



**TENDER DOCUMENT**

**H.V.A.C WORK FOR SBI APMC, SECTOR - 88  
AT NOIDA UTTAR PRADESH**

<b>CLIENT:</b>	<b>ARCHITECTS:</b>
<b>State Bank of India</b>	<b>MOHAN AND ASSOCIATES</b>
Regional Business Office-2 A-98 B, SECTOR-51, Noida -201301, Distt. Gautam Badh Nagar (U.P).	<b>201,PADMA TOWER , RAJENDRA PLACE , NEW DELHI</b>

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**STATE BANK OF INDIA****Tender ID- SBI/AO6/NOIDA/RBO2/APMC/AC****Notice Inviting Tenders**

State Bank of India invites ONLINE TENDERS from the Bank's empaneled contractors Delhi circle for the category HVAC WORKS from **Category-up to Rs. 10 lakh (Under AC-4 Category)** for the **HVAC WORKS for SBI APMC, SECTOR - 88 AT NOIDA.**

1	Name of Work	: HVAC WORKS for SBI APMC, SECTOR - 88 AT NOIDA.
2	Time allowed for completion	: <b>60 Days from the date of handing over of the site.</b>
3	Earnest Money Deposit	: <b>Rs. 5700/- ( ₹ Five Thousand Seven Hundred only )</b> by crossed Bank Draft / Banker's Cheque drawn in favour of STATE BANK OF INDIA, DELHI (To be enclosed in sealed envelope as a part of technical Bid)
4	Total Estimate value	: <b>Rs. 5,73,800.00/- ( ₹Five Lakh Seventy-Three Thousand Eight Hundred Only )</b>
5	Initial Security Deposit	: 2% of the total value of the contract including Earnest Money.
6	Last date and time of receipt of Tenders	: <b>13.04.2026 at 2:00 P.M.</b>
7	Address at which the tenders are to be submitted	: State Bank of India, Regional business office-2 A-98 b, sector-51, noida -201301, Distt. Gautam badh nagar (u.p). To be submitted online <a href="http://www.tenderwizard.com/SBIETENDER">www.tenderwizard.com/SBIETENDER</a>
8	Submission of Price Bid	Contractors shall Download the entire Technical Bid to get acquainted with the terms and conditions and <b>shall submit compulsorily the pages of tender documents / undertaking up to 13.04.2026 at 2:00 pm of the technical bid</b> without fail after putting the signature and seal. Failure to submit the hardcopy of Technical Bid, indicative price bid may render the bidder disqualified.
9	Date and time of opening Tenders	: <b>13.04.2026 at 3:00 P.M</b> <b>Technical Bid : In Hard Copy</b> <b>Price Bid: Online only followed by auction, (Indicative)</b>
10	Place of opening tenders	: <b>Technical Bid: to be submitted in Hard Copy at</b> Regional business office-2 A-98 b, sector-51, Noida -201301, Distt. Gautam badh nagar (u.p). <b>Price Bid: to be submitted</b> <b>online</b> <a href="http://www.tenderwizard.com/SBIETENDER">www.tenderwizard.com/SBIETENDER</a>
11	Defects Liability Period	: 12 months from the date of handing over of the project to the satisfaction of Bank
12	Validity of offer	: 90 days from the date of opening the tenders.

13	Liquidated Damages		<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>
14	Note:		<i>If the contractor is found to have delayed the running/in hand project beyond the prescribed time limit specified in related tender document, the vendor will not be issued the new tender until completion of the previous delayed work.</i>
			<i>The vendor has to obtain all necessary approvals/permissions including lesioning, if any, with the appropriate government authorities required for the completion of the above contract at the site mentioned in this tender. The vendor has to comply with all the rules and regulations which are necessary for the execution of the contract and shall indemnify SBI from all legal and monetary liabilities arising due to the violation of the approvals/permissions, rules and regulations.</i>
			<i>Materials to be used for execution of the said work are to be approved by the architect/bank prior to use.</i>
			<i>Quantities are tentative and can increase or decrease the quantities of any item and contractor has to execute the same at the quoted rates</i>
			<i>The contractor shall not submit interim bills. Maximum one bill shall be submitted only after taking actual final measurements after satisfactory completion of works.</i>
15.	<i>Rates shall be inclusive of:</i>		<i>Cost for disposing debris and any other unserviceable materials as per direction and inconformity with the Local or any other govt. authorities rules.</i>
			<i>cleaning of floors, making good to damaged floor, ceiling, walls, etc., after completion of work</i>
			<i>In case of any poor quality of work or substandard materials used for the purpose, shall be replaced as per instructions without any extra cost.</i>
16.	<i>Retention percentage :</i>	:	<i>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., ISD plus Retention Money shall both together not exceed 5% of the contract value.</i>
17.	<i>Retention period</i>	:	<i>12 months from the date of completion of work</i>
18.	<i>Performance guarantee:</i>	:	<i>If the L1 Price quoted is more than 7.5% below the estimated cost, the vendor has to submit the additional security deposit as performance guarantee of the amount of total % value less than the estimated value. The Performance guarantee will be released after successful completion of the work.</i>

		<i>This Bank Guarantee/D.D will be treated as an additional security deposit for due fulfillment of contract and will be retained by the SBI for entire completion period of the project. The contractor shall undertake not to cancel/withdraw the said Bank Guarantee/DD. In case contractor fails to undertake the job within stipulated time or leave the same incomplete or carryout substandard job, the bank will be at liberty to forfeit the said initial security deposit and additional security deposit by invoking the Bank Guarantee/en-cashing the DD... Bank Guarantee or FDR receipt favoring SBI but drawn on any other nationalized Bank may also be accepted as ASD / APG. ASD/APG should be deposited/submitted <b>within 7 days of date of issue of letter of Acceptance.</b></i>
19.	GST	<i>GST will be paid as extra amount by SBI. Quoted amount by contractor should be excluding GST.</i>

**Mode of Submission of Tender:** The tender shall be submitted in both physical and online into 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 instrument as per NIT
- 2) Envelope marked **Cover 2** shall be of adequate size and shall contain envelopes marked **Covers 1 & tender document (Page 1 to 10 of this document along with Undertaking as in Annexure- I** and shall be properly sealed & signed. This envelope shall be endorsed on the outside face as under:

**“HVAC WORKS for SBI APMC, SECTOR - 88, NOIDA”**

The envelope marked **Cover 2** containing the tender documents/ Undertaking as in Annexure- I as per instructions mentioned above shall be submitted in the office of **Regional Business Office-2, A-98 B, SECTOR-51, Noida -201301, Distt. Gautam Badh Nagar (U.P).** ON OR BEFORE 2:00. p.m. on **13.04.2026** Envelope marked **Cover 1 & Cover 2** containing Earnest Money Deposit along with Covering Letter and Processing Fee of Tender Document, tender document/Undertaking as in Annexure- I will be opened first. If the Earnest Money Deposit and tender document/Undertaking as in Annexure- I is not found as prescribed, the tender shall be liable to be rejected.

Thereafter, the Price bid of the successful firms / vendors will be opened online. The L-1 quote will be considered as base price and reverse auction will be conducted there from as per standard procedure. 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.

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For E-Tender related queries: **Service provider:** M/s Antares Systems Limited, Registered Office at: - #24, Sudha Complex, 3rd Stage, 4th Block, Bangalore – 560079. Ph. - 080- 49352000 / 40482000 Fax: - 080-49352034

**Help Desk:** Contact Person: Mr. Pravesh Mani /Mr. Tousik Ghosh / Mr. Kushal Bose Mobile no. 09044314492/ 09674758724/ 07686913157(On working days-9 hours–18 hours)E-mail:[praveshmani.t@antaressystems.com](mailto:praveshmani.t@antaressystems.com)/ [tousik.g@antaressystems.com](mailto:tousik.g@antaressystems.com) / [kushal.b@antaressystems.com](mailto:kushal.b@antaressystems.com)

For any other queries the vendors may contact the Architect MOHAN AND ASSOCIATES, NEW DELHI 7007818657

**STATE BANK OF INDIA**

**SIGNATURE OF THE TENDERER**

## INSTRUCTIONS TO THE TENDERERS

### 1.0 Scope of Work

State Bank of India invites online Tenders from the Bank's Empaneled Contractors Delhi circle Category-up to Rs. 10 lakh (Under AC-4 Category) for the **HVAC WORKS for SBI APMC, SECTOR - 88 AT NOIDA.**

### 1.1 Site and its Location

The proposed work is to be carried out at **SBI APMC SECTOR - 88 AT NOIDA**

#### Tender Documents

2.1 The work has to be carried out strictly according to the conditions stipulated in the tender consisting of 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:

- a) Price Bid
- b) Additional Specifications
- c) Technical Specifications
- d) Drawings
- e) Special Conditions of Contract
- f) General Condition of Contract
- g) Instruction to Tenderers

2.3 Complete set of tender documents including relative drawings can be downloaded from e-tendering portal of the 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, 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 **AS PER NIT 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 60 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 valueless EMD**, by means of Demand Draft drawn in favour of State Bank of India payable at Dehradun 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 **60 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 rates 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 Architect/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.

**12 Vendor has to submit in Hard copy the tender document along with all terms & Conditions, Specifications and subsequent annexure and corrigendum's duly signed and stamped by authorized representative/ signatory on becoming L1.**

**12.0 Nominated Contractor for Allied work, if any.**

## Annexure-I

**UNDERTAKING****(To be submitted along with the technical Bid)**

To,  
 REGIONAL MANAGER  
 Regional Business Office-2,  
 A-98 B, SECTOR-51, Noida -201301,  
 Distt. Gautam Badh Nagar (U.P).

Dear Sir,

**Reg.:- HVAC WORK FOR SBI APMC SECTOR - 88 AT NOIDA**

1. I / We refer to the tender notice issued by you for **HVAC WORKS** and allied works in connection with the above.
2. I undertake to submit in Hard copy the tender document along with all terms & Conditions, Specifications and subsequent annexure and corrigendum's duly signed and stamped by authorized representative/ signatory on becoming L1. However we accept all the terms and conditions along with the specifications, Drawings, Layouts etc. defined in the tender documents.
3. 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.
4. 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 fulfill all the terms and provisions of the said conditions annexed here to,
  - b. Complete the works within **60 Days** as per the work programmer enclosed with the tender in two or three shifts if considered necessary by the Employer / Consultants at no extra cost to the Employer.
5. **Earnest Money Rs. AS PER NIT** 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.
6. 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 .....
- 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 Local Head Office at New 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 at SBI APMC SECTOR - 88 AT NOIDA**. As per Schedule-I, to this agreement and has caused Drawings, Bills of Quantities and Specification describing the work to be done, prepared by SBI, Noida (hereinafter called "Employer").

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 "The Consultant" in the said conditions shall mean **MOHAN AND ASSOCIATES, 201, PADMA TOWER-II, RAJENDRA PLACE, NEW DELHI NEW DELHI- 110062** or in the event of their ceasing to be Consultants 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 Consultants under this Contract shall be entitled to disregard or overrule any decision or approval or direction given or expressed by the Consultants 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.

This agreement is subject to jurisdiction of courts in Delhi only.

**Regional business office-2, a-98 b, sector-51, Noida -201301, distt. Gautam badh nagar (up) shall exercise powers onbehalf of the said Employer for the purpose of the Contract Agreement.**

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.

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.

Whereas the Contractor hereby undertakes and agrees to carry out and complete the works within **60 Days** from the date of handing over site or five days from the date of issue of letter of acceptances, whichever is later? The Contractor agrees and has deposited the sum of Rs.1, 00,000/- 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.

Whereas it is agreed that the earnest money amounting to **AS PER NIT** 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.

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.

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 of **Regional business office-2, a-98 b, sector-51, Noida -201301, distt. Gautam badh nagar (up)**. 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 “**HVAC WORKS for SBI APMC, SECTOR - 88 AT NOIDA.**” as mentioned above and all subsidiary and otherworks connected therewith on the same site as may be ordered to be done from time to time by **Regional business office-2, a-98 b, sector-51, Noida -201301, distt. Gautam badh nagar (up)**. 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.

The Employer through the **Regional business office-2, a-98 b, sector-51, Noida -201301, distt. Gautam badh nagar (up)**. 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.

All disputes arising out of or in any way connected with this agreement shall be deemed to have arisen in Delhi and only the courts of Delhi shall have jurisdiction to determine the same.

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:

**Authorized Representative of Employer**

**Authorized  
Contractor**

**Representative**

**of**

**SCHEDULE I**

**“HVAC WORKS for SBI APMC, SECTOR - 88 AT NOIDA”** 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:

Signature by the said Employer

Name:

Name:

Occupation:

Designation:

Address:

Address:

In presence of

Signature:

Signature by the said Contractor

Name:

Name:

Occupation:

Designation:

Address:

Address:

## GENERAL CONDITIONS OF CONTRACT (GCC)

### Definitions:

“Contract means the documents forming the tender and the acceptance thereof 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 architects / 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’ 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. Consultants/ Consultants’ shall mean SBI, New Delhi, Site Engineer’ shall mean an Engineer appointed by the Bank as their representative to give instructions to the contractors.
- 5.2.1 ‘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.
- 5.2.2 ‘Engineer’ shall mean the representative of the Architect/Consultant.
- 5.2.3 ‘Drawings’ shall mean the drawings prepared by the Architects and issued by the Engineer and referred to in the specifications and any modifications of such drawings as may be issued by the Engineer 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.
- 5.2.4 ‘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 / consultant “Month” means calendar month.
- 5.2.5 “Week” means seven consecutive days.
- 5.2.6 “Day” means a calendar day beginning and ending at 00 Hrs. and 24 Hrs. respectively.

### **I) Total Security Deposit**

Total Security Deposit comprise of:

- Earnest Money Deposit
- Initial Security Deposit
- Retention Money

### **1.0 Earnest Money Deposit:**

The tenderer shall furnish EMD of **AS PER NIT** in the form of Demand Draft drawn in favour of State Bank of India payable at DELHI on any Scheduled Bank. No tender shall be considered unless the EMD is

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.

## 2.0 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.

## 3.0 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 Architect / consultant. 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.

## 4.0 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.
  - 1 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.
  - 2 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 carry out complete and maintain the said work in every respect in strict accordance with this contract and with the directions of and to the satisfaction of the Bank to be communicated through the architect/ consultant. The architect/ consultant 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 Architect's/ Consultant'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.

## 6.0 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.

**ii) Ownership of Drawings:**

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

**iii) Detailed Drawings and Instructions:**

The SBI through its architects/ consultants 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 programme 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 / consultant.

**iv) Copies of Agreement**

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

**v) 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.

**vi) 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/ Consultant he shall be removed from the site immediately.

**vii) 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 SBI in writing under intimation of the Architect/ Consultant. 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/ consultant 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/ consultant 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.

#### **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.

#### **a) Inspection of Work:**

The SBI Architect/ Consultant 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 / consultant and their representatives necessary for inspection and examination and test of the materials and workmanship. No person unless authorized by the SBI/ Architect / Consultant 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 organization a wing of Central Vigilance Commission.

#### **b) Assignment and Subletting**

The whole of work included in the contract shall be executed by 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/ Consultant instructions and shall be subject from time to time to such tests as the architect/ consultant 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, labor, 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 / Consultant.

## **6.0 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/ Consultant. 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 / consultant the contractor shall proceed with the procurement and installation of the particular material / equipment. The approved samples shall be signed by the Architect / Consultant 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 / Consultant 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 / Consultant 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 / Consultant 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 Architect / consultant may consider necessary until the expiry of the defects liability period stated hereto.

## **14.0 Quantities**

- ii) 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 / Consultant 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 / Consultant 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 / consultant 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 Architect / consultant shall vitiate the contract. In case the SBI / Architect / Consultant 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 Architect / Consultant 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 Architect / Consultant and the value of such extras, alterations, additions or omissions shall in all cases be determined by the Architect / Consultant and the same shall be added to or deducted from the contract value, as the case may be.

### a) Valuation of Variations

No claim for an extra shall be allowed unless it shall have been executed under the authority of the Architect / Consultant 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.
- 19.0 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 / consultant 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 / Consultant 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 Architect / Consultant) the workman's name and materials employed be delivered for verifications to the Architect / consultant 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.

**b) 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.

**c) Virtual Completion Certificate (VCC)**

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

- i) Clear the site of all scaffolding, wiring, pipes, surplus materials, contractor's labour, equipment and machinery.
- ii) 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.
- iii) Remove all rubbish, debris etc. from the site and the land allotted to the contractor by the SBI and shall clear, level and dress, compact the site as required by the SBI.
- iv) Shall put the SBI in undisputed custody and possession of the site and all land allotted by the SBI.
- v) Shall hand over the work in a peaceful manner to the SBI.
- vi) All defects / imperfections have been attended and rectified as pointed out by the SBI to the full satisfaction of SBI.

Upon the satisfactory fulfillment by the contractor as stated above, the contractor shall be entitled to apply to the Architect / consultant is satisfied of the completion of the work. Relative to which the completion certificate has been sought, the Architect / consultant 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.

**d) Work by other Agencies**

The SBI / Architect / Consultant 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.

**e) 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 Architect / consultant 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:

- 22.0 The permanent use or occupation of land by or any part thereof.
- 23.0 The right of SBI to execute the works or any part thereof on, over, under, in or through any lands.
- 24.0 Injuries or damages to persons or properties which are an unavoidable result of the execution or maintenance of the works in accordance with the contract.
- 25.0 Injuries or damage to persons or property resulting from any act or neglect of the SBI, 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, 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.

**(1) 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 / Consultant in this behalf.

**a) Third Party Insurance**

- b)** 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, 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.

**c) 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 Architect / consultant the policy or policies of insurance cover and receipts for payment of the current premiums.

- d)** 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.

**e) 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.

**f) 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 / consultant such policy of insurance and receipt for payment of the current premium. Provided always 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 is indemnified under the policy but the contractor shall require such sub-contractor to produce to the Architect / Consultant when such policy of insurance and the receipt for the payment of the current premium.

**g) 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.

**f) 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.

**g) 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 **60 Days** from the date of commencement. If required in the contract or as directed by the Architect / Consultant. 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.

**h) Extension of Time**

If, in the opinion of the Architect/consultant, the work be delayed for reasons beyond the control of the contractor, the Architect/consultant 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 / Consultant in writing in detail and his justification if any, for the delays. The Architect/Consultant 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.

**i) 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 / Consultant should the rate of progress of the work or any part thereof be at any time be in the opinion of the Architect / consultant too slow to ensure the completion of the whole of the work by the prescribed time or extended time for completion the Architect / Consultant to expedite progress so as to complete the works by the prescribed time or extended time. Such communications from the Architect / Consultant 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.

**j) 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 / Consultant, 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 / consultant. 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 / Consultant 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.

**k) No Compensation or Restriction of Work.**

If at any time after acceptance of the SBI 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 / Consultant 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 / consultant 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 / consultant shall be final.

**l) Suspension of Work**

- a) The contractor shall, on receipt of the order in writing of the Architect / consultant (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 / consultant 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
  - a) 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.
  - b) 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 Architect / consultant.
- 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 Architect / consultant 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 / consultant 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 / Consultant 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 / Consultant 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 Architects / Consultant 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 / consultant will have certified in writing the performance of such work and the value payable in respect thereof, and he shall only be entitled to be paid the value so certified.

### 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 Architect / Consultant that he is able to carry out and fulfil the contract, and to give security therefore if so required by the Architect / consultant.

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 / consultant or shall charge or encumber this contract or any payment due to which may become due to the contractor there under:

- a) Has abandoned the contract; or
- 26 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 / Consultant written notice to proceed, or

- 27 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/ Consultant that the said materials were condemned and rejected by the Architect/ Consultant 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 infidelity of the SBI's or Architect's/ Consultant's instructions to the contrary subject any part of the contract. Then and in any of said cases the SBI and or the Architect / Consultant, may not withstanding 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 / Consultant 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 / consultant 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 / consultant 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.

## **26 Certificate of Payment**

The contractor shall be entitled under the certificates to be issued by the Architect/ Consultant to the contractor within 14 working days from the date of certificate to the payment from SBI/ SBI from time to time. The SBI/ 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/ Consultant 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/ Consultant shall have power to withhold the certificate if the work or any part thereof is not carried out to their satisfaction.

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

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

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

No interim bills shall be submitted by contractor. The contractor shall submit final bills after successful completion of works.

The final bill may be submitted by contractor within a period of one month from the date of virtual completion and Architect/ Consultant 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.

- b) 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 **Regional business office-2, a-98 b, sector-51, Noida -201301, distt. Gautam badh nagar (up)**. And endorse a copy of the same to the Architect, within 60 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 **Regional business office-2, a-98 b, sector-51, Noida -201301, distt. Gautam badh nagar (up)**.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 **Regional business office-2, a-98 b, sector-51, Noida -201301, distt. Gautam badh nagar (up)**.in writing in the manner and within the time aforesaid.
- c) **Regional business office-2, a-98 b, sector-51, Noida -201301, distt. Gautam badh nagar (up)**. Shall give his decision in writing on the claims notified by the contractor. The contractor may within 60 Days of the receipt of the decision of the **Regional business office-2, a-98 b, sector-51, Noida -201301, distt. Gautam badh nagar (up)**. Submit his claims to the conciliating authority namely the **Circle Development Officer, SBI, DELHI** for conciliation along with all details and copies of correspondence exchanged between him and the Regional Manager.
- d) If the conciliation proceedings are terminated without settlement of the disputes, the contractor shall, within a period of 60 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.
- e) 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 / Consultant.

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/ Consultant 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 SBI/ Architect/ Consultant.

### **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 include 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 / consultant 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/ Consultant whenever desired by them. The contractor shall also maintain the records / registers as required by the local authorities / Govt. from time to time.

- i) Register for Cement / Paint / Lead / Specific Materials
- ii) Register for 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 60 Days from the happening of the event 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.

**43.4.1** 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) Contract 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 fromtime 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 / consultant. 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 (SCC)****b) Scope of Work**

*The scope of work is to carry out “HVAC WORKS for SBI APMC SECTOR - 88 AT NOIDA”*

**Address of Site**

*The site is located SBI APMC SECTOR - 88 AT NOIDA.*

**c) 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 / Consultant before proceeding with the work.*

**d) Notice of Operation**

*The contractor shall not carry out any important operation without the consent in writing from the Architect / Consultant.*

**e) Construction Records**

*The contractor shall keep and provide to the Architect / Consultant 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.*

**f) Safety of adjacent Structures and Trees**

*The contractor shall provide and erect to the approval of the Architect / Consultant such supports as may be required to protect effectively all structures and protective guardsto 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.*

**g) Temporary Works**

*Before any temporary works are commenced, the contractor shall submit at least 7 days in advance to the architect / consultant 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/ Consultant 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.*

**h) 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/ Consultant. 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/ Consultant.*

**i) Water, Power and Other Facilities**

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.

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

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

**j) Office Accommodation**

b) 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 / consultant.

c) 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 / consultant.

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.

**k) 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.

**l) 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.

**m) Fire Fighting Arrangements**

36.0 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 to be always kept filled with sand and some with water. These equipment shall be provided at suitable prominent and easily accessible places and shall be properly maintained.

37.0 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 :

- i) *Proper handling, storage and disposal of combustible materials and waste.*
- ii) *Worked operations which can create fire hazards.*
- iii) *Access for the firefighting equipment's.*
- iv) *Types, number and location of containers for the removal of surplus materials and rubbish.*
- v) *Type size, number and location of fire extinguishers or other firefighting equipment.*
- vi) *General housekeeping.*

**n) Site Order Book**

*A site order book shall be maintained at site for the purpose of quick communication between the Architect/Consultant. 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 be carefully maintained and preserved by the contractor and shall be made available to the Architect/ Consultant as and when demanded. Any instruction which the Architect/ Consultant may like to issue to the contractor or the contractor may like to bring to the Architect/ Consultant may like to issue to the Contractor or the Contractor may like to bring to the Architect/ Consultant 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.*

**o) 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/ Consultant.*

**p) 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 Architect/ Consultant at his own cost. It is the responsibility of the contractor to obtain from the local 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 of.*

**q) Contractor to Verify Site Measurement**

*The contractor shall check and verify all site measurements whenever requested by other specialist's contractors or 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.*

**r) Displaying the Name of the Work**

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

**s) Bar Bending Schedule**

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

**t) As Built Drawings**

*1.0 For the drawing issued to the contractor by the Architect/Consultant. The Architect / Consultant 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 / Architect / Consultant. The Contractor will make the changes made on these copies and return these copies to the Architect/ Consultant for their approval. In case any revision is required or the corrections are not properly marked the Architect/ Consultant 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/ Consultant and resubmit to him for approval. The Architect / Consultant will return one copy duly approved by him.*

*2.0 For the drawings prepared by the Contractor, the Contractor will modify the drawing prepared by him wherever the changes are made by the SBI / Architect/ Consultant. And submit two copies of such modified drawings to the Architect/ Consultant for approval. The Architect/ Consultant will return one copy of the approved drawing to the Contractor.*

**u) Approved Make**

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

**v) 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.*

**w) 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 octroy, payable in respect of materials, equipment's plant and other things required for the contract. 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 octroy is imposed under as statue or law during the currency of contract the same shall be borne by the contractor.*

**x) Acceptance of Tender**

*The SBI shall have the right to reject any or all tenders without assigning any reason. They are not to bind 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*

**SPECIAL CONDITIONS OF CONTRACT (HVAC)****PART- I****1.0 QUALITY ASSURANCE OF MATERIALS AND WORKMANSHIP****1.1 Materials**

The contractor will supply the equipment as indicated in the list of approved makes in the tender. Furthermore, all equipment must strictly conform to the relevant IS code specified in the tender. However, the contractor shall submit Vendors data in the approved format and obtain prior approval from the Engineer in-charge before placing the orders for these equipment. All the materials brought to the site shall correspond with the approved samples. All the rejected material should be removed from the site of work, without delay.

The contractor shall furnish test certificates of the materials procured for the work. Testing of materials shall also have to be done at contractors cost as and when necessary and required by the Engineer in-charge. If the test result of any material does not comply with the results stipulated in the relevant latest IS code, the materials shall be rejected and no claim shall be entertained on any account what so ever. Where manufacturer have furnished specific instructions relating to the materials used in this job and covering points not specifically mentioned in these documents, manufacturer's instructions shall be followed.

**1.2 Quantum of Materials to be ordered**

The Schedule of Rates shall not be used as a basis for ascertaining the quantum of materials to be ordered. The Contractor shall be his own resources to assess the quantities of materials to be ordered and shall be entirely responsible for the same.

**1.3 Manufacturer Instruction**

Where manufacturers have furnished specific instructions relating to the materials and equipment used in this project, covering points not specifically mentioned in these documents, such instructions shall be followed in all cases.

**2.0 INSTALLATION INSPECTIONS & TESTING****2.1** When the installation is deemed by the Contractor to be complete, he shall arrange with the Engineer in-charge for inspection and testing of the installation. Test results shall be recorded in the format approved by the Engineer in-charge. An installation shall not be accepted until the Engineer in-charge is satisfied about its compliance with the requirements of the specifications and performance of the system.

The Contractor shall cause interim/stage inspection during execution of the works as and when so called for and carry out any rectification / modification as may be suggested by the Engineer in-charge.

Soon after the work is completed, the Contractor shall inform in writing to the Engineer in-charge for getting the complete system including all sub-systems and instrumentation, control panels etc. thoroughly inspected and tested for satisfactory performance. After satisfactory completion of tests of the system by the Engineer in-charge, the Contractor shall be required to carry out all start up trails of the system provided by him.

Any defects noticed during these tests shall be speedily rectified by the Contractor without any extra claim /cost.

All instruments and materials including consumables required for testing shall be the responsibility of the Contractor.

**2.2** Balancing of all air and all tests as called for in the specifications shall be carried out by the contractor in accordance with the specifications and relevant local codes if any. Performance test shall consist of seven days operation of system for each season.

Testes shall be carried out in peak summer and monsoon season

The results for summer/monsoon and winter air conditioning in duplicate shall be submitted for scrutiny.

Two copies of the certified manufacturer's performance curves for each piece of equipment shall be submitted along with the test results. The contractor shall also provide two copies of record of all safety and automatic control settings for the entire installation.

The contractor shall pay for the arrange, without any extra cost to the Employer, all necessary balancing and testing equipment's, instruments, materials, accessories, refrigerant and the requisite labour. Any defects in materials and/or in workmanship detected in the course of testing shall be rectified by the contractor, entirely at his own cost, to the satisfaction of the Engineer in-charge.

The installation shall be tested again after removal of defects and shall be commissioned only after approval by the Engineer in-charge. All tests shall be carried out in the presence of the representatives of the Engineer in-charge.

- 2.3 All civil works like foundations for the equipment, breaking and making good of openings for pipes and ducts shall be carried out by Air-conditioning Contractor and nothing extra shall be paid on this account.

### 3.0 STANDARD OF WORK

The work shall be carried out to the satisfaction of the Engineer in-charge and in accordance with the regulations of the Electricity Supply Authority, the Fire Insurance Company insuring the building, Electricity Rules and other local Regulations and the enclosed specifications.

### 4.0 PRICES

The prices to be quoted by the Tenderer shall include the supply, installation, testing & commissioning of all the Equipment, Ancillary material, associated Civil and Service Works, and other items, what-so-ever required for carrying out the job, to fulfill the intent and the purpose as laid down in the Specifications and /or the Drawings. The tendered price shall be deemed to include all nuts, bolts, shims, clamps, supports, etc., as required for proper fixing and/or grouting of Equipment's, ancillary items, etc. whether specifically mentioned or not. The Contractor shall also include, in his prices, all taxes, duties, other levies, (viz. excise duty, customs duty, sales tax, works contract tax, octroy etc. ) which are legally leviable on the Air Conditioning plant and installation entailing the Contractor to any extra claims from the department. The Contractor's rates shall remain firm and fixed during the currency of the Contract. However, the price shall be subject to adjustment, in case of variation in the rate of excise or customs duty due to an act of legislature, within the originally agreed period for the completion of work.

### 5.0 SHOP DRAWINGS

- 5.1 Before proceeding with the work, the Contractor shall submit for approval, general layout and assembly drawings and such additional assembly and sub-assembly detailed drawings as necessary to demonstrate fully that all parts of the apparatus to be furnished will conform to Specifications. These Drawings will include plant room layouts, required to complete the project as per specifications and as required by the Engineer-in-Charge/ Consultant. These drawings will contain details of construction, size, and arrangement, operating clearances, performance characteristics and capacity of all items of equipment, as also the details of all related items of work by other Contractors. Each item of equipment proposed shall be a standard catalogue product of an established manufacturer as per specifications.
- 5.2 When the Engineer-in-Charge/Consultant makes any amendments in the above drawings, the Contractor shall supply fresh sets of drawings with the amendments duly incorporated, along with the drawings on which corrections were indicated.
- 5.3 The Contractor shall furnish for checking and scrutiny advance sets of prints of the layout, assembly and erection drawings. No modifications shall be made in the drawings after they have been approved by the Engineer-in-Charge/consultant without his prior consent. All drawings necessary for assembly, erection, maintenance, repair and operation of the equipment shall be furnished. Different parts shall be suitably numbered for identification and ordering of spare parts.
- 5.4 No material or equipment may be delivered or installed at the job site until the Contractor has in his possession, the approved Shop Drawings for that particular material or equipment.
- 5.5 The Shop Drawings shall be submitted for approval sufficiently in advance of the planned delivery and installation of any materials, to allow the Engineer-in-Charge ample time for scrutiny. No claims for extension of time shall be entertained because of any delay in the work due to his failure to produce Shop Drawings at the right time, in accordance with the approved program.
- 5.6 After approval of the drawings, the Contractor shall furnish a set of tracings of the approved Drawings.
- 5.7 Approval of Drawings by the Engineer-in-Charge shall not relieve the Contractor of any part of his

obligation to meet all the requirements of the Contract or of the correctness of his drawings. The Contractor shall be responsible for any pay for all alterations of the works due to discrepancies or omission in the drawings or other particulars supplied by him, whether such drawings have been approved by the Engineer-in- Charge or not.

- 5.8 The drawings prepared, and the allocated position for equipment's represents a feasible scheme. The layout in the equipment room may be re-arranged only in the allocated space, subject to the approval of the Engineer-in-Charge/Consultant.
- 5.9 Where the work of the Contractor has to be installed/executed in close proximity to, or will interfere with the work of other trades, the Contractor executed shall assist in working out space conditions to make a satisfactory adjustment. If so directed by the Engineer-in-Charge, the Contractor shall prepare composite working drawings and sections at a suitable scale, clearly showing how his work is to be installed in relation to the work of other trades. If the Contractor installs his work before coordinating with other trades, or so as to cause any interference with work of other trades, he shall make all the necessary changes without extra cost to the purchaser.
- 5.10 On completion of work contractor shall provide soft and two sets of hard copies of as- built drawings

## 6.0 VIBRATION ISOLATION AND NOISE LEVEL

All equipment shall operate under all conditions of load without any sound or vibration which is objectionable in the opinion of the Engineer-in-Charge. In case of rotating machinery, sound or vibration noticeable outside the room in which it is installed, or annoyingly noticeable inside its own room, shall be considered objectionable. The provision shall be made for vibration isolation of minimum 90% efficiency. Abnormal vibration and noise level conditions shall be corrected by the Contractor at his own expense.

## 7.0 TECHNICAL DATA

The Tenderers must submit the technical data along with catalogue, literature, and manufacturer's manual for all items as listed in Tender (Technical Specifications) in the indicated format, and submit along with their Tenders. Failure to furnish Technical Data with Tenders may result in summary rejection of Tenders.

## 8.0 GUARANTEE

- 8.1 The contractor shall guarantee that all the material, machinery and components supplied, fabricated, designed and installed by him shall be free from defects due to fault design material and/or workmanship, that the plant shall perform satisfactorily specifically the successful performance of the system in monsoon and summer and the efficiency of the system and all the components shall not be less than the values laid down in the specifications and the capacities shall be within +/- 3% of the specified values, in case of deviation greater than +/- 3%, the contractor shall replace the necessary components at no extra cost or alternately the employer shall be entitled to deduct a proportionate amount from payments due to the contractor.
- 8.2 The period of the guarantee shall be (12) twelve months from the date of first running tests. During which period any or all components found to be defective shall be replaced or repaired free of charge and any shortcomings found in the system as specified shall be removed at no extra cost. The contractor shall provide the necessary personnel and tools for fulfilling the above guarantee.
- 8.3 If the defects are not removed within a reasonable time the employer may arrange to do at the contractor's risk and cost, without prejudice to any other rights.

## 9.0 MAINTENANCE & TRAINING

- 9.1 The maintenance for a period of 12 months from handing over of the plant shall be included under the warranty.
- 9.2 The Contractor shall associate, during the erection and during the Defects Liability Period with the purchaser staff/department's staff to familiarize them with the operation and maintenance of the plant.
- 9.3 If required by the Engineer-in-Charge the Contractor shall agree to train members of the purchaser maintenance staff either at his or the sub- Contractor's work or at such other place or places as may be considered suitable by the Engineer-in-Charge.

10. Maintenance Manual on Completion of Work  
Contractor shall provide 2 sets of hard bound operation and maintenance manual duly approved by

engineering in charge/consultant. Each set shall also contain as built drawings.

#### 11. Spares

Contractor shall provide a list of recommended spare parts for operation and maintenance of equipments for a period of 3 years.

#### WORKS & SERVICES TO BE EXECUTED BY OTHER AGENCIES

The following associated works and services are excluded from Scope of this contract and shall be executed by other agencies in accordance with Contractors approved shop drawings.

- a) Provision of 415 volt, 3 phase power at main panel and all indoor unit. 220 volt 1 phase supply /Exhaust Fans.
- b) False ceiling work

#### 1. CODES & STANDARDS.

- 1.1 All air conditioning equipments for the project shall meet energy efficiency criterion employing environment friendly HFC requirements based on latest state of art technology.
- 1.2 ASHRAE Standards and hand books.
- 1.3 National building codes of India.
- 1.3 Indoor air quality as per ASHRAE 62.1-2007.
- 1.4 Motors, cabling, wiring and accessories as per BIS Codes/ I.E. Rules/National Building Code.

#### Appendix-1

#### 2. BASIS OF DESIGN.

2.1 LOCATON OF SITE DELHI

#### 2.2 AMBIENTDESIGN CONDTIOINS

Outdoor ambient conditions as detailed below are based on weather data Compiled and published by ISHRAE corresponding to 0.4% annual frequency Of occurrence.

##### SUMMER

DRY BULB Temperature 41.5 deg. C (107.5°F)  
Mean Coincidental WET BULB Temperature 23.6 deg. C (75°F)

##### MONSOON

WET BULB Temperature 28.05°C (83°F)  
Mean Coincidental DRY BULB Temperature 33°C (92° F)

##### WINTER

DRY BULB Temperature 6.0deg.C (42.8deg. F)  
Mean Coincidental WET BULB Temperature 5.2deg.C (41.4deg.F)

#### 2.3 INDOOR AIR QUALITY

One stage filtration of normal cleanable filters upto 10 micron particle size

#### 2.4 FRESH AIR

Fresh air quantities for Air conditioning areas are as in accordance with ASHRAE Indoor air quality standard

LIGHTING LOAD as per NBC  
EQUIPMENT LOAD as per NBC

#### 2.5INSIDE CONDITION

Roof Insulation  
ROOM Temperature 24deg.C (75deg.F)±1.1deg.c(2 deg.F)  
Relative Humidity 50% - 60% (Not more than 60%)

### 3.1 PROPOSED SYSTEM

VRV System of Air conditioning is proposed in view of variation in occupancy and time duration for optimum use of energy requirement. The system has an added advantage of Heating in Winter in addition to cooling in Summers at a very negligible cost as the equipment has built-in feature .

SERVER room are provided with additional Split unit as independent STANDBY.

4.0 The area wise cooling loads and proposed cooling units are as follows  
Cooling Load Summary

S	Description	F	Dehu	RE	
				CFM	TR
1	WAITING AREA	F	953	2.5	2.58
2	BST & HLST STAFF	F	1093	2.9	2.93
3	AUDITOR +STAFF	F	883	2.9	2.95
4	NPA-1-2-3	F	796	2.4	2.48
5	EXPENSION AREA	F	2530	5.0	5.06
6	MAINTANANCE	F	502	1.2	1.26
7	CONFERENCE ROOM	F	1113	3.6	3.65
8	PROPOSED STRONG ROOM	F	2725	6.7	6.73
	FIRST FLOOR TOTAL		1059	28	28

### 5.0 COOLING LOADS

#### 5.1 CONSIDERING UTILITY/DIVERSITY FACTORS OF

A) FIRST FLOOR the cooling load 20TR

20 TR

## 5.2 CAPACITY OF PLANT

To meet the above cooling loads a total of 24 HP outdoor units are proposed.

## 6.0 EQUIPMENT LAYOUT

The outdoor units shall be located at Terrace and Indoor units are located in individual area.

The indoor and outdoor units are connected by suitable copper pipes and control wiring. The starting and stopping of units shall be by remote controllers. The condensate drains shall be terminated at nearest building drain points.

## 6.1 POWER REQUIREMENT

Electrical Power for OUTDOOR units shall be 28 KW of 415V/3/50Hz and INDOOR units shall operate on 230V/1/50Hz from power points in rooms. The total power requirement shall be 41KW including power for INDOOR units

## 7.0 VENTILATION

The following shall be provided with mechanical ventilation

- a) Toilets                                      12 Air changes/hour for each toilet.

### Technical Specification

#### PART-II AIRCONDITIONING SYSTEM

##### 1.0 SYSTEM DESCRIPTION

###### 1.1 All area

VRV system provides for air-conditioning for all area with multi indoor units with single outdoor unit. Each indoor unit connected to dedicated outdoor units

###### 1.2 Outdoor unit

Outdoor units for all area are located on terrace/stilt level.

###### 1.3 The Refrigerant Piping

Insulated refrigerant piping interconnecting outdoor and indoor units shall be routed as shown in layout drawing.

###### 1.4 Drain Piping

Insulated drain piping shall be terminated at nearest drain point or nearby shaft through pipe

#### VARIABLE REGRIGERANT FLOW SYSTEM

##### 1. SYSTEM

The Variable Refrigerant Flow (VRF /VRV R 410a refrigerant) System should be air cooled, spilt type air conditioning systems consisting of modular condensing units connected to multiple indoor units, each having the capability of individual set point control. Each modular condensing unit should incorporate at least one inverter control scroll/Rotary compressors to obtain 10% to 100% step less capacity control for enhanced Power saving. The indoor units should be provided with Cordless Remote Control as a standard accessory.

The VRF/VRV units shall be capable of operating within a wide range of ambient temperatures. The Condensing units should be capable of provide cooling within an ambient range of -5 Deg. C to 45 Deg. C DB and heating in the range -10 Deg. C to 15 Deg. C DB.

The refrigerant piping shall be extendable minimum 150 m with 50 m level without any oil trap. Ambient conditions.

##### 2. OUTDOOR UNIT

2.1 The outdoor unit shall be a factory assembled unit housed in a sturdy weather proof casing constructed from rust-proofed mild steel panels coated with a baked enamel finish. The ODU must deliver 100% cooling capacity at 49Deg C ambient Temperature.

The outdoor unit shall have multiple scroll / Rotary compressors and be able to operate even in case of breakdown of one of compressors.

The noise level shall not be more than 68 dB(A) at normal operation measured horizontally 1m away and 1.5m above ground.

The outdoor unit shall be modular in design and shall be allowed for side by side installation.

###### 2.2. Compressor

The compressor shall be of inverter type highly efficient hermetic Vapor Injection Scroll/rotary capable of capacity modulation by time averaging method & Vapor injection Technology. Each ODU should have minimum 1 no. variable compressor upto 12 HP capacity.

### 2.3 Heat Exchanger

The heat exchanger shall be constructed with copper tubes mechanically bonded to aluminium fins to form a cross fin coil. The aluminium fins shall be covered by anti-corrosion resin film. The System must have sub-cooling heat exchanger further to Condenser to increase refrigerating effect in Indoor units.

### 2.4 Fan Motor Speed Control

The condensing unit fan motors to have at least two speed operations to maintain constant head pressure control in all ambient temperatures and modes of operation.

### 2.5 Refrigerant Circuit

The refrigerant circuit shall include an accumulator, liquid and gas shut off valves and a solenoid valves or pulse width modulation valve.

All necessary safety devices shall be provided to ensure the safety operation of the system.

### 2.6 Safety Devices

The following safety devices shall be part of the outdoor unit;

High Pressure Switch, Low Pressure Switch, Fan Motor Safety Thermostat, Over Current Relay, Fusible Plugs, Fuses.

### 2.7 Oil Recovery System

Each unit shall be equipped, with an oil separator to ensure stable operation with long refrigerant piping.

## 3. INDOOR UNIT

3.1 Indoor unit shall be mix-match of duct type. It shall have electronic control valve to control refrigerant flow rate in response to load variations of the room. The fan shall be of the dual suction multi blade type and statically and dynamically balanced to ensure low noise and vibration free operation.

3.2 The address of the indoor unit shall be set automatically in case of individual and group control. In case of centralized control, liquid crystal remote controller shall set it.

### 3.3 Electronic Expansion Valve

Each indoor unit shall be fitted with an electronic expansion valve to control the refrigerant flow in response to the load variations in the room. The electronic expansion valve is to be controlled via a computerized control sensing the return air temperature, refrigerant inlet and outlet temperatures. During the cooling operation the electronic expansion valve shall control the refrigerant superheat degree at the evaporator.

### 3.4 Indoor Unit Fans

Shall be direct driven of the DIDW multi-blade type, statically and dynamically balanced to ensure low noise and vibration free operation. The noise level shall not exceed 45dbA.

### 3.5 Cooling Coils

Shall be direct expansion, constructed from copper tubes expanded into aluminium fins to form a rigid mechanical bond.

## 4. CABLING BETWEEN INDOOR AND OUTDOOR UNITS

The cable between indoor and outdoor units shall run in GI conduit.

## 5. REFRIGERANT PIPEWORK:

5.1 Scope of Refrigerant Piping work shall include Supply, installation, testing and commissioning of all interconnecting pipe-work between the condensing unit & indoor units. Refrigerant quality seamless copper tubes with brazed connections and the appropriate Distribution joints and headers shall be used. The piping should be routed at site in such a manner, that brazed joints in the Refrigeration Piping are kept to a minimum.

### 5.2 Joint Orientation:

Proprietary Distribution refrigeration pipe joints and headers shall be installed in an appropriate orientation to enable correct distribution of refrigerant. The Distribution joints shall be factory insulated with pre-formed sections of expanded Polystyrene / equivalent.

### 5.3 Cleanliness of Piping:

All pipe-work must be kept clean and free from contamination to prevent breakdown of the system. All pipe ends shall be kept sealed until immediately prior to making a joint.

### 5.4 Pressure Testing:

After complete installation of refrigerant piping, it shall be pre-pressure tested and repaired if necessary and further pressure tested to 3,800 Pa, to hold for a minimum 24 hours with dry nitrogen prior to insulating the joints. After satisfactory testing, the refrigerant pipe shall be evacuated and dehydrated to (- 755 MM HG) and held for one to four hours depending on the pipe length.

### 5.5 Refrigerant Charge

Refrigerant charge must be calculated based on the actual length of the refrigerant pipe work. The refrigerant charging process must be carried out with an appropriate charging station and under supervision of Consultancy.

### 5.6 Piping Insulation

All suction & liquid lines of the Refrigerant pipe work shall be insulated with cross linked polyethylene pipe

sections as specified to avoid condensation. The exposed piping insulation shall be painted with U/V paint

#### 5.7 Fixing Pipe Work & Electrical Conduit:

The insulated refrigerant piping and electrical conduit shall run on GI tray properly supported by GI rods. The exposed tray on terrace shall be covered by open able GI covers.

5.8 The OD & wall thickness of copper refrigerant piping shall be as follows:

Size	Thickness	Specification
6.4mm (1/4 in)	22 G	C1220T-O (ANNEALED)
9.5mm (3/8 in)	22 G	C1220T-O (ANNEALED)
12.7mm (1/2 in)	22 G	C1220T-O (ANNEALED)
15.9mm (5/8 in)	22 G	C1220T-O (ANNEALED)
19.1mm (3/4 in)	20 G	C1220T-1/2 H (HALF-HARD)
22.2mm (7/8 in)	20 G	C1220T-1/2 H (HALF-HARD)
28.6mm (1 1/8 in)	18 G	C1220T-1/2 H (HALF-HARD)
34.9mm (1 1/4 in)	18 G	C1220T-1/2 H (HALF-HARD)

#### 6.0 DRAIN PIPING

6.1 The indoor units shall have uPVC drain pipe suitable for 10 kg/cm<sup>2</sup>.

6.2 The pipes shall be laid in proper slope for efficient drainage of condensate water.

#### 6.3 Drain Pipe Insulation

Drain pipes carrying condensate water shall be insulated with 6 mm cross linked polyethylene as specified to avoid any leakage condensation.

The joints shall be properly sealed with synthetic glue to ensure proper bonding of the ends.

#### 7.0 TESTING

The units shall be tested for capacity and COP as per ARI conditions at manufactures premises before delivery, Owners / their representative reserve the right to witness the tests.

#### 8.0 TESTING OF AIR-CONDITIONING SYSTEM

8.1 Routine and types tests for the various items of equipment shall be performed at the contractor's works and test certificates furnished. Functional tests shall be conducted at site.

8.2 The performance tests to determine whether or not the full intent of the specification is meant shall be conducted by the contractor. After notification to the employers that the installation has been completed and the plant has run continuously for a period of at least one weeks, the contractor shall conduct under the direction of the consultants and in the presence of the employer's representatives tests such tests as specified to establish the capacity of various equipment supplied and installed by the contractor.

8.3 The contractor shall operate, test and adjust the air conditioning appliances including adjustment of regulators, dampers, etc.

8.4 All test equipment, labour, operating personnel, oil and refrigerant required for these tests shall be furnished by the contractor to enable the plant to be put in continuous running test for a period of two days after all other tests and adjustments have been made. The performance tests shall be conducted during peak summer and peak monsoon.

#### 8.5 PROCEDURE

8.5.1 Design Conditions: The inside and outside conditions will be recorded for 24 hours duration on hourly basis. The outside and inside dry bulb and wet bulb temperatures shall be recorded by means of a

sling spectrometer with mercury thermometers. The relative humidity shall be computed from the psychometric chart. The inside dry bulb temperature and relative humidity shall fall within the specified limits.

8.6 FUNCTIONAL TESTS

8.6.1 Electrical Equipment:

All the cables shall be tested for continuity and absence of cross phasing. Insulation resistance between the phase conductors and the earth shall be measured shall with the help of a 500-V megger.

Motors:

Starter operation shall be checked for single phasing by removing one of the phases. Overload protection shall be checked by altering the starter thermal overload setting.

TECHNICAL DATA

- 1 Variable Refrigerant Volume Air Cooled Units
  - 1.1 Outdoor Units
    - a Make and Model
    - b. Type (Cooling or heat pump)
    - c Dimension of unit (Overall)
    - d. Actual capacity (TR) at specified conditions
    - e. Permissible length of refrigerant piping (m)
    - f. Type of compressor
    - g.No. of compressor (each unit)
    - h. No. of compressor
  - i. Electrical characteristics
    - j. Power consumption at ARI conditions for each capacity  
100% , 75%, 50% , 25%
- 1.2 Indoor Units
  - a. Manufacturer
  - b. Type
  - c Nominal capacity (TR)
  - d Airflow Min/Max (CFM)
  - e. Sound level (Hi/Lo)
  - f. Overall dimensions (L x W x H)
  - g. Unit weight (Kg)
  - h. Remote controller for each indoor unit (Yes/No)

PART III –AIR DISTRIBUTION SYSTEM

1.0 SCOPE

This chapter covers the general requirements for sheet metal ductwork for air distribution with associated items such as air outlets and inlets, fresh air intake and dampers.

1.2 MATERIAL

1.2.1 RECTANGULAR DUCTS

All ducts shall be fabricated from Galvanized Sheet Steel (GSS) conforming to IS: 277 with coating of minimum 120 grams per square meter (GSM) of Zinc.

The thickness of sheets for fabrication of rectangular ductwork shall be as under. The thickness required corresponding to the longest side of the rectangular section shall be applicable for all the four sides of the ductwork.

Longest side (mm)	Minimum sheet thickness	
	For GSS	For Aluminum
	----- 750 mm and below	
	0.63	0.80
751 mm to 1500 mm	0.80	1.00
1501 mm to 2250 mm	1.00	1.50
2251 mm &above	1.25	1.80

All sheet metal connections, partitions and plenums required for flow of air through the filters, fans etc. shall be at least 1.25 mm thick galvanized steel sheets, in case of G.I. sheet ducting or 1.8 mm thick aluminum sheet,

## 2.0 DOCUMENTATION & MEASUREMENT OF DUCTING

All ducts fabricated and installed should be accompanied and supported by following documentation:

Measurement sheet covering each fabricated duct showing dimensions and external surface area along with summary of external surface area of duct gauge-wise. Duct vanes, grids, flanges shall be measured as ducts fabricated

All duct pieces to have a part number, which should correspond to the serial number, assigned to it in the measurement sheet. The above system will ensure speedy and proper site measurement, verification and approvals.

### TESTING

After duct installation, total duct work (Air-conditioning and Mechanical Ventilation Ducts) should be tested for leakage. The procedure for leak testing should be followed as per SMACNA – “HVAC Air Duct Leakage Test Manual” (First Edition – 1985)

### DUCTWORK LEAKAGE TESTS:

This section of the specification describes the ductwork leakage testing procedure. All ductwork shall be pressure tested for leakage, by smoke test the contractor shall provide the necessary test equipment and skilled labour to carry out the tests satisfactorily.

Testes shall be witnessed and certified by the Client / Consultant representative. Prior to witness of final tests, the contractor shall carry out preliminary tests to ensure the test results are within specified limits.

All duct work shall be tested for leakage without duct insulation or duct enclosure at the joints.

## 3.0 ASSOCIATED ITEMS

### 3.1 Ducting Supports:

All ductwork shall be independently supported from building construction. All horizontal ducts shall be rigidly and securely supported, in an approved manner, with hangers formed of galvanized steel wire ropes and galvanized steel angle/channel or a pair of brackets, connected by galvanized steel wire hangers under ducts, rigid supports may be provided at certain interval if need be. The spacing between supports should be not greater than 2.4 meter. All vertical ductwork shall be supported by structural members on each floor slab. Duct supports may be through galvanized steel insert plates or Toggle end wire fixing left in slab at the time of slab casting. Galvanized steel cleat with a hole for passing the wire rope hanger shall be welded to the plates. Trapeze hanger formed of galvanized steel wire rope using shall be hung through these cleats. Wherever use of metal insert plates is not feasible, duct support shall be through dash/anchor fastener driven into the concrete slab by electrically operated gun. Wire rope supports shall hang through the cleats or wire rope threaded studs can be screwed into the anchor fasteners. In case of PEB structure Loop and Catenary system can be used based on the site conditions as per approved suspension system drawings.

3.2 All horizontal ducts shall be adequately secured and supported. In an approved manner, with trapeze Hangers formed of galvanized steel wire rope in a cradle support method (refer to typical drawings) under ducts at no greater than 300mm centre, for 300mm-above appropriate size angle along with neoprene pad in between the duct & MS angle should be used with prior approval. All vertical duct work shall be supported by structural members on each floor slab. Duct support shall be through dash / anchor fastener driven into the concrete slab by electrically operated gun. Hanger wires shall then hang around the ducting. Rigid supports shall be used in conjunction with wire rope hangers to assist with alignment of services where recommended for by the manufacturer. Rigid support must also be used in conjunction with wire rope hangers with duct work at each change of direction or connection or as per approved drawings. Support ducting in accordance with Schedule I at the end of this Section. Any other solution can be used based on manufacturer's recommendation on site conditions after prior approval. In cases of Spiral ducting the wire can be wrapped directly around the ducting without the need for a spiral ducting clamp for sizes above 1100 a cradle support should be provided, refer to manufacturer's recommendations.

3.3 Ducting over furred ceiling shall be supported from the slab above or from beams after obtaining approval of Construction manager/consultant. In no case shall any duct be supported from false ceiling Hangers or be permitted to rest on false ceiling. All metal work in dead or furred down spaces shall be erected in time to occasion no delay to other Contractor's work in the building. All supports of pipe shall be taken from

structural slab/wall by means of fastener.

3.4 Catenary Supports: Refer to manufacturer's recommendations on Catenary supports with C-clip, special care should be taken with tensioning of the wire and angles at which the installation of services are made.

3.5 Stainless Steel Supports should be available for food, chemical and High Corrosion areas near coastlines. Refer to manufacturers catalogue and installation guide for further technical information. Comply with manufacturer's load ratings and recommended installation procedures.

#### Schedule I: Duct Hanger Schedule

For ducts with external SP upto 250 Pa			For ducts with external SP upto 500 Pa		
Maximum Duct Size (mm)	Gauge	Hanger No.	Maximum Duct Size (mm)	Gauge	Hanger No.
1 - 750	26	1 or 2	1-600 mm	26	1 or 2
751-1000	26	2	601-750 mm	26	2
1001-1200	24	2 or 3	751-1000 mm	24	2 or 3
1201 - 1500	24	3	1001-1200 mm	22	3 or 4
1501 - 1800	22	3 or 4	1201-1300 mm	20	3 or 4
1801-2100	20	3 or 4	1301-1500 mm	18	4
2101-2700	18	4	1501-1800 mm	18	4
			1801-2100 mm	18	4
			2101-2250 mm	18	4 or 5
			2251-2400 mm	18	4 or 5
			2401-2700 mm	18	4 or 5

Notes: All supports are considered at 2400 mm interval in above table and may vary as per the design but should not be greater than 2400mm.

3.6 Desertification fans, Air Conditioning Units, Plenum Boxes, Radiant Panels, Heaters, Fan Coil Units, Diffusers, Cassette units and Chilled Beams.

3.7 All units shall be adequately secured and supported in an approved manner using wire hanger suspension Y fit solution as per manufacturers' recommendation with prior approval.

#### 3.8 Rigid Supports:

Rigid supports if required in conjunction with wire hangers shall be of steel, adjustable for height and Zinc chromate primer coated and finish coated black. Where supports and clamps are of dissimilar materials, a gasket shall be provided in between. If the MS angle at the bottom if required as per design should be as per following table:

Longer size of Duct	Type of Joints
Up to 750	25x25x3 mm L angle with M8 nuts & bolts
751-1000	25x25x3 mm L angle with M8 nuts & bolts
1001-1500	40x40x5 mm L angle with M8 nuts & bolts
1501-2250	50x50x5 mm L angle with M10 nuts & bolts
2251 & above	50x50x6 mm L angle with M10 nuts & bolts

All the supporting system should be supplied from same manufacturer.

## 4.0 CONSTRUCTION

### 4.1 DUCTS

Ducts shall be fabricated at site or factory fabricated and shall be generally as per IS: 655 "Specifications for metal air ducts", unless otherwise deviated in these General Specifications.

The interior surfaces of the ducting shall be smooth.

All the ducts up to 600mm longest side shall be cross broken between flanges by a single continuous breaking.

Ducts of size 600mm and above shall be cross broken by single continuous breaking between flanges and bracings. Alternatively, beading at 300mm centers for ducts up to 600mm longest side, and 100mm centers for ducts above 600mm size shall be provided for stiffening.

As far as possible, long radius elbows and gradual changes in shape shall be used to maintain uniform velocity accompanied by decreased turbulence, lower resistance and minimum noise. The ratio of the size of the duct to the radius of the elbow shall be normally not less than 1:1.5.

Flanged joints shall be used at intervals not exceeding 2500mm. Flanges shall be welded at corners first and then riveted to the duct.

Stiffening angles shall be fixed to the sides of the ducts by riveting at 1.2.5 meters from joints for ducts of size 600mm to 1500mm, and 0.6mm from joints for ducts of size larger than 1500mm. Bracings for ducts larger than 1500mm can alternatively be by/diagonal angles.

Plenums for filters shall be complete with suitable access door of size 450mm x450mm.

### 4.2 AIR OUTLET AND INLETS (SUPPLY AND RETURN)

All air outlets and intakes shall be made of extruded aluminum sections & shall present a neat appearance and shall be rigid with mechanical joints.

Square and rectangular wall outlets shall have a flanged frame with the outside edges returned or curved 5 to 7 mm and fitted with a suitable flexible gasket between the concealed face of the flanges and the finished wall face. The core of supply air register shall have adjustable front louvers parallel to the longer side to give upto 22.5 degrees vertical deflection and adjustable back louvers parallel to the shorter side to achieve a horizontal spread air pattern to at least 45 degrees. Return air grilles shall have only front louvers. The outer framework of the grilles shall be made of not less than 1.6 mm thick aluminum sheet.

The louvers shall be of aero foil design of extruded aluminum section with minimum thickness of 0.8mm at front and shall be made of 0.8mm thick aluminum sheet. Louvers may be spaced 18 mm apart.

Square and rectangular ceiling outlets/intakes shall have a flange flush with the ceiling into which it is fitted or shall be of anti-smudge type. The outlets shall comprise an outer shell with duct collar and removable diffusing assembly. These shall be suitable for discharge in one or more directions as required. The outer shell shall not be less than 1.6 mm thick extruded section aluminum sheet. The diffuser assembly shall not be less than 0.80 mm thick extruded aluminum section.

Linear diffusers shall have a flanged frame with the outside edges returned 3.5 mm and shall have one to four slots as required. The air quantity through each slot shall be adjustable. The metal sheet used for the construction of these shall be minimum 1.6 mm thick extruded aluminum sheet.

Grilles and diffusers constructed of extruded aluminum sections shall have grille bars set straight, or deflected as required. These shall be assembled by mechanical interlocking of components to prevent distortion.

These grilles and diffusers shall have a rear set of adjustable blades, perpendicular to the face blades for deflection purposes.

All supply air outlets shall be fitted with a volume control device, made of extruded aluminum gate section. The blades of the device shall be mill finish/ block shade pivoted on nylon brushes to avoid rusting & rattling noise, which shall be located immediately behind the outlet and shall be fully adjustable from within the occupied space without removing any access panel. The volume control device for circular outlets shall be opposed blade radial/shutter type dampers, or two or more butterfly dampers in conjunction with equalizing grid. Opposed blade dampers shall be used for square and rectangular ceiling/ wall outlets and intakes.

All the products supplied by contractor should supplement 'in performance by selection curves of product ratings from the manufacturer.

Laminar supply air diffusers shall be made of 2mm thick powder coated aluminum sheet duly insulated with 5mm thick doped cell polyethylene foam insulation having factory laminated aluminum foil and joints covered with self-adhesive aluminum tape and having holes 2/3 mm dia including frame work.

### 4.3 FRESH AIR INTAKES

Fresh air intake grills shall be made of extruded aluminum sections.

A flanged frame using RS sections shall be provided on front face to conceal the gap between the louvers and the adjoining wall face. Corners of frame shall be welded. The frame shall be made structurally rigid.

Additional intermediate equally spaced supports and stiffeners shall be provided to prevent sagging/vibrating of

the louvers, at not more than 750mm centers where the louver's length is longer than 750mm. A bird wire screen made of 12 mm mesh in 1.6 mm steel wire held in angle or channel frame shall be fixed to the rear face of the louver frame by screens.

#### 4.4 FLEXIBLE CONNECTION (METAL DUCT CONNECTION TO SUPPLY/ EXHAUST DUCT)

Where sheet metal duct connects to the intake or discharge of fan units, a flexible of fire retarding double layer heavy duty canvas of at least 100mm width shall be provided. The material shall be attached to angle frames by means of steel and over the end of the flexible connection. The material shall be secured between the band and the angle frame by bolting. Sleeve shall be made smooth and the connecting ductwork rigidly held by independent supports on both ends. The flexible connection shall be suitable for fan intake and outlet pressures. This shall be part of the equipment supplier.

### 5 INSTALLATION OF METALLIC DUCT

#### 5.1 DUCTING

The fabrication and installation shall be in a workman like manner. Duct work shall be rigid and straight without kinks.

All joints shall be airtight.

Ducts shall be supported independently from the building structure and adequately, to keep the ducts true to shape. The support spacing shall be not more than 2m. Where ducts cannot be suspended from ceiling, wall brackets or other suitable arrangements, as approved by the Engineer-in-charge shall be adopted. Neoprene or other vibration isolation packing of minimum 6mm thickness shall be provided between the ducts and the angle iron supports/brackets. Vertical duct work shall be suitably supported at each floor by steel structural members.

Where metal ducts or sleeves terminate in woodwork, tight joints shall be made by means of closely fitting heavy flanged collars. Where ducts pass through brick or masonry openings, wooden frame work shall be provided within the openings and the crossing ducts shall be provided with heavy flanged collars on either side of the wooden frame work, so that duct crossing is made leak-proof.

Duct connections to the air-handling unit shall be made by inserting a double canvas sleeve 100 mm long. The sleeve shall be securely bonded and bolted to the duct and unit casing.

Dampers shall be provided in branch duct connections for proper volume control and balancing the air quantities in the system, whether indicated in the drawings or not. Suitable links, levers and quadrants shall be provided for proper operation, control and setting of the dampers. Every damper shall have an indicating device clearly showing the position of the dampers at all times.

#### 5.2 AIR OUTLETS AND INLETS

The locations of the air outlets and intakes shall be shown in the tender drawings and necessary openings and the wooden framework for fixing the grilles shall be provided by the air conditioning contractor. The location of these outlets/ inlets is subject to change and the approval of the Engineer-in-Charge shall be obtained before finally fixing the grilles/diffusers in position.

In installing fresh air intakes, no fixing device shall be visible from the face of the frame. Where louvers are to be fixed in masonry or concrete, fixing shall be with either expanding plugs or raw plugs. Where the louvers are to be fixed in steel or wood, non-ferrous screws or bolts shall be used.

Supply air outlets and return air intakes shall be anodized/ powder coated aluminum to the desired color to match the surroundings wall/ceiling. The fresh air intakes shall be anodized/ powder coated aluminum as approved by the Engineer-in-Charge. The paint color shall be approved by the Engineer-in-Charge.

All damages to the finish of the structure during the installation work shall be made good by the air-conditioning contractor before handing over the installation to the Department.

#### 5.3 BALANCING

The entire air distribution system shall be balanced with the help of an anemometer. The measured air quantities at fan discharge and at the various outlets shall be within  $\pm 5$  percent of those specified/ quoted. Branch duct adjustments shall be permanently marked after the air balancing is completed so that these can be restored to their correct position if disturbed at any time.

#### 5.4 MEASUREMENT

Duct measurements (for insulated ducts) shall be taken before application of insulation.

Duct work shall be measured section wise on the basis of external surface area by multiplying the axial length from flange face to flange face for each section by the corresponding duct perimeter in the centre of that section length.

Uniformly tapering straight sections shall also be measured as in (ii) above. However, for special pieces like tees, bends etc. area computations for surface areas shall be done as per the shape of such pieces.

The quoted unit rate for external surfaces of ducts shall include all wastage allowances, flanges, gaskets for joints, vibration isolators, bracings, hangers and supports, inspection chambers/access panels, splitter dampers with quadrants and levers for position indication, turning vanes, straightening vanes, and all other accessories required to complete the duct installation as per the specifications. These accessories shall not be separately measured.

Grilles and diffusers (except linear diffusers) shall be measured by the cross sectional areas, perpendicular to the airflow, and excluding the flanges. Volume control dampers, where provided shall not be separately accounted for.

Linear diffusers shall be measured by linear measurements only, and not by cross sectional areas, and shall exclude flanges for mounting of the linear diffusers. The supply air plenum for linear diffusers shall be measured as described above for ducting.

Fire dampers shall be measured by their cross sectional area perpendicular to the direction of the airflow. Quoted rates shall include the necessary collars and flanges for mounting, inspection pieces with access door, fusible link/solenoid with wiring, but excluding the fire detectors, etc.

**PART-IV-INSULATION**

**1. SCOPE:**

Supply and fix thermal insulation for piping, ducting and equipment's as per the specification described in this section.

**2. MATERIALS OF INSULATION:**

Thermal insulation material for Duct/Pipe insulation shall be closed cell cross linked polyethylene foam. Thermal conductivity of the insulation material shall not exceed 0.032 W/moK at an average temperature of 25oC. Density of the material shall be 25-30 Kg/m3. The product shall have temperature range of –40 oC to 105oC. The insulation material shall be fire rated for Class 1 as per BS 476 Part 6: 1989 for fire propagation test and as per BS 476 Part 7, 1987 for surface spread of flame test. Water vapour permeability as per DIN 52615 shall not exceed 0.15ng/Pa.Sec.m. Thermal conductivity of the material shall not be affected by ageing, as per DIN 52616. The material must be tested for ageing effect in an accredited laboratory for a minimum period of five years to satisfy the ageing criteria. The smoke density of the material as per AS-1530.3 shall not exceed 1. There shall be no toxicity in the emitted smoke, both under flaming and non-flaming conditions, as per AITM 3.000 (1993).

**3. PIPING INSULATION:**

3.1 The thickness of piping insulation for various pipe sizes shall be as given below:

For refrigerant pipes of dia. upto 19 mm, 13mm thick XLPE Insulation
For refrigerant pipes of dia. 22 mm - 38 mm , 19mm thick XLPE Insulation
For Drain pipes of dia. 20 mm- 50 mm , 6mm thick XLPE Insulation

**PART V- ELECTRICAL WORK**

1.1 This chapter covers the requirements for the electrical works associated with ventilation & Air-conditioning applications, namely, switch boards, power cabling, control wiring, earthing, P.F capacitors and remote control-cum-indicating panels. Electric motors are not covered here, as these are covered as part of the respective equipment specifications.

**1.2 GENERAL**

Unless otherwise specified in the tender specifications, all equipment's and materials for electrical works shall be suitable for continuous operations on 415V/240V ± 10% (3phase/ single phase), 50 Hz. AC system.

All electrical works shall be carried out complying with the Indian Electricity Rules, 1956 as amended to date.

All parts of electrical works shall be carried out as per appropriate CPWD General Specifications for Electrical works.

All materials and components used shall conform to the relevant IS specifications amended to date.

**1.3 SWITCH BOARDS**

The main switch board shall be floor mounted free standing cubical type and shall be factory built fabricated by one of the reputed switch board manufacturer. It shall be suitable for termination of the incoming cable(s)/ bus trunking from top/ bottom. as approved by the Engineer-in-charge, but they shall be cubical design, unless otherwise specified and open able from front.

The capacity of switch gear, starters etc. shall be suitable for the requirements of loads feeder /controlled. ACB shall be used for incomer at the panel of suitable rating.

Switch boards controlling motors shall house starters for motors, unless otherwise specified. Independent single

phasing preventers for each such starter shall be provided. The starter and SPP shall be located adjacent to the controlling switch gear.

One volt meter with selector switch, a set of indicating lamps and fuses for voltmeter shall be provided at each switchboard. One ammeter with CTS and selector switch shall be provided with each motor starter. Instruments shall be flush mounted with the panel and have a glass index not higher than 1.5. The instruments and accessories shall be provided whether or not specifically indicated in the tender specifications.

The fabrication of switchboard shall be taken up only after the drawings for the fabrication of the same are approved by the Engineer-in-charge.

Switchboards shall be fabricated as per specifications indicated in sub-Para above.

The layout of bus bars and cable alleys shall be designed for convenient connections and inter-connections with various switchgears. Connections from individual compartments to cable alleys shall be such as not to shut down healthy circuits in the event of maintenance work becoming necessary on a defective circuit. Care shall be taken to provide adequate clearances between phase bus bars as well as between phase bus bars, neutral and earth.

Where terminations are done on the bus bars by drilling holes therein, extra cross section shall be provided for the bus bars. Alternatively, terminations may be made by clamping.

Provision shall be made for proper termination of cables at the switchboards such that there is no strain either on the cables, or on the terminators. Cables connected to the upper tiers shall be duly clamped within the switchboard.

Identification labels shall be provided against each switchgear and starter compartment, using plastic engraved labels.

Metallic danger board conforming to relevant IS shall be fixed on each electrical switchboard.

#### 1.4 POWER CABLING

Unless otherwise specified, the power cables shall be XLPE insulated, PVC outer sheathed aluminum conductor, armored cables rated for 1100 V grade. The power cables shall be of 2 core for single phase, 4core for sizes upto and including 25 sqmm, 31/2 core for sizes higher than 25sq.mm for 3phase. Where high voltage equipments are to be fed, the cables shall be rated for continuous operation at the voltages to suit the same.

Power cables shall be of sizes as indicated in the tender specifications. In all other cases, the sizes shall be as approved by the Engineer-in-Charge, after taking into consideration the load, the length of cabling and the type of load.

Cables shall be laid in suitable metallic trays suspended from ceiling, or mounted on walls, or laid directly in ground or clamped on structures, as may be required. Cable trays shall be fabricated from slotted angle/solid angles to make ladder type cable tray, designed with adequate dimensions for proper heat dissipation and also access to the cables. Alternatively, cable trays may be of steel sheet with adequate structural strength and rigidity, with necessary ventilation holes therein. In both the cases, necessary supports and suspenders shall be provided by the sub-Contractor as required.

#### 1.5 CONTROL WIRING

Control wiring between indoor and outdoor unit shall be done using ISI marked PVC insulated and PVC sheathed, 1.5 sq.mm copper conductor, 250 V grade, cables drawn in ISI marked steel or PVC conduits. Alternatively, armored multi-core copper conductor cables may also be used for the purpose. The control cables interconnecting between indoor and outdoor unit shall be of multi-core armored type only, the number and size of the control cables shall be such as to suit the control system design adopted by the Contractor.

Control cables shall be of adequate cross section to restrict the voltage drop.

In the case of control wires drawn through steel conduits, the wire drawing capacity of conduits, as specified under the CPWD General Specifications for Electrical Works (Part I) 1994 shall not be exceeded.

Runs of control wires within the switchboard shall be neatly bunched and suitably supported/clamped. Means shall be provided for easy identification of the control wires.

Control wiring shall correspond to the circuitry/sequence of operations and interlocks approved by Engineer-in-Charge.

#### 2.0 MINIATURE CIRCUIT BREAKER (MCB)

Miniature Circuit Breaker shall comply with IS-8828-1996/IEC898-1995. Miniature circuit breakers shall be quick make and break type for 240/415 VAC 50 Hz application with

The terminals shall be protected against finger contact to IP20 Degree of protection. All DP, TP, TPN and 4 Pole miniature circuit breakers shall have a common trip bar independent to the external operating handle.

#### LV CABLES

##### 1.0 General

Technical specifications in this section cover supplying and laying of:

11 LV cables

##### 2.0 CODES & STANDARDS:

All equipment's, components, materials and entire work of cabling system shall be carried out in conformity with Bureau of Indian Standards and Codes of Practice as amended up to date and as below:

PVC insulated heavy duty cables IS 1554  
 Cross link polyethylene insulated PVC (sheathed XLPE cables) IS 7098  
 Conductors for insulated electrical cables IS 8130  
 Recommended current rating IS 3961  
 Recommended short circuit rating of high voltage PVC cables IS 5891

In addition, relevant clauses of the Indian Electricity Act 1910 and Indian Electricity Rules 1956 as amended up to date shall also apply.

### 3.0 Cables

3.1 Medium Voltage Cables: Up to 25 sq.mm size, Medium voltage cables shall be aluminum conductor XLPE insulated, PVC sheathed armoured conforming to IS 7098-part-1 and the cable below 25 sqmm size shall be copper conductor PVC insulated, PVC sheathed conforming to IS-1554-part-1.

All medium voltage Cables shall be rated for a 1100 Volts. The cable shall be stranded aluminium /Copper conductor in case of above 10 sq.mm whereas solid conductor in case of 10 sq.mm. And below.

Current ratings shall be based on the following conditions.

Maximum conductor temperature 70.0 deg C  
 Ambient air temperature 45.0 deg C  
 Ground temperature 30.0 deg C  
 Depth of laying 750 mm

Short circuit rating of cables shall be as specified in IS 1554 Part-I.

Cables have been selected considering conditions of maximum connected loads, ambient temperature, laying method, grouping of cables and allowable voltage drop. However, the contractor shall recheck the sizes before cables are fixed and connected to service.

### LIST OF ACCEPTABLE MAKES OF EQUIPMENTS / MATERIALS

S.No.	Description	Makes/Manufacturer
1.	VRF/VRV AC System	Toshiba/ Mitsubishi/ Hitachi/ Daikin/Voltas/Carrier/O-general/Bluestar
2.	Split/Cassette AC System	Toshiba/ Mitsubishi/ Hitachi/ Daikin/Voltas/Carrier/O-general/Bluestar
3.	G.I. Sheets	Sail/ Tata/Jindal
4.	Welding Rods	Advani/L&T
5.	Duct Support	Hilti/ walraven/gripple
6.	Anchor/Fastener	Hilti/Fisher
7.	Grills/Diffusers/ Louvers	Conaire/Caryaire/Systemair/Mapro
8.	insulation/Acoustic Lining	Supreme / paramount /Trocellene
9.	Copper refrigerant pipe	Rajco/Mandev/Mahflow
10.	UPVC drain piping	Supreme/Astrals/Finolex
11.	propeller type exhaust fan	Kruger/ havells
12.	MCB	Schneider (Multi-9)/ Legrand/ Siemens/havells
13.	Selector Switch	Kacee/L&T/BCH/Areva
14.	LT Cables / Control Cables	Bonton/ Finolex/polycab
15.	PVC Conduits	Precision/BEC/AKG

## **DESIGN PARAMETRES**

### **I) BASIS OF DESIGN**

**1. Site Location** **SBI APMC SECTOR - 88 AT NOIDA.**

#### **2. Introduction**

A HVAC System shall be designed, installed & commissioned to provide thermally controlled environment for the proposed facility.

<b>3. Outside Design Conditions</b>	<b>DBT °C</b>	<b>WBT °C</b>
Summer/Monsoon/Winter	44.4/35.0/7.2	23.9/28.3/5.0
<b>Inside Design Conditions</b>	<b>DBT °C</b>	<b>RH %</b>
Summer/Monsoon/Winter	23.89 +/-1.0	40% to 60%
Winter	No provision of winter heating	

**4. Filtration:** Pre filters of efficiency 90% down to 10 micron particle size shall be installed in all the indoor units at the intake for AC application.

**5. Exposed Roof:** All exposed roof/terraces shall be insulated with 50mm thick expanded polystyrene of density 20 Kg/CMT or equivalent material by AC contractor (If quantified in BOQ otherwise by other agencies) to get an overall heat transmission factor of 0.12 BTU/HR/SFT/°F.

**6. Power Supply:** Stabilized three phase four wire AC supply i.e. 415 Volts  $\pm 10\%$  & 50 Hz  $\pm 5\%$  with double earthing shall be made available near each Isolators of Ductable unit & Single phase power supply with earthing near Isolators/MCB of Hi Wall Unit Fan etc.

### **II) DESIGN PARAMETERS**

#### **A) Ducting Work**

a) Method of Duct Design	:	Equal Friction method
b) Maximum air velocity in supply duct MPM	:	500.00
c) Maximum air velocity in return duct MPM	:	450.00
d) Friction loss in duct(maxm.)MM Wg in 100 mt run.:		8.33
e) Maximum velocity at supply air grill outlet MPM :		150.00

### **III) NOISE & VIBRATION CONTROL**

The air conditioning contractor must take all necessary precautions to have minimum noise generation and its transmission. Minimum vibration as permitted by IS relevant code shall be ensured.

## **MODE OF MEASUREMENT**

The following measurement code shall apply to the Contract:

#### **A.1 Insulation**

1. This shall be measured on linear basis in meters.

#### **A.2 Electrical Cabling work**

- a) All power cables/ Controls cables shall be measured on linear basis in meters.
- b) No extra price shall be paid on account of end termination of cables which include thimble, gland etc.

#### **A.3 Structural Supports**

No extra price shall be paid on account of structural supports required for piping, Ducting & cabling work.

### **SPECIFICATIONS**

- All the works specified and provided for in the tender/ schedule and drawing or which may be required to be done in order to perform and complete any part there of shall be executed in accordance with the technical specification, workmanship, quality control, as prescribed whether enclosed/ not enclosed in this document, in the specification & codes, with up to date amendments, in the following order:-
  - a) CPWD/ DSR
  - b) IS (BIS) Codes
- All works under this contract (wherever grey cement is used) have to be executed in OPC.
- The quantities given in the tender are approximate. However, the payment shall be made on the basis of actual measurements taken on site and in conformity with CPWD Specification and BIS Codes. It is clarified that all quantities are subject to change and no claims whatsoever on this behalf shall be entertained.
- All materials used in the works shall be of their respective kind and quality specified in the tender document or approved by the SBI and/ or Architect and shall comply strictly with the requirements of the latest specifications of CPWD and Indian Standard Codes.
- The work shall be executed and measured as per metric dimensions given in the Schedule of Quantities, Drawings etc. (FPS units wherever indicated are for guidance only).

**Signature of Contractor & Seal**

**TIMBER***As per IS 1708-1969*

Test Required & Procedure	Frequency	Acceptance Criteria
1	2	3

**1. Moisture Content and Specific Gravity Test preparation and procedure:**

a) **Measurement and weight:** Prior to each test, the dimensions of each test specimen shall be measured correct to 0.01 cm and the specimens shall be weighed correct to 0.001 gm.

For every Ten cum or part thereof.

*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:*

$$\text{Percentage Moisture content} = \frac{WI - WO}{WO} \times 100$$

*WI = Weight of sample at test in gms. WO = Oven dry wt. of sample in gms.*

*Moisture content shall not exceed following values*

i) *Timber for frames = 14%*

ii) *Timber for planking shutters etc. = 12%*

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  $27^{\circ} \text{C} \pm 2^{\circ} \text{C}$  temperature and  $65 \pm 5\%$  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.

c) **Control of temperature:** To avoid significant changes in strength properties all test specimen shall be tested within the temperature range of  $27^{\circ} \pm 2^{\circ} \text{C}$ . The temperature at the time of test shall be recorded.

Test Required & Procedure	Frequency	Acceptance Criteria
1	2	3

d) **Rate of loading:** The rate of loading of the rest 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><b>2. Consistency-</b></p> <p><b>Procedure:</b> Insert a clean metal rod or palette knife into the original container and examine the nature of the setting.</p> <p><b>3. Finish-</b></p> <p><b>Procedure:</b> 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><b>4. Residue on Sieve-</b></p> <p><b>Outline:</b> 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><b>Procedure:</b> 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 a 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 trap the  
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 ethyl acetate  
(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 until  
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:** Weight 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 10litres.

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

**SAFETY CODE**

- 1) First aid appliances including adequate supply of sterilised 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 man 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 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 ready-made 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 Book No. \_\_\_\_\_.

Date & Signature of  
Contractor.

Date & Signature of  
Architect'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.

**ARCHITECT**

**SITE ENGINEER / BANK'S ENGINEER**

**MOHAN AND ASSOCIATES.**

Contractor's Signature & Stamp

**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**

- a) Name of the Contractor
- b) Name of the Work as given in the Agreement
- c) Agreement W O
- d) Tender Amount
- e) Date of Commencement of Work
- f) Period allowed for Completion as per Agreement
- g) Date of Completion as per Agreement
- h) Period for which Extension of Time has been given

- |  | <b><u>Date</u></b> | <b><u>Month</u></b> | <b><u>Year</u></b> |
|--|--------------------|---------------------|--------------------|
| i) 1 <sup>st</sup> Extension vide Bank's Letter No   |                    |                     |                    |
| j) 2 <sup>nd</sup> Extension vide Bank's Letter No   |                    |                     |                    |
| k) 3 <sup>rd</sup> Extension vide Bank's Letter No   |                    |                     |                    |
| l) Reasons for which extensions have been previously given (Copies of the previous applications should be attached)                  |                    |                     |                    |
| m) 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

\_\_\_\_\_

Dated

**BILL OF QUANTITIES****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.

**(Refer annexed file/section in e-tender portal for detailed Bill of Quantities)**

**AGREED AND ACCEPTED ALL THE TERMS & CONDITIONS.**

**SIGNATURE OF CONTRACTOR DATE:**

**SEAL**

**SAMPLE BUSINESS RULE DOCUMENT**  
**BUSINESS RULE DOCUMENT OF ONLINE AUCTION**  
**BUYER NAME STATE BANK OF INDIA**  
**AUCTION TO BE CONDUCTED**  
**BY**

**M/s. Antares Systems Limited, Bangalore,**  
**#24,3rd Stage, 4th Block, Basveshwara Nagar,**  
**Bangalore- 560079, India**  
**Mr. Pravesh Mani**  
**MOB-919044314492**

Website Link:

(<https://www.tenderwizard.com/SBIETENDER>)

**DATE & TIME OF AUCTION**

Online Auction Date: (Date and Time of AUCTION to be intimated after opening of technical bid and Price bid)

Auction Time: One hour

(With 6 extensions of 5 min each)

**DOCUMENTS ATTACHED (A) Business rules for Reverse Auction**

(B) terms & conditions of Reverse Auction

(C) Annexure -I

(D) Process Compliance Statement (Annexure II)

(E) Price Confirmation Letter (Annexure III)

(F) Price break up (Annexure IV)

**SPECIAL INSTRUCTIONS** Bidding in the last minutes and seconds should be avoided in the bidder shown interest. Neither the Service Provider nor SBI will be responsible for any lapses /failure on the part of the Contractor/Vendor, in such cases.

**Important Note:** As per the new Inter-operability guidelines released by Controller of Certifying Authorities (CCA), the Secured Socket Layer (SSL) certificate for an e-Procurement application is generated on a new algorithm, SHA2. Also, the Digital Signature Certificates that will be applicable for these platforms have to be SHA2 algorithm compliant. For the same, the users have to ensure that they have Windows XP (SP3) / Windows Vista/Windows7 or applicable version to be installed in the irrespective PC/Laptop. In case of Windows XP service pack 3, if you get any issue you can install the SSL patch, which is available at our download section of our e-Tender/e-Auction Portal and also at our corporate website [www.auctiontiger.net](http://www.auctiontiger.net) just below the label of "Download".

**(A) Business rules for Reverse Auction:**

1. Against this Enquiry for the subject item/system with detailed scope of supply as per our specification, SBI may resort to "REVERSE AUCTION PROCEDURE" i.e. ON-LINE BIDDING on INTERNET.
2. For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.
3. SBI will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on Internet. SBI will inform the Contractor/Vendor in writing in case reverse auction, the details of service provider to enable them to contact and get trained.
4. Business rules like event date, time, start price, bid decrement, extensions, etc. also will be communicated through service provider for compliance.

5. Contractor/Vendors have to send the mail the compliance form in the prescribed format (provided by service provider) before start of Reverse auction. Without this the Contractor/ Vendor will not be eligible to participate in the event.
6. Reverse auction will be conducted on schedule date &time.
7. At the end of reverse auction event, the lowest bidder value will be known on the network.
8. The lowest bidder has to mail the duly signed filled-in prescribed format as provided on case-to- case basis to SBI through service provider within 24hours of auction without fail.
9. In case SBI decides not to go for Reverse auction procedure for this tender enquiry, the price bids and price impacts, if any already submitted and available with SBI shall be opened as per SBI standard practice.

The reverse auction will be treated as closed only when the bidding process get closed in all respects for the item listed in the tender.

(B) Terms & conditions of Reverse Auction:

SBI shall finalize the procurement of the item against this Tender through reverse auction mode. SBI has made arrangement with M/s. **Antares Systems Limited, Bangalore**, who shall be SBI's authorized service provider for the same. Please go through the guidelines given below and submit your acceptance to the same along with your Commercial Bid.

1. Computerized Reverse auction shall be conducted by SBI, on pre-specified date, while the Contractor/ Vendors shall be quoting from their own offices/place of their choice. Internet connectivity and other paraphernalia requirements shall have to be ensured by Contractor/ Vendors themselves. In the even to failure of their Internet connectivity, (due to any reason whatsoever it may be) it is the bidders' responsibility. In order to ward-off such contingent. Situation bidders are requested to make all the necessary arrangements/alternatives such as back-up power supply whatever required so that they are able to circumvent such situation and still be able to participate in the reverse auction successfully. Failure of power at the premises of Contractor/ Vendors during the Reverse auction cannot be the cause for not participating in the reverse auction. On account of this the time for the auction cannot be extended and SBI is not responsible for such eventualities.
2. ETL shall arrange to train your nominated person(s), without any cost to you. They shall also explain you all the Rules related to the Reverse Auction. You are required to give your compliance on it before start of bid process.
3. **BIDDING CURRENCY AND UNIT OF MEASUREMENT:** Bidding will be conducted in Indian currency & Unit of Measurement will be displayed in Online Auction.
4. **BIDPRICE:** The Bidder has to quote the rate as per the Tender Document provided by State Bank of India.
5. **VALIDITY OF BIDS:** The Bid price shall be firm for a period specified in the tender document and shall not be subjected to any change whatsoever.
6. At the end of the reverse auction, bidder has to provide the price confirmation letter & a detail break up for his lowest offer within 24 hour of closing of auction as per the Annexure III & IV respectively.
7. Procedure of Reverse Auction: