B.S. shall be provided with an earth strip connecting these earthing studs / terminals and the outgoing ECC earth bar. All MCBs shall be with a minimum short circuit rating of 10 Kamps. All outgoing feeders shall terminate or by means of insulated single conductor copper wires.

All termination shall be carried out by using crimping type ferrules or reducer type terminal lugs.

Installation and Testing :

All distribution boards shall mounted as directed either recessed or on adequate size of angle iron frame work in case they are to surface mounted. All mounting frames shall be coated with one coat of red oxide primer followed by two coats of synthetic enamel paint of approved colour, after installation. All D.B.S. shall touched up for damaged painting. All work shall be carried out as per NEC.

All boards shall be meggard phase to phase and neutral, using 1000 V meggar with all switchgear in close position. The meggar value should be not less than 2.50 megohms between and 1.50 megohms between phase and neutral.

E.L.C.B. (Earth Leakage Circuit Breaker) :

The E.L.C.B.s shall have leakage sensitivity of 30 ma / 30 Secs and shall have a short circuit current rating equal to that of MCB i.e. mini. of 10 KA. Current rating and No. of poles shall be as described in the B.O.Q. / Drawing. A test push knob facility shall be provided to periodically test the operation of E.L.C.B.s.

Medium Voltage Cabling :

Scope :

The scope of work shall be cover supply, laying, connecting, testing and commissioning of medium voltage power cables inclusive of all labour.

Standards :

The following standards and rules shall be applicable :

- 1) IS : 1554 (P-I) : PVC insulated electric cables (heavy duty)
- 2) IS : 1753 : Aluminium conductors electric cables (heavy duty)
- 3) IS : 3961 : Recommended current ratings for cables.
- 4) Indian Electricity Act and Rules.
- 5) NEC.

All codes and standards mean the latest. Whereas not specified otherwise, the installation shall generally follow Indian Standard Codes of Practice and the relevant British Codes of Practice in the absence of Indian Standard.

Cables :

All cables shall be 1100 Volt Grade, PVC insulated and extruded inner sheath with or without steel armouring as specified and with an outer PVC Protective sheet. Cables shall have high conductivity stranded aluminium or copper conductor as specified. Cores shall be colour coded as per Indian Standard.

All cables shall be new without any kind of visible damages. The manufactures name, insulating material, conductor size, voltage class and ISI mark shall be embossed on the surface of the cable at every 600 mm. centres.

Installation :

Cables shall be laid in the routes marked in the drawings, where the route is not marked, the Contractor shall mark it out on the drawing and also on the site and obtain the approval of the Architect / Consultant before laying the cable. Procurement of cables shall be on the basis of actual site measurements and the quantities shown on the schedule of work shall be regarded as a guide. Payment shall be restricted to the quantity of cable installed (and measured jointly as per unit stated) at site. Cables rising indoors shall laid on walls, ceiling, shafts or trenches. Cables shall be fixed to walls or ceiling with supports saddles. Cables trays will be used wherever directed / necessary. All supports shall be at not more than 500 mm. apart. Plastic identification tags shall be provided at every 20 M in general at every floor in the rising shaft in particulars. Oversize M.S. Sleeves shall be used for cables passing through the walls. Cables shall be bent to a radius not less than 12 times the recommendations, whichever is higher, in case of direct buried cables the cable route shall be parallel or perpendicular to roadways, walls cushion to provide cushion against abrasion. Width of excavated trenches over sand cushion shall be covered with a mini. of excavated trenches will be as per drawings or as directed. The laid cables in protective layer of bricks on both sides and top. Backfill of the trench shall be with a minimum earth cover of 600 mm. to be properly rammed and consolidated. At road / pathway crossings cables have a pulled through R.C.C. pipe of 150 mm. dia. to be laid for each cable by the Electrical Contractor. A mini. of 100 mm. thick concrete bed has to be spread before laying the RCC pipes, topped by 150 mm. thick concrete to avoid any damage to the RCC pipe.

The cables shall be provided with cable route markers at every 20 meters and also at every in the direction of the route.

All cables shall be full runs from panel to panel without any joints or splices. A minimum of Eight (8) M loop shall be provided at each end of every cable. Cables shall be identified at end terminations indicating the feeder number and the Panel / Distribution

Board from where it is being laid. All cable terminations shall have tinned copper compression lugs. Cable terminations shall have necessary Brass glands. The Brass glands and armouring shall be earthed at both the ends of the cable. The end terminations shall insulated with a minimum of six half lapped layers of PVC taps.

Testing :

MV cables shall be tested before and upon installations with a 1000 V meggar and the following established.

- 1) Continuity on all phases.
- 2) Insulation Resistance a) Between conductors.
 b) Between all conductors and ground.

All test reading shall be recorded. Cables will be charges only after the above reading are found to be satisfactory.

Mode of Measurement :

Cables will be measured on the basis of unit length and shall include the following :

- 1) Cables, clamps, supports and spacers.
- 2) Installation, testing and commissioning.
- 3) Cable marking.

Each cable termination will be measured as one unit for payment.

- 1) Cable glands, lugs, bolts, nuts.
- 2) All joining materials.
- 3) Installation, testing and commissioning.
- 4) Earthing of glands and armour.

Cables buried underground will be measured on the basis of unit length and paid for unit rates and shall includes.

- 1) Excavated and backfilling as described above.
- 2) Sand for cushioning and protective bricks.
- 3) Cable route markers.

C.T.S. Wiring :

Scope :

The scope of work shall cover supply, installation, testing and commissioning of all C.T.S. wiring work. All size of teak-wood battens should be varnished before fixing on the wall. The batten should be from good teakwood battens and should not have any knot in between, varnishing of batten is to be done on all sides. As far as possible overlapping of the battens should be avoided by providing the bridge. The wires should be fixed with appropriate types of tinned brass joint clips at every 2” to 2.5 distance. The teak-wood wires shall be fixed nettlefold screws and not by nails. Earthing wires shall be stranded copper conductor with Green / Yellow – Green colour insulation of 440 V Grade.

Conduits Wiring :

Scope :

The scope of work shall cover supply, installation, testing and commissioning of all conduit wiring. All works shall be carried out as per NEC.

Standards :

The following standards and rules shall be applicable :

- 1) IS : 732 : Code of Practice for Electrical Wiring installation
(System voltage not exceeding 650 V)
- 2) IS : 1646 : Code of Practice for fire safety of buildings
(General Electrical installation (Part II).
- 3) IS : 9537 : Rigid steel conduits for Electrical wiring (Part II)
- 4) IS : 2667 : Fittings for rigid steel conduits for Electrical
Wiring.
- 5) IS : 3480 : Flexible steel conduits for Electrical Wiring.
- 6) IS : 3837 : Accessories for rigid steel conduit for Electrical
Wiring.
- 7) IS : 694 : PVC insulated cables.
- 8) IS : 9537 : Rigid non-metallic conduits for Electrical Wiring.
- 9) IS : 6946 : Flexible (pliable) non-metallic conduits for
Electrical Wiring.
- 10) IS : 1293 : 3 – Pin plugs and sockets.
- 11) IS : 8130 : Conductors for insulated electric cables and
flexible cods.
- 12) IS : 5133 : For switch boxes and other conduit accessories.
- 13) Indian Electricity Act 1910 and Amendments issued thereunder.

14) Regulations for the electrical equipment in buildings issued by the Mumbai Regional Council of Insurance Association of India.

15) NEC.

Rigid and Flexible conduits.

All conduits shall be heavy gauge black enamelled mild steel or galvanised steel or as specified in schedule of works. Conduits shall be with ISI mark.

Flexible conduits shall be formed from a conditions length of spirally wound inter locked strip steel with a fused zinc coating on both sides. The conduit shall be terminated in brass adaptors.

Accessories :

Conduit fittings such as bends, elbows, reducers, chase, nipples, split couplings, plug, etc., shall be specifically designed and manufactured for their particular application. All conduit fittings shall conform to IS : 2667 – 1964 and IS : 3887 – 1966. Conduit bends and elbows shall not be used. Instead, wherever bending is required, the conduit shall be properly bent using the bending machine. Only in unavoidable conditions, use of bends and elbows may be permitted.

Cast iron round junction boxes used for light and fan points shall be normally 75 mm. deep in case of slabs and 50 mm. deep in case of walls. Bottom of the junction boxes shall be flush with wall / bottom of the slab. The fabricated junction boxes shall be 1.60 mm. thick and of suitable dimension and minimum 75 mm. deep. Other dimensions shall be as per IS:5133. These boxes may be used for light / bell point in walls. These boxes shall be galvanised M.S. boxes. Check nuts shall be used on either side of the box for conduits. At conduit entry, bushes shall be provided to avoid cutting of insulation of wires.

Notes of Concealed Conduiting :

- 1) Routing of concealed conduits Location of conduit drop or rise in walls, location of junction boxes, vertical surface conduit runs in shafts etc. Wherever shown on the drawing is schematic only. Adjustments / Re-routing of the same shall be carried out by the Contractor to suit layout of lighting fixtures, ceiling fans, receptacles, telephone outlets, TV outlets room switch boards etc., shown on relevant drawings and to suit site conditions.
- 2) Passing of embedded conduit through columns for any reason whatsoever is totally prohibited, except in any of the really unavoidable situation, where Structural Consultants express permission in wiring will be a must before so doing.
- 3) Cross over of embedded conduit in slab, except at locations unavoidable should not be done, in case of cross-over of conduits where it is a must, the contractor shall obtain the specific permission for the location of cross-overs from the Consultant prior to concerning the slab.
- 4) Conduits droppers in columns shall not be permitted.

- 5) Concealed conduit running along the length of beam is to be avoided. Suitable conduit sleeves shall be provided in lintel beams where conduit droppers are required to be extended through such beams.
- 6) Standard typical details shall be referred for concealed conduit routing through sunk slab through staircase, walls, etc., and for provision of junction boxes, wherever required.
- 7) Conduit routing at Lift Machine Rooms and at Lift Wells shall be installed in consultation with Elevator Contractor.
- 8) The Contractor shall select the routes of surface conduiting in such a way that embedded conduits laid during civil works need not be punctured. In case embedded conduits get damaged, it shall be the responsibility of the Contractor to rectify the defective work at his own cost.
- 9) All conduit shall be of 25 mm. nominal bore except specified otherwise.
- 10) Bending radius of concealed conduit shall not be less than ten times the outside diameter of the conduit. Maximum distance between two junction boxes shall not be more than four meters.
- 11) Cast iron junction box for fan hooks shall be at appropriate location so as to avoid interference.
- 12) Conduit sleeves with threaded projections (50 mm.) shall be provided at suitable locations in Auxillary Beams, Lintel Beams to facilitate extension of conduits in walls.
- 13) Junction boxes, conduits etc., shall be suitably tied to reinforcing bars in slabs to avoid displacement and misalignment. Minimum 25 mm. thick concrete cover around conduit / junction box shall be ensured.
- 14) To facilities pulling of wires / cables, pull-out wires shall be provided in each length of conduit to be concealed. Also all open faces of junction boxes and open ends of conduits shall be suitably plugged or covered by the Contractor with care to avoid ingress of stones / sand / concrete mix etc. into junction boxes / conduits during pouring of concrete. Similar care must be taken at the locations where couplers etc., are used for extension of conduit.
- 15) During civil works, Contractor shall arrange to provide conduit sleeves (of adequate size and adequate in number) at ceiling level or walls for the passage of surface – conduits so as to avoid routing of conduits along the beam contours at a later stage. Co-ordination in this regard shall be Contractor's responsibility.
- 16) Supply and installation of 150 mm. / 250 mm. dia. Hume pipes for main power cable, for earthing conductors and for direct line telephone cables shall be in Contractors scope. These pipes shall be laid in typical standard details as directed to avoid damage to these pipes.
- 17) Two Nos. earth electrode stations shall be provided for general earthing system of the buildings to be located to suit site conditions. Distance between two earth electrode stations shall not be less than 3.5

meters and that between the outer edge of plinth protection of the building and earth electrodes shall not be less than 2.00 meters.

Wiring :

All wires shall be single core stranded copper PVC insulated to IS: 694 and shall be 1100 V Grade. All wires including earth wire shall be terminated using crimping type ferrules or lugs. Earthing shall be of stranded copper conductor with Green or Yellow Green insulation of 440 V Grade with ISI Mark.

All wires shall be colour coded as follows:

<u>Phase</u>	<u>Colour of Wires</u>
R	Red
Y	Yellow
B	Blue
N	Black

Earth Green (insulated) (if any) Grey.

All wires shall be with ISI Mark.

Installation :

All works shall be carried out as per National Electrical Code. The size of conduits shall selected in accordance with the number of wires permitted table given below :

Note : Even though 20 mm. dia. conduit is indicated in the table.

Contractor has to use minimum size of the conduit of 25 mm. dia. unless otherwise indicated. Size of wires shall be not less than 1.5 sq.mm.

Nominal Cross Section & Area (Sq.mm.) of wire.	20 mm.	25 mm.	32 mm.	40 mm.	No. of Strands Dia. in mm.
1.50	6	10	14	---	3/0.80
2.50	5	10	14	---	3/1.04
4.00	3	6	10	14	7/0.85
6.00	2	5	9	11	7/0.04
10.00	---	4	7	9	7/1.35
16.00	---	2	4	5	7/1.70

The above table is applicable for both straight as well as deviated runs.

Conduits shall be kept at a minimum of 100 mm. from the pipes of other Services such as T.V., Telephones etc., Pull / Junction Boxes shall be provided for straight conduit runs of more than 10 meters and also for deviated runs with more than 3 Nos. of 90 bends.

Separate conduits / raceways shall be used for

- 1) Normal lights, and 5 A – 3 pin sockets on lighting circuits.
- 2) Power outlets : 15 A – 3, 20/A 30 A 2 pin + scraping earth metal clad socket.
- 3) Separate conduit runs shall be used for incoming and outgoing circuits. 4) Wires of various circuits but of different phases.

Conduits runs in the slab shall be properly laid, fixed to the reinforcement bars, before concreting of the slab all conduit entries shall be properly blocked or sealed to avoid ingress of concrete slurry.

For vertical conduits drops in the wall proper chasing shall be carried out and conduit laid and fixed, chase restoration shall be done after installing the 24 SWG G.I. wiremesh over the chase and after which plastering shall be carried out to give a neat smooth finish.

As far as possible horizontal chase in the wall shall be avoided. If unavoidable, it shall not exceed 300 mm.

All final branch circuits for lighting and appliances shall be single core stranded copper conductor cable run inside conduits. The conduits shall be properly threaded and screwed into sockets junction boxes etc. or fixed properly, using epoxy resin, in case of PVC pipe. The exposed threading shall be given a coat of rust inhibiting chemical / paint.

Branch circuit conductor sizes shall be as shown in schedule of quantities and / or drawings.

Final branch circuits shall preferably be kept in a separate conduit upto branch distribution boards. No other wiring shall be bunched in the conduit except those belonging to the same phase. Each lighting branch circuit shall not have more than ten (10) outlets or 800 watts whichever is lower.

Flexible cords for connections to appliance, fans and pendants shall be 650 / 1100 V Grade (three or four cores i.e. with insulated neutral and earth wires of the same size) with stranded copper wires insulated twisted and sheathed. Colour of the sheath shall be subject to Architect's approval.

Looping system of wiring shall be used. Wires shall not be jointed. Where joints are unavoidable they shall be made through approved mechanical connection. Earth wire shall be provided for all light, fan, bell and socket points, control switches having marking for light or fan as required shall be connected in the phase conductors only and shall be ON when knob is down. Unless otherwise stated, switches shall be fixed in 3 mm. white colour Hylam sheet on M.S. Boxes with cover plate as specified. Chromium plated brass screws shall be used. M.S. switch boxes for switch board shall be of sufficient dimensions to accommodate required no. of choke type fan regulators for flush mounting or electronics regulators as the case may be.

M.S. Boxes shall be fabricated from 1.6 mm. thick M.S. sheet and shall be galvanized. Switch boards accommodating 3 or more than 3 switches shall be provided with slide-in fuse holder of 10 Amps. Rating and proper rating fuse-wire.

Power wiring shall be distinctly separate from lighting circuit, M.S. conduits not less than 2.5 mm. and

wires not less than 2.5 sq.mm. shall be used for power wiring. Wire size for circuits will be as per schedule of quantity.

Testing :

The entire installation shall be tested for :

- A) Insulation resistance.
- B) Earth continuity.
- C) Polarity of single pole switches.

A test certificate shall be submitted in the Format, in triplicate as required / specified by the Electric Supply Company / M.S.E.B.

Point wiring rates shall include, but not limited to supply and installation of the following items.

PVC heavy gauge or M.S. conduiting embedded CONCEALED type or exposed SURFACE type as called for, branch and sub-circuit wiring with all items such as fabricated junction boxes, conduit fittings and accessories such as couplers, bends, tees, nipples, spacers, saddles, pull-out wires (2 mm. G.I. Wire), hardware, ceiling fan boxes to be embedded in the ceiling etc. Supports for exposed surface conduits shall be at an interval of 750 mm. for vertical run and at the interval of 450 mm. for horizontal run.

Recessed type M.S. covers as specified for various items such as room switch boards, receptacle board or light switch board etc. Housing with knock outs shall be tailor made or as specified to accommodate all switches, sockets, outlets, fan regulators, etc., as necessary for a particular location.

PVC insulated, unsheathed, stranded copper wires for phase, neutral and earth for branch circuits, for sub-circuits and for point wiring, cable, / wire upto lamp holder.

SP or DP or TPN / MCBs / ELCBs individual switches and accessories.

All consumables such as insulation tape, hardware, pipe sleeves and any other item not specified but required for completion of point wiring.

All work in complete wiring of a switch circuit of any length from the D.B. to the following via the switch board.

- 1) 3 Plate ceiling rose.
- 2) Connector.
- 3) Blank Plate.
- 4) Socket.
- 5) Lamp holder – Angle / Straight.
- 6) Fan boxes, hooks.
- 7) Any other terminal outlet.

All metal boards and boxes sunk or surface mounted.

Supply and installation of this item of work shall comply with all above requirements in coordination with the construction of civil works for provision of sleeves in walls / beams / slab and for laying embedded junction boxes / inspection boxes / pull out boxes / pull out wire etc. as required.

Earthing :

Scope :

This item of work is required for providing the earth-pits for electrical power network and also for lighting protection network. Earth pits for power network and lighting protection network shall be separate from each other without any interconnection. However, all Earth pits for power supply shall be interconnected with each other through buried earth conductors, similarly all earth pits for lighting protection shall be connected with each other through buried earth conductors. Spike earthing for St. Light poles is also covered. Each down common conductor of lighting protection network shall be terminated to a separate earth electrode pit through testlink.

Standards :

The following Standards and rules shall be applicable

- 1) IS : 3043 – 1987 Code of Practice for earthing.
- 2) Indian Electricity Act and Rules Electric Supply Co.'s Rules. 3) NEC.
- 4) IS : 2309 – Protection of building and allied structures against lightning.

All codes and standards mean the latest. Where not specified otherwise, the installation shall generally follow the Indian Standard Code of Practice. In the absence of Indian Standards, the relevant British Standard Codes shall be followed.

General Requirements :

- 1) The earthing shall generally carried out in accordance with the requirements of I.E. Rules as amended from time to time and relevant regulations of B.E.S.T / Electric Supply Company, If Rules No. 32, 51, 61, 62, 67, 69, 88(2) and 90 are particularly applicable.
- 2) All earth connections shall be carefully made visible for inspection and testing of individual earth electrode shall be possible.
- 3) The earthing electrode shall be away at a minimum distance of 2 mt. From the outer surface of plinth protection / Diaphragm wall in case of basements. A minimum clearance of twice the depth of electrode shall be maintained between two earth stations. Wherever adequate distance cannot be maintained due to site constraints. The decision of the Architect / Consultant will be final and binding.

- 4) A brick masonry chamber cement plastered from both inside and outside shall be provided on the top of the each earth station to house the funnel for watering and the earth connection. The size of this chamber will be 300 mm. x 300 mm. deep. The chamber will be provided with a lockable cast iron cover hinged to the C.I. frame embedded in the top portion of the masonry wall, by providing spikes for grouting. Lock with key shall be supplied for each pit. The top of the masonry chamber shall be 50 mm. above the surrounding G.L.
- 5) The earth conductor from electrode shall be taken out of the masonry chamber through a protecting pipe embedded in the masonry laid atleast 250 mm. below the ground level.
- 6) Earthing system shall be mechanically robust and the joints shall be capable of retaining low resistance even after passage of fault currents / strokes.
- 7) Joints shall be welded / soldered / tinned and double rivetted. All the joints shall be mechanically, electrically continuous and effective, joints shall be protected against corrosion by giving suitable treatment duly approved by Architect.
- 8) Contractor shall use the layout drawing issued by the Architect / Consultant for guidance only. He shall submit working drawings for approval of the Architect prior to execution of the work. He will thereafter submit as built drawings for conductor route showing locations of earth pits etc., for final records and reference after executing the work.
- 9) Contractor shall use the schematic layout drawings for the quantity and route of the conductor issued by Architect / Consultant for guidance only. He shall work out the exact quantity of earth conductors with its associated accessories required for the job.

Earth Electrodes :

- 1) The materials of earth electrode and earth conductors shall be galvanised iron unless specified otherwise in the bill if quantities, specifications or drawings.
- 2) The earth electrode shall be free from paint, enamel, grease etc.
- 3) The earth electrode shall be embedded as far as possible in the moist soil and below permanent moist level.
- 4) Earth electrode shall not be installed in the proximity of a metal fence.

Types of Earth Electrodes :

The earth electrode shall be either a pipe electrode or plat electrode, as detailed in schedule of quantities. Plate electrodes shall be used for sub-stations and large medium voltage network and pipe electrodes for small medium voltage network and installations.

Pipe Electrode :

- 1) Pipe Electrode shall consist of 2.50 meter long single piece heavy duty G.I. pipe of minimum 40 mm. N.B. and shall be cut tapered at the bottom. 12 mm. dia. holes in a staggered manner shall be frilled on the pipe as per IS : 3034.
- 2) This Electrode shall be buried vertically in a specially prepared earth pit of size 30 cm. x 30 cm. and the earth pit shall be filled with alternate layers of charcoal, salt and fine washed sand with a minimum thickness of 150 mm. for each layer. A funnel with wiremesh inside shall be fixed to the top of G.I. pipe for watering purpose.
- 3) The earth conductor of 50 mm. x 6 mm. G.I. strips shall be connected to the electrode just below the funnel with proper terminal lugs, check nuts the other end of this 50 mm. x 6 mm. strip shall be terminated through a removable test-link, on the earth bus at meter room. Test link is to be provided in masonry chamber.
- 4) Details of chamber etc., have been already give below.

Plate Electrode :

- 1) The plate electrode shall consist of G.I. Plate of size 600 mm. x 600 mm. x 6.3 mm. as per B.O.Q. or drawings.
- 2) The electrode plate shall be buried vertically in a specially prepared earth pit which shall be dug up 2.50 M. deep from the ground level. The earth plate shall be placed in the earth pit with its faces vertical and embedded in the alternate layers of coal fine washed sand and salt with a minimum thickness of 150 mm.
- 3) The earth conductor of 50 mm. x 6 mm. G.I. strip shall be connected to the earth electrode plate with terminal lugs, the other end of this 50 mm. x 6 mm. G.I. strip shall be terminated through a removable test link provided in the masonry chamber, on the earth bus at meter room.
- 4) A 20 mm. G.I. pipe heavy gauge, shall be provided from the masonry chamber upto the top earth late for watering purpose. The G.I. pipe shall be provided with a funnel having wiremesh inside for watering.
- 5) Details of masonry chamber etc. have been already give above.

Simple Pipe Electrode for earthing individual Street Light Poles etc. with chamber :

- 1) Pipe Electrode shall consist of 2.50 meter long single piece heavy duty G.I. pipe of minimum 40 mm. N.B. and shall be cut tapered at the bottom. 12 mm. dia. holes in a staggered manner shall be frilled on the pipe as per IS : 3034.

- 2) This Electrode shall be buried vertically in a specially prepared earth pit of size 300 mm. x 300 mm. and 3 M. deep. The pit shall be filled with alternate layers of salt, charcoal, salt and fine washed sand, with a minimum thickness of 150 mm. for each layer.
- 3) The earth conductor of 25 mm. x 5 mm. G.I. strips shall be connected to the electrode just below the top with G.I. nuts and bolts and spring and flat washers with check-nuts. Other end of this earth strip shall be connected to the equipment to be earthed using suitable lugs for termination at both ends, etc.

Sub-Station Earthing :

In case of Sub-Stations, large installations and wherever specified earth electrode shall be 600 mm. x 600 mm. x 3.15 mm. copper plate. The earth lead shall be connected to earth plate, using termination lugs and brass nuts, bolts and washers, masonry chamber details being as given above, including heavy duty 40 N.B. G.I. Pipe, funnel for watering etc.

Earth leads and connections :

Earth lead shall be either bare copper or aluminum or galvanized steel as specified with sizes in the B.O.Q. Copper lead shall have a phosphor content of not over 0.15% aluminum and galvanized steel buried in ground shall be protected with bitumen and hessian wrap or polythene faced hessian and bitumen coating. At road crossings necessary hume pipes shall be laid. Earth lead run on surface of wall or ceilings, columns, beams etc., using G.I. spacers of minimum 6 mm. thick and saddles. The complete earthing system shall be mechanically and electrically continuous and robust and should provide an independent return path to the earthing source.

Testing of Earth-Stations / Pits :

After the erection of Earth-Stations is complete, Contractor should arrange for an earth-tester, carry out earth-resistance test (- average of 4 – readings -) in the presence of the Clients representative and records the results.

For substation earth-stations, the resistance of each earth station should not exceed 0.5 ohms.

For other earth-station, it shall be less than 0.2 ohms.

In case of higher resistance values, either the electrode shall be driven of more depth or to construct additional earth-pit assesblies at a distance minimum three meter apart to achieve the combined resistance less than or equal to the desired results as stated above.

Sizes of the G.I. Strips to be used :

- 1) 50 mm. x 6 mm. G.I. earth strip shall be used for connecting the earth-bus at meter room / meter box of chamber to be earth electrode pit.
- 2) 40 mm. x 6 mm. G.I. strip shall be used for interconnection of earth pits by directly buried underground system to a minimum depth of 600 mm. to form an earth grid.

- 3) 20 mm. x 3 mm. G.I. earth strip shall be used for connections between earth-bus and S.F. / M.C.B. / M.C.C.B. / E.L.C.B. units at meter room. Two pole units shall be connected with one such earth strip and three or four pole units shall be connected by two such earth strips.
- 4) 32 mm. x 6 mm. G.I. strip shall be used for horizontal air-termination network at terrace / roof level and for down covers to bond with earth-electrode pit through test-link.
- 5) The overlapping of strips at joints where necessary, shall be 75 mm. (minimum). The joints will be double riveted and then welded and painted with silver paint.

Equipment Earthing :

All apparatus and equipment transmitting or utilizing electric power shall be earthed in the following manner. Copper earth wires / strips shall be used where specified in B.O.Q.

1) **Power transmission apparatus :**

- a) Metallic conduits shall not be accepted as an earth continuity conductor. A separate insulated earth continuity conductor or bar of the size 50% of the size of the phase conductor subject to the maximum as given below shall be provided.

Copper

Galvanized Iron

Minimum 2.5 Sq.mm.

6 Sq.m..

Minimum 6.5 Sq.mm.

200 Sq.m..

The earth continuity conductor may be drawn inside the conduit in which case it should be insulated.

- b) Armour of the cables shall be earthed by two distinct earth connections at both the ends to the armouring, the size of the connection being as for the metallic conduit.
- c) In case of unarmoured cable, an earth continuity conductor shall either be run outside along the cable or should form a separate core of the cable.
- d) 3 phase power panels and distribution boards shall have two distinct earth connections of the size co-related to the incoming cable size. In case of single phase D.B.'s and isolating switches 1 earth connection and in case of 3 phase, two distinct earth connections shall be provided, sizes being co-related to the sizes of incoming cables.

Testing :

The following earth resistance shall be measured with an approved earth-tester and recorded.

- 1) Earth resistance of each earth station.
- 2) Earthing system as a whole.
- 3) Earth continuity conductors.

Prohibited Connections :

Use of following as earth conductor is strictly prohibited for earthing an installation or ever as a link in the earthing system.

Neutral conductor, sprinkler pipes, gas pipes, water pipes, structural steel work, metallic enclosures or armour of cables and conductors, metallic conduits lighting protection system conductors are all prohibited to be used earth conductor.

Mode of measurement – as per schedule of quantity. However, the cost of earthing the following items shall become part of the item itself and no separate payment / rate of earthing these items shall be made.

- a) Motors – earthing forming part of cabling / wiring for the motors.
- b) Isolating switches and starters shall form part of mounting frame, switch starter etc.
- c) Fan lightings, Exhaust fan fittings Light fittings – These shall form part of installation of these fittings only.
- d) Conduit wiring cabling – shall form part of the wiring or cabling.
- e) Street Lighting – should form that of the street light pole.

External Lighting :

The scope of the work covered the supply, installation and testing and commissioning of lighting poles, wiring to the fixtures, cable laying as specified and shown on drawings / B.O.Q. etc. All work shall be carried out as per NEC.

Standards :

The following standards and rules shall be applicable :

- 1) IS : 1913 – 1969 : General and safety requirements for light fittings.
- 2) IS : 1944 – 1981 : Code of Practice for Lighting Public through fares.
- 3) IS : 3528 – 1966 : Water Proof Electric Lighting fitting.
- 4) IS : 2713 – 1978 : Swaged type tubular poles.

- 5) IS : 2149 – 1970 : Luminaries for street lighting.
650 V.
- 6) Indian Electricity Act & Rules.
- 7) N.E.C.

All codes and standards mean the latest. Where not specified otherwise, the installation shall generally follow the Indian Standards Codes of Practice or the British Standard Codes of Practice in the absence of Indian Standards.

Lighting Poles :

The lighting poles shall be fabricated from heavy duty cold rolled street tubes to IS:2713 and hot dip galvanized or painted as specified. The pole shall have M.S. base plate and Junction Box a large access panel shall provide easy access to multiway porcelain connector and fuse board to be mounted inside the Junction Box. The access shall be specially fabricated with adequate reinforcement and weather gasket to prevent ingress of moisture and vermin proofed. Poles shall have large diameter entries for incoming and outgoing cables and two earth studs. The contractor shall make a drawing and have it approved before fabricated.

Cable Laying :

Cable shall be generally laid as specified in section “Cabling” cable shall be terminated in a 4way terminal block inside the pole of attached therewith. Contractor shall mark out the cable route and got it approved before laying the cables.

Earthing :

All street lighting fixtures and poles shall be earth as specified under section “Earthing”

Mode of Measurement :

Each light fitting with lamp, control gear, earthing etc., shall be considered as one unit for measurement and payment. Each lighting pole, concreting, coping, base plate, earthing etc., shall be considered as one unit for measurement and payment. Wiring from terminal block to the light fitting shall be considered as one unit for measurement and payment. All cabling work shall be measured on the basis of unit length for supply and installation. The excavation and backfilling of cable trench, cable-termination in Junction Boxes or Terminal Box of the pole etc., shall not be measured separately.

Power Panel Boards :

The salient features of construction of power panel boards shall be as follows :

- 1) Construction : Totally enclosed, dust and vermin proof conforming to IP-54 of IS:2147, free standing, floor mounting, single front compartment, cubicle extensible type at both ends.

- 2) Welded shall be fabricated with shipping sections bolted together. All such joints to be gaskets. Lifting lugs shall be provided.
- 3) Panel shall be fabricated out of CRCA Sheets 1.6 mm. thick for front and rear doors and cover. Bottom and top of the panel for cable glands and component, mounting plates shall be fabricated out of 2 mm. thick CRCA Sheets. Frame work – 2 mm. thick.
- 4) All doors to be hinged type except bus-bar chamber which shall be bolted type. Panel shall be flush door design suitable for access from front.
- 5) Fabricated panel shall undergo seven tank process and two coats of primer before giving Epoxy resin paint finish. Final colour shall be Shade No. 631 of IS:5. No welding or drilling shall be done on the panel after final painting.
- 6) Vertical bus-bars will be red from main horizontal bus-bars located at top. Panel compartment, bus-bar chamber and cable alley will be operated from, front. Depth of MCCB panel shall be 1000 mm. and the width of it shall be 7000 mm. The depth of the other section shall be minimum 500 mm. and width shall be 500 mm. vertical bus-bar chamber and cable alley width shall be 300 mm. Height of earth bus-bar chamber at the bottom shall not be less than 150 mm. Total height of the panel shall not exceed 2400 mm. Foundation channel shall be provided at the bottom and shall be of type MC 1000.
- 7) Bus-bars shall be electrolytic grade aluminum suitable for the current capacity as per BOQ and shall be supported by high quality FRP insulator of SMC type, to withstand short circuit of 500 KA at 415 Volts. Bus-bars shall be provided with heat shrinkable PVC sleeving with R, Y, B and neutral colour coding for identification. All bus-bar connections (nuts and bolts) shall be accessible so that they can be checked with normal tools.
- 8) In a blank compartment provided at the bottom, G.I. earth bus-bar of 50 mm. x 6 mm. run through entire length shall be provided and project outside in vertical. Formation with facility for connection earth strip at either terminals on opposite sides to connect external earth conductor. All accessible live terminals / portion of components shall be provided with shrouds.
- 9) Separate compartment shall be provided for each three phase feeder. Each feeder compartment shall be provided with three pilot lamps with red lens on each for indication of power supply.
- 10) Indicating lamps shall be panel mounting type with filament or Neon lamps. Filament type lamps shall be provided with series resistors to prevent short circuiting of control supplies on fusing of lamps filaments. The lens shall be easily replaceable from the front.

11) **Indication Instruments and Meters** :

These shall be provided as per BOQ and shall be 96 mm. square size suitable for flush mounting and zero adjustment from outside. All meters except KWN meter shall be AE make. KWN meter shall be GEC / IMP make.

- 12) Current transformers shall be bar primary cast type or dry type, and shall have short-circuit time withstand rating equal to that of associated switchgear for 1 sec.

13) **Push Buttons** : The push buttons shall be of the momentary contact to actuate for 10 Amp. At 240 V AC and 2200 V.D.C., provided with integral inscription plates engraved with their functions. They shall have required “NO” and “NC” contacts. Only “Siemens” or E.E. Push Buttons shall be used.

14) All HRC switch Fuse Units, Contactors, single phase preventive and O/L relays, indicating lamps will be only “Siemens”, “English Electric” or “Havells” Brands only.

15) **Control and Selector Switches** :

The control switches and selector switches shall be of rotary type having enclosed contacts, adequately rated for application but with a minimum rating of 10 Amps, at 2400 V AC and at 220 V.D.C. the plates shall have clear position markings, control switches shall have momentary contacts, spring return to centre, with pistol grip handles, instrument and selector switches shall have stay-out contacts with oval knurled handles.

16) **Name Plates** : Main name plate shall be fixed at the top centre, name plate giving feeder details shall be provided and are to be fixed by screws. All labels / name plates shall be black plastic with white engravings of letters or minimum 6 mm. size.

17) **Internal Wiring** : All internal power wiring shall be done either stranded PVC Copper wire 2.5 sq.mm. size 1000 V Grade or strips of insulated copper conductor of adequate size.

Small wiring for control circuit shall be done with stranded Copper wire PVC conductor 1100 V Grade.

Each end of control cable shall be provided with identification Ferrules Yellow in colour with black letters.

All wiring shall be terminated on stud type terminal blocks through crimping sockets. Not more than 2 connection shall be made on any one terminal block. All spare auxiliary contacts of contactors shall be wired to terminal block.

18) **Terminal Blocks** :

Terminal blocks for power and control wiring shall be of reputed make stud type, with washers, nuts, and lock nuts, and identification mark. All adjacent terminals shall have insulating barriers. All power terminal blocks shall be rated for a minimum current of 300 Amps. Terminal blocks for controls and instrument circuit shall be rated for minimum 115 Amps., and shall be suitable to receive 100 Sq.mm. conductor. All sets of power control power terminal blocks shall be identified with engraved plastic labels, black background and white letters.

19) **Cable Terminators** :

Double compression type of brass cable glands mounted on gland plates shall be provided to receive and support all power and control cables entering the switchgear. Size of the cable gland shall be suitable for cables entering the switchgear. Cable gland shall have earthing facilities for earthing armour of the cable.

20) **Tariff Advisory Committee and CPRI Tested** :

The switchgear shall be approved by the TAC for fire insurance and CPRI tested for shortcircuit test and enclosures test.

21) **Tests** :

Following tests shall be performed before shipped the switchgear panels to Site :

- 1) high Voltage Test at 2.5 KV.
- 2) Insulation Resistance test before and after H.V. test, using 1000 V Meggar.
- 3) Operational Test.
- 4) Three sets of Test Certificates to be submitted.

22) **Documentation** :

Contractor shall arrange to get from Manufacturers and shall supply following drawings in quadruplicate for approval before starting manufacturing operations within 4 weeks from the LOI / date of order.

- a) General Agreement Drawings.
- b) Scheme and Wiring Diagram Drawings.
- c) Instructions and Service manual for all the Components.

Approval of drawings by Clients / Consultant does not relieve the contractor of the “Performance” of the panels.

After supply and installation and commissioning of the panels and switches Contractor shall submit 6 sets of the above documents of as built in panels.

23) **Air-Break Switches** :

For all places in this project : Metal Clad.

- 1) The air-break switches shall be of AC 23, heavy duty, quick make-quick break type as per IS : 4047.
- 2) Switches shall be capable of withstanding the mechanical and thermal stresses produced by overloads and short-circuits.
- 3) All switches of all rating shall have interlocks with the compartment doors. Switches 250 A and above shall be lockable in “OFF” position. All live parts shall shrouded. It shall be possible to intentionally defeat the interlocks if required.
- 4) Red indicating lamps shall be provided for “ON” indication.
- 5) Brands : Only L & T, Siemensm English Electric, Hevels, controls and switchgear brands to be used.

The switches shall have the following standards rating :
32, 63, 100, 125, 200, 250, 300, 400 and 600 Amps.

24) **Fuses** :

The fuses shall comply with the following :

- 1) HRC Cartridge Fuse : Link type with carriers.
- 2) Certified rupturing capacity not less than 46 KA at 415 Volts A.C .as per IS : 2000.
- 3) All fuses shall have visible indication to indicate “Blown” condition.
- 4) Pressure clamp terminals for wires upto 4 sq.mm. and bolted lugs for higher ratings.
- 5) HRC Fuses:Make : E.E., L & T, Siemens, Havells.
- 6) Fuse Puller: Contractor shall supply 3 sets of Fuse Pullers.

25) **Moulded case circuit breakers** :

M.C.C.B.

- 1) The M.C.C.B.'s shall be 4 pole construction wherever specified and shall have independent Manual opening and closing mechanism of quick make, quick break type and they shall be trip free in operation. “ON” , “OFF” and “TRIP” mechanism shall be clearly indicated.
- 2) They shall conform to IS : 2516.
- 3) Bolted type neutral link will be provided with T.P. M.C.C.B. only.
- 4) It shall be possible to mount accessories on the M.C.C.B's like shunt trip, U.V. release, alarm contacts etc.
- 5) The M.C.C.B.'s shall have adjustable thermal / static trip devices.

26) **Contactors** :

- 1) The Motor starter contactors shall be of electro-magnetic type double break, non-gravity type rated for uninterrupted duty suitable for operation under AC – 3 utilization category of as per IS : 2959. The contacts shall be silver plated.
- 2) 2 Nos. and 2 NC auxiliary contacts shall be included.
- 3) The operating coils shall have Class “E” insulation of wire and shall be suitable for operation of any specified control supply systems.

27) **Thermal overload Relays :**

- 1) These shall be 3 elements, positive action, ambient, temperature compensated with a time lag and adjustable settings.
- 2) The setting range shall be selected according to the ratings of the motor.
- 3) The relay shall be self – reset type / hand reset type. The reset button in case of hand reset type – shall be fixed on the compartment door.
- 4) The relay shall have atleast on “NO” and one “NC” or changeover contact or as per requirements.

SPECIFICATIONS OF HVAC WORKS WORKS

1. General:

- 1.10 Without forgoing the requirements of the Conditions of Tender and the Conditions of Contract the works in general shall confirm to the "Latest Specifications" published by CPWD, New Delhi and the "Specifications for Works" stated in this tender. In case of items not covered by the General Specifications referred above, reference shall be made to the appropriate I.S. Code. If there is any difference in the particular specifications of individual item of work and the description of item as given in the Schedule of Quantity, the latter shall prevail. In case of any work for which there is no specification in I.S. Specifications or in the specifications forming part of tender documents or in case there is any variation, such work shall be carried out in all respects in accordance with the instructions to be issued by the ARCHITECTS. The term Department shall mean the Employer. Any reference to ISI shall also mean reference to its successor Bureau of Indian Standards. All corrections to "Latest Specifications" or revisions of I. S. shall be deemed to apply to this contract.
- 1.11 Materials bearing ISI certification mark shall be given highest preference for use in the works.
- 1.12 Where the Contractor is required to do, perform, execute (etc.) any work or service or the like, it shall be deemed to be at his own cost. Absence of terms providing supplying, installing, fixing, etc. shall not even remotely entitle the Contractor to any additional payment thereof.
- 1.13 The rates accepted in the Schedule of Quantities apply to all floors, heights, depths, leads, lifts, spans, sizes, shapes, locations, etc. unless a distinction has been included in the very Schedule.
- 1.14 The Specifications and the Schedules may have been divided into various sub-heads for convenience only. This does not limit applicability of one to the other nor it absolves the Contractor of his responsibility to complete any trade/item of work as reasonably inferred from one or more of such sub-heads.
- 1.15 The Schedule of Quantities is not necessarily based on "Schedule of Rates" later/earlier versions. Hence the Schedule of Quantities shall be read and construed according to explanations given herein and intentions gathered therefrom. A mere parallel drawn from the said Schedule of Rates shall therefore not form a basis for a variation and, or additional payment.
- 1.16 All work under this contract is deemed to be performed above subsoil water level. However, removal of water collected from rains and the like shall be treated as part of contractual risk/obligation.
- 1.17 Screws, bolts, nuts, washers, hold fasts, lugs, anchors, clamps, plugs, suspenders, brackets, straps and fasteners of the like are deemed to be included in the rates of various items unless the Schedule of Quantities expressed a different intention.
- 1.18 Resetting any displacements, making good holes/chases and such other incidental jobs are included in rates of respective items for which these are required.

SPECIFICATIONS FOR SERVICES

1.0 General

- 1.1 The drawings for services are diagrammatic but shall be followed as closely as actual construction permits. Any deviations from the drawings shall be in conformity with structural drawings. The dimensions designated by the manufacturers shall take precedence over the drawings.
- 1.2 At completion of work the Contractor shall submit one set of tracings and two sets of prints of "As-Built-Drawings". These drawings shall, among others, include invert levels, pipe runs, diameters, location of valves, access panels, layout of equipment, piping connections and such other information for maintenance & future extensions. Guarantees given by manufacturers shall be assigned to the Employer along with names & addresses of manufacturers, suppliers and information about spare parts.
- 1.3 All site test shall be carried out with prior intimation to the Bank Engineer / Architect. All defects shall be rectified and tests conducted again to the satisfaction of the Bank Engineer / Architect. In addition to the test required by the specifications, the Contractor shall also conduct tests required by the Architect and by the Municipal or other Authorities.
- 1.4 All work shall be executed by competent and licensed persons. The contractor shall maintain liaison with Municipal and other controlling Authorities. He shall obtain their approvals and certificates as required by the bye – laws at appropriate stages.
- 1.5 No cutting / chasing shall be done in load bearing structural members without prior approval of the Architect. Sleeves and openings shall be provided during the progress of construction in preference to cutting at later date.
- 1.6 The Architect may require typical mock up(s) to be installed in advance for approval. Undamaged materials from the mock up shall be allowed to be reused in the work.
- 1.7 Unless otherwise described in the item CI / SCI pipes and fittings shall be a spigot and socket type.
- 1.8 G.I. pipe spouts shall be paid as per item of G.I. pipes (internal work). Cutting and making good is included. The free ends may be skew-cut.
- 1.9 Wherever use of G.I. pipes is called for the same shall be medium class (class – B)

2.0 Materials :

- 2.1 The materials shall conform to the specifications and in absence thereof to Indian Standards. The products should bear the ISI Mark.
- 2.2 The makes of materials for use in this work are broadly approved as per list given below. The Contractor shall, however, get particular makes and samples approved before ordering:
- 2.3 Notwithstanding any interim or final approval the Contractor remains responsible for satisfactory performance of all fittings & fixtures. The liability of the Contractor is not limited by any approval of the make of materials.
- 2.4 The item rate of mirror includes extra packing piece of AC plain sheet, where required due to off set between plaster & glazed tiles surface.

3.0 Testing

- 3.1 The sand cast iron soil, waste and vent pipes and fittings including joints shall be tested by pumping smoke into the pipe at the lowest end.
- 3.2 All G.I pipes and fittings including joints shall be tested to hydraulic pressure of 6 kg / cm² (60 meters) avoiding water hammer. The test pump having been stopped the test pressure should maintain without loss for at least half an hour. The pipes and fittings shall be tested in sections as the work of laying proceeds keeping the joints exposed for inspection during the testing.
- 3.3 All stone ware pipes shall be tested with water pressure of 1.5m head of water at the highest point of the section under test.

SAFETY CODE

1. First aid appliances including adequate supply of sterilized dressing and cotton wool shall be kept in a readily accessible place.
2. An injured person shall be taken to a public hospital without loss of time, in cases where the injury necessitates hospitalization.
3. Suitable and strong scaffolds should be provided for workmen for all works that cannot safely be done from the ground.
4. No portable single ladder shall be over 8 meters in length. The width between the side rails shall not be less than 30 cm (Clear) and the distance between two adjacent rungs shall not be more than 30 cm. When a ladder is used an extra mazdoor shall be engaged for holding ladder.
5. Every opening in the floor of a building or in a working platform be provided with suitable means to prevent to fall of persons or materials by providing suitable fencing or railing whose minimum height shall be one meter.
6. No floor, roof or other part of the structure shall be so overloaded with debris or materials as to render it unsafe.
7. Workers employed on mixing and handling material such as asphalt, cement mortar or concrete and lime mortar shall be provided with protective footwear and rubber hand-gloves.
8. Those engaged in welding works shall be provided with welder's protective eye-shields and gloves.
9. I) No paint containing leads or lead products shall be used except in the form of paste or readymade paint.
ii) The workers should supply suitable facemasks for use when the paint is applied in the form of spray or surface having lead paint dry rubbed and scrapped.
10. Overalls shall be supplied by the contractor to the painters and adequate facilities shall be provided to enable the working painters to wash during the periods of cessation of work.
11. Hoisting machines and tackle used in the works, including their attachments, anchorage and supports shall be in perfect condition.
12. The ropes used in hoisting or lowering material or as a means of suspension shall be of durable quality and adequate strength and free from defects.

PROFORMA FOR RUNNING ACCOUNT BILLS

CERTIFICATE

The measurements on the basis of which the above entries for the Running Bill _____ were made have been taken jointly on _____ and are recorded at pages _____ of Measurement BookNo. _____.

Date & Signature of
Contractor.

Date & Signature of
SBI's Representative
(Seal).

Date & Signature
of Site Engineer

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

BANK's ENGINEER

RUNNING A/C BILL

Name of Contractor/Agency: _____
 Name of Work: _____
 Sr. No. of this Bill: _____
 No. and Date of Previous Bill. _____
 Reference to Agreement No. _____
 Date of Written Order to Commence. _____
 Date of Completion as per Agreement. _____

Sr. No.	Item description	Unit	Rate (Rs.)	As per Tender		Upto Previous R/A Bill		Upto Date (Gross)		Present Bill		Remarks
				Qty.	Amt. (Rs.)	Qty.	Amt. (Rs.)	Qty.	Amt. (Rs.)	Qty.	Amt. (Rs.)	
1.	2.	3.	4.	5.		6.		7.		8.		9.

Note: 1. If Part Rate is allowed for any Item, it should be Indicated with reasons for allowing such a Rate.
 2. If Adhoc Payment is made, it should be mentioned specifically.

Net value since Previous Bill.

Date & Signature of Contractor.

PERFORMA FOR APPLICATION BY CONTRACTOR FOR EXTENSION OF TIME

1. Name of the Contractor
2. Name of the Work as given in the Agreement
3. Agreement W O
4. Tender Amount
5. Date of Commencement of Work
6. Period allowed for Completion as per Agreement
7. Date of Completion as per Agreement
8. Period for which Extension of Time has been given

Date Month Year

- a) 1st Extension vide Bank's Letter No
- b) 2nd Extension vide Bank's Letter No
- c) 3rd Extension vide Bank's Letter No

9. Reasons for which extensions have been previously given (Copies of the previous applications should be attached)
10. Period for which extension is applied for and the reasons thereof including hindrances, time for extra work assigned, if any etc.

Signature of Contractor & Seal

PERFORMA OF HINDERANCE REGISTER

Name of Work : Date of State of Work :

Name of Contractor : Period of Completion :

Agreement No : Date of Completion :

Sr No	Nature of Hindrance	Date of occurrence of Hindrance	Date of which Hindrance was removed	Period of Hindrance	Signature SE / PE	Remarks
1	2	3	4	5	6	7

SE = Site Engineer

PE = Project Engineer

**ACCOUNT OF SECURED ADVANCE, IF ADMISSIBLE ON
MATERIALS HELD AT SITE BY THE CONTRACTOR**

No.	Item	Quantity	Unit	Amount	Remarks
1	2	3	4	5	6

Total Value of Materials at Site

Secured Advance @.....% of above Value B

CERTIFIED (I) That the materials mentioned above have actually been brought by the contractor to the site of the work and no advance on any quantity of any of this item is outstanding on their security, (ii) that the materials are of imperishable nature and are all required by the contractor for use in the work in connection with the items for which rates of finished work have been agreed upon.

Dated Signature of
Site Engineer
preparing the Bill

Designation_____

Dated Signature of
Bank's Engineer

Dated signature of Contractor

LIST OF APPROVED BRANDS / MAKES (CIVIL, PHE & INTERIOR)

One of the following make of the material shall be used. The contractor will have to get the sample approved from the Architect/ Bank's Engineer whose decision shall be binding on the contractor. The condition is also applicable for any material, not mentioned in the specification or schedule of work. No deviations are allowed in these even during/ after Tender:

S. No.	Item	Approved Make
1.	Cement (OPC and White)	L&T/ A.C.C./ Ambuja/ Ultratech
2.	TMT Steel Bars/ MS Steel Sections	TATA, SAIL, Jindal
3.	BWP/ Commercial/ Board/ Ply	Greenlam, Century, Duro, Archid
4.	Glass/ Mirror/ Toughened Glass	Saint Gobain, Modi Float Glass, TATA
5.	Prelaminated Board	Novapan, Archidply
6.	Laminates (1.00mm & 1.25 MM thk.)	New Mica Greenlam / Century/ Sky Decor Archid
7.	SS Railing	Dorma, Jindal Arc
8.	Paints & Primer	Asian/ Nerolac/ Berger/ Dulux
9.	Wooden Laminated Flooring	Pergo/ Tiles/ Xylos/ Armstrong/ Vista
10.	Ceramic floor Tiles (antiskid)	Kajaria/ Somany/ H.R.Johnson/ NITCO/ Orient Bell
11.	Vitrified Tiles	Kajaria/ Somany/ H.R.Johnson/ NITCO/ Orient Bell
12.	Ceramic wall Tiles	Kajaria/Somany/ H.R.Johnson/ NITCO/ Orient Bell
13.	Flush Door	Century/ Archid/ Greenlam
14.	Door Handles	Dorma, Ozone, Enox, Godrej
15.	Marble, Kota	As per approved sample and variety
16.	Water proofing compound	CICO, ROFF
17.	Bricks	Class designation 75 (CPWD approved)
18.	SS Dash Fasteners/ Anchoring	Hilti, Fischer
19.	Adhesion Tape	Norton
20.	Silicone	G E Bayer, Dow Coring
21.	Texture Interior Paint	Sandtex Matt/ Dulux/ Berger/ Okios/ Asian
22.	Vitreous China	Hindware, Parryware Cera,

23.	C.P. Fittings	Jaquar, Hindware, Cera, Neycer
24.	CPVC Pipes	Prince, Supreme, Astral
25.	CPVC Fittings	Prince, Supreme, Astral
26.	Grating, Floor drain, Floor Trap	Neer, GMGR, Camry, Chilly
27.	Check Valves (Slim type)	Advance, SKG Pneumatic, AIP
28.	C.I. S/S pipes Class LA	Kesoram, Electrosteel
29.	Butterfly valve	Audco, VEESON, AIP
30.	Ball Valves	AIP, DRP
31.	Stoneware Pipes & Gully Traps	Perfect, Anand
32.	R.C.C. pipes	Jain Spun Pipe, Daya Spun Pipe
33.	Manhole cover & Frame (ductile Iron)	NECO, RIF, BIC
34.	SFRC Manhole & Road Gully Chamber covers/ Grating	KK Manholes & Gratings Pvt. Ltd. , New Delhi, SFP
35.	Pumps	Kirloskar, Crompton Greaves, KSB
36.	Electrical Switch Gear & Starters	L&T, Siemens
37.	Cables	Skytone/ Finolex/ Polycab
38..	Water Level Indicator	Advance, Unison
39.	Anticorrosive Bitumastic Paint	Shalimar, Asian, Berger
40.	Epoxy Paint	MRF, Berger, J&N
41.	Lugs (Tinned Copper)	Dowel
42.	PVC Copper Wire	Skyline, Ralison
43.	W.C. Pan Connector	Multi, Kwik
44.	SS Sink	Nirali, Jayna

45.	False Flooring	Unifloor/ Flexi Access Floor/ Armstrong
46.	Aluminum Fittings	Jindal/ Hindalco/ MAAN
47.	Aluminum Extrusion Sections	Jindal/ Hindalco/ MAAN

48	Commercial Plywood	Century/ Greenlam / Archid/ Duro
49	Veneer	Century / Archid/ Green lam
50	Drawer Sliding/ Patch Fittings	Earl Bihari (EBCO)/ Godrej/ Hettich/ Dorma
51	Floor Spring / Door Closer	Godrej / Hardwyn / Hyper/ Dorma/ Haffele
52	Triple Computer Monitor Mount/ Stand Arm	Vivo/ Dell/ HP
53	Readymade Computer Drawer	EBCO/ Hettich/ Blum/ Godrej
54	Cement paint	Asian/Snowcem/ Surfaced/ Durocem
55	Synthetic Enamel Paint	Asian/ Nerolac/ Berger/ Dulux
56	Acrylic Emulsion Paint (Interior and Exterior)	Asian/ Nerolac/ Berger/ Dulux
57	Glazing	Modi Tuff Glass/ Triveni Glass Ltd./ Indo Asahi Glass Co. Ltd./ Saint Gobain
58	Mineral Fibre False Ceiling	Armstrong/ Indian Gypsum Board/ Gyproc/ USG Boral
59	ACP Panels/ Sheets	Alubond/ ALU Decor/ Alstrong/ Alstone
60	Acrylic Sheets	Sanmati Acrylics/Acrylic Sheet India/ Acry Plus
61	Vertical/Roller blinds	Vista/ MAC/ DECK
62	Corian	Dupont/ LG/ Samsung
63	PU Paint	Asian/ Berger/ ICI
64	Wall Paper	Elemento/ Marshel

LIST OF APPROVED MAKES OF MATERIALS ELECTRICAL			
1	PVC/MS CONDUIT PIPE (ISI) MARKED	:	BEC / PRECISION / AKG / SETIA/CAP
2	WIRES 1100V GRADE FR/FRLS MULTI STRANDED ONLY-ISI	:	FINOLEX/ SKYTON/ POLYCAB/ BONTON/ RR KABEL/KEI/RELISONS/ESC
3	CABLES 1100V PVC INSULATED FRLS XLPE	:	SKYTON/ BONTON/RELISONS/ KEI/ GRANDLAY/POLYCAB/FINOLEX/
4	MCBS, MCCBS & ELCBS	:	SCHNIDER/ LEGRAND/ L&T-HAGER/ ABB/ C&S/HPL/
5	MOULAR SWITCH, SOCKET, PLATES, BOXES & OTHER ACCESSORIES (MDEL MENTIONED)	:	LEGRAND- Linc/ Mosiac / CRABTREE- Athena / PHILIPS- Elite / MK - Wraparound / North West- Stylus only /Anchor – Woods / Viola / Simon-Vivid-38 / Great White-Myraha
6	FLUORESCENT/LED/CFL LUMINAIRES	:	PHILIPS/CROMPTON/ BAJAJ/TRILUX/ /HAVELLS /HELONIX/WIPRO/HPL
7	METAL CLAD SOCKET OUTLETS	:	ABB/ L&T/ LEGRAND/ NORTH WEST/C&S
8	TELEPHONE CABLE& SPEAKER CABLE	:	DELTON/AMP/D-LINK/FINOLEX
9	BAKELITE SHEET	:	HYLAM / FORMICA/
10	SOLDERLESS LUGS / FERRULES	:	DOWELL/
11	CABLE GLANDS	:	COMET /GRIPWEL/ DOWEL
12	TAG BLOCK (TELE)	:	KRONE
13	DISTRIBUTION BOARDS (DOUBLE DOOR TYPE)	:	INDOASIAN/SCHNIDER/ LEGRAND/ L&T-HAGER/ ABB/ C&S/

14	JOINTING KITS/ CONNECTORS	:	SCREWLESS WAGO & CONTROLS (I) LTD/3M/RPG		
15	METERING EQUIPMENTS	:	RISHAB/ AE/ CONZERV/L&T/SECURE		
16	ASS/VSS	:	KAYACEE/ L&T/		
17	FANS	:	Crompton/BAJAJ/USHA/Havells/Orient		
18	LAN & VOICE	;	AMP/ D-LINK		
19	VOLTAGE STABILIZER & AC TIMER	:	RITLINES/ BLUE BIRD/ LOGICSTATE/ INLINE/V- GUARD/SERVOKON/SERVEL/RUPTRONICS		

NOTE: Above makes of equipment are approved subject to their meeting the specifications. The contractor however shall seek approval of specific make from Consultant/ Bank's Engineer before commencing the work. The decision of Consultant/ Bank's Engineer shall & binding on the contractor in this respect. Any other make of the equipment not specified shall be got approved by the Bank's Electrical engineer in charge as per requirement.

LIST OF APPROVED MAKES AIR CONDITIONING WORKS

SL	ITEM	COMPANY
1	GSS SHEET	JINDAL / TATA / SAIL
2	FACTORY MADE DUCTS	ROLLASTAR/ NUTECH
3	PROPELLER FANS	GE ALSTHOM / CROMPTON/ CARRYAIRE
4	FLEXIBLE PIPE CONNECTION	RESISTOFLEX / DUNLOP
5	EXTRUDED ALUMINIUM GRILLES /DIFFUSER	AIRTECH/AIR COOLING SYSTEM/TRISTAR /CARRYAIRE
6	FIRE DAMPER / VOLUME CONTROL DAMPER	AIRTECH/AIR COOLING SYSTEM/TRISTAR /CARRYAIRE
7	FLEXIBLE INSULATED DUCTS	CARRYAIRE / ATCO/ MAPRO
8	FIBRE GLASS	OWENS CORNING/ UP TWIGA
9	EXTRUDED POLYSTYRENE BOARD	SUPREME
10	CROSS LINKED POLYETHYLENE	SUPREME/A-FLEX/AEROFLEX
11	CLASS 'O' NITRILE RUBBER INSULATION	SUPREME /K-FLEX / SUPERLON / EUROBATEX / ARMACELL/A- FLEX
12	COPPER PIPE	RAJCO / MANDEV / MAXFLOW / TOTAL LINE / SHREE SHAYAM
13	PVC PIPE	SETIA/ FINOLEX/ PRAKASH/ SURYA
14	CONDUIT FOR ELECTRICAL WIRE	AKG, SETIA, BEC, SUPER
15	EXPANDED POLYSTYRENE	STYRENE PACKING / INDIAN PACKING
16	VIBRATION ISOLATION SPRING	DUNLOP / RESISTOFLEX
17	PAINTS	ICI / ASIAN
18	DASH FASTENERS	CANON / FISHER / TKS/HILTI
19	WELDING RODS	ADVANI / L&T
20	ACB, M.C.B. & MCCB	L&T / GE / CROMPTON/C&S
21	POWER/CONTROL CABLE	CCI/ HAVELLS / GRANDLAY/ UNIVERSAL
22	CENTRIFUGAL / AXIAL FANS	ABB / KRUGER / COMFREI / NUAIRE (UK)
23	INLINE FANS	KRUGER / NUAIRE / OSTBERG / SYSTEMAIR/ CARRYAIRE

NOTE : 1. NO DEVIATION FROM THE APPROVED MAKE IS ACCEPTABLE. HOWEVER, THE ARCHITECT/ CONSULTANT/ BANK RESERVE THE RIGHT TO SELECT ANY OF THE APPROVED MAKE OF THESE ITEMS, WHERE MORE THAN ONE MAKE IS MENTIONED.
2. FOR ANY LEFT-OUT ITEMS, PRIOR APPROVAL FROM CONSULTANT / ARCHITECTS / BANK IS REQUIRED.

NB
1)
The

contractor should obtain prior approval from Employer / Consultants before placing order for any specific materials. Employer may / delete any of the makes or brands out of the above list.

- 2). All materials should conform to relevant standards and codes of BIS.
- 3) Materials with I.S.I. mark shall be used duly approved by the SBI Engineer / Architect.

Note: - If any material is found to be not up to the mark, the contractor will have to produce original bills/certificate from the manufacturer or his authorised Distributor for authenticity and genuineness of the material for consideration and as per make approved by the SBI. The same will not be considered for payment.

BILL OF QUANTITY

PREAMBLE:

TO BE READ ALONG WITH DRAWINGS.

1. RATES TO BE QUOTED BOTH IN FIGURES AND WORDS.
2. ALL PAGES TO BE SIGNED AND STAMPED BY THE TENDERER.
3. THE RATE OF THE ITEMS SHALL BE APPLICABLE FOR ANY FLOOR LEVEL/ ANY NUMBER OF FLOORS, OR ANY QUANTITY.
4. THE SPECIFICATION OF THE ITEMS SHALL BE AS PER LATEST INDIAN STANDARD CODES UNLESS OTHERWISE SPECIFIED.
5. ALL MATERIALS SHALL BE AS PER APPROVED LIST AND SHOULD BE OF 1st QUALITY UNLESS OTHERWISE SPECIFIED.
6. THE RATES ARE INCLUSIVE OF ALL DUTIES AND TAXES (EXCEPT GST) OF ALL GOVERNMENT, MUNICIPAL OR ANY OTHER STATUTORY BODY APPLICABLE FROM TIME TO TIME.
7. RATES SHALL BE FOR ITEMS COMPLETE IN ALL RESPECTS AS PER DRAWING, INSTRUCTIONS AND APPROVAL OF THE ARCHITECT/ BANK'S ENGINEER.
8. THE QUANTITIES ARE APPROXIMATE AND TENTATIVE WHICH MAY VARY DURING COURSE OF EXECUTION. THE RATES QUOTED AGAINST PARTICULAR ITEM SHALL NOT BE CHANGED WITH VARIATION IN QUANTITIES.
9. MAKING OF ANY CUTOUT / OPENING FOR ELECTRICAL / AIR – CONDITIONING WIRING / FITTING IN ANY OF THE ITEM OF FALSE CEILING, PARTITIONS, PANELING MASONRY WORK ETC. AND FINISHING EDGES JAMBS / CILLS / SOFFITS OF THE OPENING SHALL NOT BE PAID EXTRA.
10. THE TENDERER SHALL VISIT THE SITE AND SHALL SATISFY HIMSELF AS TO CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED. HE SHALL ALSO CHECK, ASCERTAIN THE LOCATIONS OF ANY EXISTING STRUCTURES OR EQUIPMENT OR ANY OTHER SITUATION WHICH MAY AFFECT THE WORK. NO EXTRA CLAIM AS A CONSEQUENCE OF IGNORANCE OR ON GROUND OF INSUFFICIENT DESCRIPTION WILL BE ALLOWED AT A LATER DATE.
11. THE QUOTED PRICE FOR ITEMS SHALL INCLUDE ALL ACCESSORIES, CONSUMMABLES ETC. AS REQUIRED TO MAKE THE ITEM COMPLETE IN ALL RESPECTS, COMPATIBLE WITH OTHER RELATED / ASSOCIATED ITEMS AND FULLY FUNCTIONAL.
12. CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY ERROR, DIFFICULTY IN EXECUTION / DAMAGES INCURRED OWING TO DISCREPANCY IN DRAWINGS WHICH HAS BEEN OVERLOOKED BY HIM AND HAS NOT BEEN BROUGHT TO THE NOTICE OF THE ARCHITECT.
13. THERE ARE NUMBER OF ITEMS GIVEN IN THE TENDER WHERE IN BASIC RATES INCLUDING ALL TAXES EXPECTED HAS BEEN MENTIONED IN THE TENDER. THESE ITEMS SHALL BE PURCHASED BY THE CONTRACTOR FROM THE MARKET ONLY AFTER THE APPROVAL OF QUALITY AND RATES BY THE ARCHITECT.
14. ALL HIDDEN SURFACES OF BOARD / PLY / WOOD WORK TO BE PAINTED WITH ANTI BACTERIAL PAINT FROM NAV AIR INTERNATIONAL FR 881 (VIPER) (WHITE COLOUR AS PER MANUFACTURER'S SPECIFICATIONS ON WOOD / BOARD).
15. CONTRACTOR SHALL APPOINT TECHNICALLY QUALIFIED FULL TIME SITE SUPERVISOR TO MONITORING THE DAY TO DAY PROGRESS OF WORK AT SITE ON THEIR OWN COST.

TENDER DRAWINGS

(Refer annexed file/section in e-tender portal for Tender Drawings)