

NIT NO	SBIRB/2023-24/06
DATE	29.09.2023



STATE BANK INSTITUTE OF RURAL BANKING (SBIRB), HYDERABAD

INVITES

TENDER FOR

**SUPPLY, INSTALLATION, TESTING AND COMMISSIONING (SITC) OF HVC AT
PROPOSED RENOVATION OF ADMIN BUILDING AT STATE BANK INSTITUTE OF
RURAL BANKING (SBIRB), LINGAMPALLY, HYDERABAD.**

FROM

*** Air conditioning vendors empanelled with SBI-LHO, Hyderabad
under respective category are only eligible to participate***

THROUGH E-TENDERING PROCESS

mape connoisseurs,

(Milind Architectural, Interior & Pankaj Engineering Connoisseurs)

3-4-485 & 485/1, D1, I Floor, Near Bank of Baroda,

Opp,. Reddy women's college, Barkatpura,

HYDERABAD – 500 0027.

Tel. : 48557866409 – 48557866.

URL: www.mapeindia.com

E-mail: info@mapeindia.com

Clients

Chief Manager(Admin),

State Bank Institute of Rural Banking(SBIRB)

Lingampally, Hyderabad

Hyderabad-500019

Phone No:040-23463306

Email: agmadmin.sbirb@sbi.co.in

NOTICE INVITING TENDER (NIT)

SBIRB, invites online tenders on behalf of State Bank of India for the following work in TWO BID SYSTEM from the empanelled HVAC contractors of LHO Hyderabad circle in respective category.

1.	Name of the Work	SUPPLY, INSTALLATION, TESTING AND COMMISSIONING (SITC) OF HVC AT PROPOSED RENOVATION OF ADMIN BUILDING AT STATE BANK INSTITUTE OF RURAL BANKING (SBIRB), LINGAMPALLY, HYDERABAD.
2.	Estimated cost of work	SITC: ₹868530/- plus GST as applicable
3.	Quantum of Earnest Money Deposit (EMD)	₹9000/- DD Drawn In Favor of "CM(Admin), SBIRB, payable at Hyderabad. EMD will be exempted under submission of valid MSE certificate in the respective category. EMD/Valid exemption certificate should be submitted before due date
4.	Time for Completion of work	30Days from the date of PO or handover of the site whichever is earlier.
5.	Eligibility of the contractor	1. empanelled AC contractors of LHO Hyderabad circle in respective category. 2. The vendor should have a valid digital signature to participate in the online tendering process
6.	Date and Time where tender forms are available	From 30.09.2023 to 07.10.2023
7.	download from the websites:links	https://etender.sbi
8.	Last date and time of submission of online Tender	07.10.2023 upto 15.00 hours
9.	Date, Time of opening of e-Tenders(Technical bid	07.10.2023 upto 15.10 hours
10.	Place of submission of EMD/MSE certificate, opening of tender, contact person /telephone no/email address.	Chief Manager(Admin), State Bank Institute of Rural Banking(SBIRB) Lingampally, Hyderabad Hyderabad-500019 Phone No:040-23463306 Email: agmadmin.sbirb@sbi.co.in
11.	Quantum of Security Deposit (percentage)	3% of the contract value.
12.	Terms of payment of Bills, if any (specify the	i) No advance payment. ii) a. 70% payment after Supply of all materials

	minimum value of work for payment of running account bills)	at site b. 25% payment after installation , testing & Commissioning of all AC units c. 5% will be retained as security deposit, subject to deductions as applicable.
13.	Initial Security Deposit (ISD)	2% of the Contract value
14.	Defects Liability Period	12 Months from the date of completion or commissioning and handover of the work.
15.	Liquidated Damages for delay in work	If the work is delayed beyond the scheduled completion date, then 0.50% of the total value of the contract per week (or part thereof) of delay will be deducted from the final bill value subject to max 5%of the value of work
16.	Validity of tender	90 days.
17.	Eligible Taxes	A)Income Tax will be deducted at source as per Govt. Guidelines. B) Reimbursement of GST will be made only on submission of proper GST invoice as per applicable GST provision. The contractor should comply with the following; <ol style="list-style-type: none"> 1. Contractor should have GST Registration Number 2. Invoice should specifically/separately disclose the amount of GST levied at applicable rate as per GST provision 3. In case of Correction in the bills after scrutiny, contractor should submit fresh bills for payment 4. Contractor should timely file his GST return in accordance with GST provisions to enable the bank to claim the credit of GST paid to the contractor 5. The GST Number of State Bank of India are For Telangana State -36AAACS8577K1ZQ
18.	Electronic Payment	Payment shall be made by way of Electronic fund transfer and the bill will be paid by the Branch. Firm should furnish details of the bank, a/c no, IFSC code
19.	Any additional Information	The quoted rate should be inclusive of materials, labour, wages, fixtures, transportation, installation, all taxes (excluding GST), wastages, Octroi, machinery, temporary works such as scaffolding, cleaning, overheads, profit, statutory expenses, incidental charges and all related expenses to complete the work

20.	For any queries or support in connection with the online tendering process, please contact our E-procurement solutions agency	e-Procurement technologies Limited, Ahmedabad.		
		Dinesh Bagresha	Dinesh.bagresha@eptl.in	95108 12960
		Devendra R	Devendra.r@eptl.in	95108 12971
		Nandan Valera	Nandan.v@eptl.in	90810 00427
		Fahad Khan	Fahad@eptl.in	99044 06300
		Nikhil Khalas	Nikhil@eptl.in	93745 19729
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.				
SBI reserves the right to accept or reject any or all bids without assigning any reasons thereof, even after opening of the bids.				
<p>If the final L1 bid is below 7.5% of the estimated cost then the L-1 contractor has to submit Additional Security Deposit (ASD)/Additional Performance Guarantee (APG). The amount of such ASD / APG shall be the difference between 92.5 % of estimated cost put to tender and the quoted price.</p>				
Bank Guarantee or FDR receipt favoring Asst.General Manager, SBI, but drawn on any other Nationalized Bank may also be accepted as ASD / APG.				

Chief Manager

INSTRUCTIONS TO THE TENDERERS

1. Scope of Work:

Online Sealed Tenders are invited by State Bank of India for the work as specified in the tender

1.1 Site and Its Location

The proposed work is to be carried out as specified in the NIT

2.0 Tender Documents

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

1. Instructions to tenderers
2. General Conditions of Contract
3. Special Conditions of Contract
4. Additional Conditions for Electrical Installation
5. Technical Specifications
6. Drawings
7. Price Bid

2.1 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. Technical Specifications
- c. Additional Conditions for Electrical Installation
- d. Special Conditions of Contract
- e. General Conditions of Contract
- f. Instructions to Tenderers

2.2 Complete set of Bid documents can be downloaded from the Bank's website <http://www.sbi.co.in> under "SBI in the News" link "procurement news" and also at our e-procurement agency's portal <https://etender.sbi> during the period mentioned in the NIT.

2.3 The tender documents are not transferable.

3 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 local authorities requirement, traffic regulations etc;

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

4 Earnest Money

4.1 The tenderers are requested to submit the Earnest Money as specified in the NIT in the form of Demand Draft or Banker's Cheque in favour of as mentioned in the NIT drawn on any Bank in India. EMD will be exempted subject to submission of valid MSE certificate under respective category.

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 within 30 days of award of Contract.

4.5 EMD of successful tenderer will be retained as a part of security deposit.

5 Initial Security Deposit

The successful tenderer will have to submit a sum equivalent to 2% of contract value less EMD by means of D/D as mentioned in the NIT within a period of 15 days of acceptance of tender.

6 Security Deposit

6.1 Total security deposit shall be **3%** of contract value or as per GO issued by central government at that time i.e settlement of final bill. 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 bill 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.

6.2 No interest shall be paid to the amount retained by the Bank as Security Deposit.

7 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 15 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.

For AMC separate agreement will have to be entered with the Bank against the issue of PO.

8 Completion Period: As stipulated in the NIT

9 Validity of Tender

Tenders shall remain valid and open for acceptance for a period of 3 (Three) months 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 acceptance to the Bank without prejudice to any other right or remedy the Bank shall be at liberty to forfeit the EMD.

10 Liquidated Damages

The liquidated damages shall be 0.5% per week subject to a maximum of 5% of contract value.

11 Rates and Prices

11.1 In case of item rate tender

11.2 APPLICABLE ONLY FOR OFFLINE TENDER:

- a. 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.
- b. 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 amount will be corrected.
- c. 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.
- d. 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.
- e. Each page of the BOQ shall be signed by the authorized person and cutting or overwriting shall be duly attested by him.
- f. Each page shall be totaled and the grand total shall be given.

11.3 APPLICABLE BOTH ONLINE/ OFF LINE TENDERS

- a. The rate quoted shall be firm and shall include all costs, allowances, taxes, levies, etc except GST. Applicable GST will be reimbursed by the Bank on the executed value.
- b. If no rate is quoted for a particular item the contractor shall not be paid for that item when it is executed.

12. CLARIFICATION /AMENDMENTS AND CORRIGENDUM:

12.1 Bidder requiring any clarification of the bidding document may notify us in writing at the address/by e-mail given in the NIT within the date/time mentioned.

12.2. The clarifications to the queries received or amendments in the tender will be posted on the Bank's website and e-tender portal as a corrigendum/Addendum. No individual communication will be conveyed to the Bidders. The interested parties/Bidders are advised to check the above website regularly till the date of

submission of Bid document and ensure that clarifications / amendments issued, if any, have been taken into consideration before submitting the Bid. Such amendments/clarifications, if any, issued by the Bank will be binding on the participating Bidders. Bank will not take any responsibility for any such omissions by the Bidder. Bank, at its own discretion, may extend the deadline for submission of Bids in order to allow prospective Bidders a reasonable time to prepare the Bid, for taking the amendment into account.

- 12.3. Bank/ SBI reserves the right to amend, rescind or reissue the tender, at any time prior to the deadline for submission of Bids.
- 12.4. No request for change in commercial/legal terms and conditions, other than what has been mentioned in the tender or any addenda/corrigenda or clarifications issued in connection thereto, will be entertained and queries in this regard, therefore will not be entertained.
- 12.5. Queries received after the scheduled date and time will not be responded/acted upon.

13. Bank's RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS

Bank/ SBI reserves the right to accept or reject any Bid in part or in full or to cancel the Bidding process and reject all Bids at any time prior to award of the contract, without incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the Bank's action.

- 21.4 The acceptance of a tender rests with the Competent Authority, who does not bind himself to accept the lowest tender and reserves to himself the authority to reject any or all of the tenders received, without assigning any reasons. All tenders in which any of the prescribed conditions are not fulfilled, or are incomplete in any respect are liable to be rejected.
- 21.5 The notification of award will constitute the formation of the Contract. The selected Bidder should convey acceptance of the award of contract by returning duly signed and stamped duplicate copy of the PO within 15 days of receipt of the communication and to enter into an agreement with the Bank.

14 OPENING AND EVALUATION OF BIDS

14.1 The online Bids will be opened at the office of **the Regional Manager**; Representatives of Bidder may be present during opening of Bids. However, Bids would be opened even in the absence of any or all the bidder's representatives.

14.2 In the two bid system, the technical bids will be opened at the scheduled time mentioned in the NIT. In case, if the date of opening is declared as nonworking day or Holiday, the bids will be opened on the next working day. The price bid of the qualified vendors will be opened on a subsequent date which will be intimated to the bidders.

14.3 VALIDITY OF BID

Bids shall remain valid and open for acceptance for a period stipulated in this document from the date of opening of price bid. If the Bidder 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.

15.0 PRELIMINARY EXAMINATION

15.1 M/s Bank will examine the Bids to determine whether they are complete, on required formats & accompanied by supporting Documents and the Bids are conforming to all the terms and conditions of the Bidding Document without any deviations and are generally in order.

15.2 If a Bid is not conforming to the terms and conditions, it will be rejected. However, Bank will have right to demand submission of more information as required, if any of the document is partly submitted. If the bidder does not respond within the stipulated time, BANK will reject or disqualify the bid.

16.0 TECHNICAL EVALUATION

16.1 Only those Bidders and Bids who have been found to be in conformity of the eligibility terms and conditions during the preliminary evaluation would be taken up for further detailed evaluation. Those Bids who do not qualify the eligibility criteria and all terms during preliminary examination will not be taken up for further evaluation.

16.2 The Bank will evaluate the bids on technical & functional parameters including site or factory visit and witness demos of the system and verify functionalities, response times etc from the previous employers or users of the equipment.

16.3 During evaluation of bids, the Bank may, at its discretion ask the bidders for clarification of its bid. The request for clarification shall be in writing and no change in prices or substance of the bid shall be sought, offered or permitted. No post bid clarification at the initiative of the bidder shall be entertained.

16.4 The tenders must be unconditional. Conditional tenders leading to unknown / indefinite liability may be summarily rejected.

17.0 EVALUATION OF PRICE BIDS AND FINALIZATION

17.1 Only those Bidders who qualify in Technical evaluation would be shortlisted and the online price bid submitted by the bidder will be opened.

17.2 The L1 Bidder will be selected on the basis of net total of the price evaluation as quoted in the on line bidding.

17.3 The process of online rebidding amongst the two or more contractors offering same rates shall continue till L1 bidder is discovered.

17.5 In case, any of such contractors or all contractors (who have quoted same tender amount in the initial bidding or subsequent bidding) refuse to submit revised offer, it shall be treated as “Withdrawal of tender” by the Contractor before acceptance by BANK and the EMD of such contractors shall be forfeited and they shall not be allowed to participate in the re-tendering process for the work.

GENERAL CONDITIONS OF CONTRACT

a. 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) a body Corporate created under State Bank of India Act 1955, having its Corporate Centre at State Bank Bhavan, Madame Cama Road, Mumbai 400 021 and a Apex Training Centre State Bank Institute of Consumer Banking, Begumpet, Hyderabad and includes the client's representatives, successors and assigns.

'Architects/Consultants ' shall mean **as M/s** Mape

- 1.1.2 'Site Engineer' shall mean an Engineer appointed by the Bank as their representative to give instructions to the contractors.
- 1.1.3 The Contractor' shall mean the individual or firm or company whether incorporated or not, undertaking the works and shall include legal personal representative of such individual or the composing the firm or company and the permitted assignees of such individual or firms of company.

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

- 1.1.4 'Engineer' shall mean the representative of the Architect/consultant.
- 1.1.5 '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 made under the provision herein after contained.
- 1.1.6 '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.
- 1.1.7 "Week" means seven consecutive days.
- 1.1.8 "Day" means a calendar day beginning and ending at 00 Hrs and 24 hrs respectively.

CLAUSE

1. Total Security Deposit

Total Security deposit comprise of:

- a. Earnest Money Deposit
- b. Initial Security Deposit
- c. Retention Money

(a) Earnest Money Deposit(EMD) :

- The tenderer shall furnish EMD as specified in the NIT in the form of Demand draft or Bankers cheque drawn in favour of as specified in the NIT, on any Scheduled Bank. **EMD is exempted subject to submission of valid MSE certificate in respective category.**
- No tender shall be considered unless the EMD is so deposited in the required form.
- No interest shall be paid on this EMD.
- The EMD of the unsuccessful tenderer shall be refunded soon after the decision to award the contract is taken without interest.
- The EMD shall stand absolutely forfeited
 - i. if the tenderer revokes his tender at any time during the period when he is required to keep his tender open acceptance by the SBI
 - or
 - ii. after it is accepted by the SBI the contractor fails to enter into a formal agreement
 - or
 - iii. fails to pay the initial security deposit as stipulated

or

- iv. fails to commence the work within the stipulated time.

Note: If the tendering process is delayed for any reason, the Bank will insist on the revalidation of the DD and the bidder has to get it revalidated and submit again.

(b) Initial Security Deposit (ISD)

The amount of ISD shall be 2% of accepted value of tender including the EMD. Balance of ISD (i.e. excluding EMD) is to be submitted in the form of *DD* drawn on any scheduled Bank and shall be deposited within 15 days from the date of letter of acceptance of tender.

(c) Retention Money

Besides the ISD as deposited by the contractor in the above said manner the retention money shall be deducted from the running account bill at the rate of 10% of the gross value of work done by the contractor and claimed in each bill provided the total security deposit i.e. the ISD plus Retention Money shall both together not exceed 5% of the contract value. 50% of the total security deposit shall be refunded to the contractor without any interest on issue of Virtual Completion certificate by the 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.

2.0 NA

3.0 Language Errors, Omissions and Discrepancies

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

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

- v. Between the duplicate/subsequent copies of the tender, 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 strictly in 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 drawings and/or specifications, the removal from the site of any material brought thereon by the contractor and the substitution of any other materials thereof, the demolition, removal and/or re-execution of any work executed by him, the dismissal from the work of any person employed/engaged thereupon.

5 (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.

5 (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 fifteen days thereof he shall sign an agreement in a non-judicial stamp paper of appropriate value.

6.0 Ownership of drawings

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

7.0 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 the 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.

Copies of Agreement

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

8.0 Liquidated Damages

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

9.0 Materials, Appliances and Employees

Unless or otherwise specified the contractor shall provide and pay for all materials, labour, water, power, tools, equipment transportation and any other facilities that are required for the satisfactory execution and completion of the work. Unless or otherwise specified all materials shall be new and both workmanship and materials shall be 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 behaviour is found to be unsatisfactory by the SBI/Architect/Consultant he shall be removed from the site immediately.

10.0 Permits, Laws and Regulations

Permits and licenses required for the execution of the work shall be obtained by the contractor at his own expenses.

The contractor shall give notices and comply with the regulations, laws, and ordinances rules, applicable to the contractor. 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.

11.0 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.

12.0 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 due to his fault or negligence except which are due to causes beyond his control.

He shall take adequate care and steps for protection of the adjacent properties. The contractor shall take all precautions for safety and protection of his employees on the works and shall comply with all applicable provisions of Government and local bodies' safety laws and building codes to prevent accidents, or injuries to persons or property of about or adjacent to his place of work. The contractor shall take insurance covers as per clause 24.0 at his own cost. The policy may be taken in joint names of the contractors and the SBI and the original policy may be lodged with the SBI.

13.0 Inspection of Work

The SBI/Architect/Consultant or their representatives shall at all reasonable time 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/execution stage or its completion can also be inspected by the Chief Technical Examiner's organization a wing of Central Vigilance Commission.

14.0 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 undertaken shall relieve the contractor from the responsibility of the contractor from active superintendence of the work during its progress.

15.0 Quality of Materials, Workmanship & Test

1. 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, labour and materials

2. Samples

All samples of adequate numbers, size, shades & 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 samples/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/equipmentsetc shall be to the account of the contractor.

(iii) Cost of tests

The cost of making any test shall be borne by the contractor if such test is intended by or provided for in the specifications or BOQ.

(iv) Cost of test 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 particularised or through so intended or provided for but ordered by the Architect/Consultant which is either 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.

16.0 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.

17.0 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.

18.0 Quantities

- i. The bill of quantities (BOO) unless or otherwise stated shall be deemed to have been prepared in accordance with the Indian Standard Method of Measurements

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 hereof as well as amounts of prime cost and provisional sums, if any, shall be excluded.

- ii. Variation exceeding 25% : The items of work executed in relation to variation exceeding 25% shall be paid on the basis of provisions of clause 21(e) hereof .

19.0 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 calculation 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 measurements.

20.0 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 omission 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 alteration 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.

21.0 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 authorized extra and shall be made in accordance with the following provisions.

- a i) The net rates or prices in the contract shall determine the valuation of the extra work where such extra work is of similar character and executed under similar conditions as the work priced herein.

- ii) Rates for all items, wherever possible should be derived out of the rates given in the priced BOQ.
- b The net prices of the original tender shall determine the value of the items omitted, provided if omissions do not vary the conditions under which any remaining items of works are carried out, otherwise the prices for the same shall be valued under sub clause (c) hereunder.
- c Where the extra works are not of similar character and/or executed under similar conditions as aforesaid or where the omissions vary the conditions under which any remaining items or works are carried out, then the contractor shall within 7 days of the receipt of the letter of acceptance inform the Architect/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 are 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.
- f It is further clarified that for all such authorized 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 wastages etc plus 15% towards establishment charges, contractor's overheads and profit. Such items shall not be eligible for escalation.

22.0 Final Measurement

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

23.0 Virtual Completion Certificate (VCC)

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

- a. Clear the site of all scaffolding, wiring, pipes, surplus materials, contractor's labour, equipment and machinery.
- b. Demolish, dismantle and remove the contractor's site office, temporary works, structures including labour sheds/camps and constructions and other items and things whatsoever brought upon or erected at the site or any land allotted to the contractor by the SBI and not incorporated in the permanent works.
- c. Remove all rubbish, debris etc from the site and the land allotted to the contractor by the SBI and shall clear, level and dress, compact the site as required by the SBI.

- d. Shall put the SBI in undisputed custody and possession of the site and all land allotted by the SBI.
- e. Shall hand over the work in a peaceful manner to the SBI.
- f. All defects/imperfections have been attended and rectified as pointed out by the SBI 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 for the certificate. If 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.

24.0 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 manners not to impede the progress of the works included in the contract.

25.0 Insurance of Works

25.1 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 or 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 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.

25.2 Damage to persons and property

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

- a. The permanent use or occupation of land by or any part thereof.
- b. The right of SBI to execute the works or any part thereof, on, over, under, in or through any lands.
- c. Injuries or damages to persons or properties which are unavoidable result of the execution or maintenance of the works in accordance with the contract.
- d. Injuries or damage to persons or property resulting from any act or neglect of the SBI, their agents, employees or other contractors not being employed by the contractor 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.

25.3 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 provision sub-clause 26.2 of this clause.

25.4 Contractor's superintendence

The contractor shall fully indemnify and keep indemnified the SBI against any action, claim, or proceeding relating to infringement or use of any patent or design or any alleged patent or design rights and shall pay any royalties which may be payable in respect of any article or part thereof included in the contract. In the event of any claim made under or action brought against SBI in respect of such

matters as aforesaid the contractor shall be immediately notified thereof and the contractor shall be at liberty, at his own expenses to settle any dispute or to conduct any litigation that may arise there from, provided that the contractor shall not be liable to indemnify the SBI if the infringement of the patent or design or any alleged patent or design right is the direct result of an order passed by the Architect/Consultant in this behalf.

25.5 Third Party Insurance

25.5.1 Before commencing the execution of the work the contractor but without limiting his obligations and responsibilities under clause 26.0 of GCC shall insure against his liability for any material or physical damage, loss, or injury which may occur to any property including that of SBI, or to any person, including any employee of the SBI, 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.

25.5.2 Minimum Amount of Third Party Insurance

Such insurance shall be affected 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.

25.6 The minimum insurance cover for physical property, injury, and death is Rs.5.0 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.

25.7 Accident or Injury to Workmen

25.7.1 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.

25.7.2 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 any person 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 have 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 required such policy of insurance and the receipt for the payment of the current premium.

25.7.3 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 and also deduct 15% of contract value from any amount due or which may become due to the contractor, or recover the same as debt from the contractor.

25.7.4 Without prejudice to the other rights of the SBI against contractors, in respect of such default, the Bank 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.

26.0 Commencement of Works

The date of commencement of the work will be reckoned as the recorded date of handing over site by the SBI or 15 days from the date of issue of Letter of Acceptance of Bank, whichever is later.

27.0 Time for completion

Time is the essence of the contract and shall be strictly observed by the contractor. The entire work shall be completed within a period as specified in the NIT calendar months 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.

28.0 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 at least 30 days before the expiry of the scheduled time and while

applying for extension of time he shall furnish the reasons 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 9 of GCC shall become applicable. Further contract shall remain in force even for the period beyond the due date of completion irrespective whether the extension is granted or not.

29.0 Rate of progress

Whole of the materials, plant and labour to be provided by the contractor and the mode, manner and speed of execution and maintenance of the works are to be of a kind and conducted in a manner to the satisfaction of the Architect/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 shall thereupon take such steps as considered necessary by 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 he shall be entitled to raise any claims arising out of such directions.

30.0 Work during nights and holidays

Subject to any provision to the contrary contained in the contract no permanent work shall save as herein provided be carried on during the night or on holidays without the permission in writing of the Architect/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 provision 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 and 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.

31.0 No compensation for restrictions of work

If at any time after acceptance of the tender SBI shall decide to abandon or reduce the scope of work for any reason whatsoever and hence not require 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 bona fide 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 from 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.

32.0 Suspension of work

- i. 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 cause any damage or injury to the work already done or endanger the safety thereof for any of following reasons.

- a. On account any default on the part of the contractor,

or

- b. For proper execution of the works or part thereof for reasons other than the default of the contractor,

or

- c) For safety of the works or part thereof.

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) in 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.

33.0 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, and to give it to another contractor to complete in which case any expenses which may be incurred in excess of the sum which would have been paid to the original contractor, if the whole work had been executed by him (of the amount of which excess the certificates in writing of the 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 rescinded 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.

34.0 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 Government 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

b. Has failed to commence the works, or has without any lawful excuse under these conditions suspended the progress of the works for 14 days after receiving from the SBI through the Architect/Consultant written notice to proceed,

or

c. Has failed to proceed with the works with such diligence and failed to make such due progress as would enable the works to be completed within the time agreed upon, or has failed to remove the materials from the site or to pull down and replace work within seven days after written notice from the SBI through the Architect/ 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 of 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 in defiance 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 realized 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.

35.0 Certificate of Payment

The contractor shall be entitled under the certificates to be issued by the Architect/ Consultant to the contractor within 10 working days from the date of

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

The contractor shall submit interim bills only after taking actual measurements and properly recorded in the Measurement book (M.B).

The contractor shall not submit interim bills when the approximate value of work done by him is less than amount specified in the NIT and the minimum interval between two such bills shall be one month.

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.

36.0 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 these 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 :

- i. 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 Assistant General Manager (Premises &

Estate)/Dy.General Manager (Premises) and endorse a copy of the same to the Architect, within 30 days from the date of disallowance thereof or the date of deduction or recovery. The said notice shall give full particulars of the claim, grounds on which it is based and detailed calculations of the amount claimed and the contractor shall not be entitled to raise any claim nor shall the Bank be in any way liable in respect of any claim by the contractor unless notice of such claim shall have been given by the contractor to the Assistant General Manager (Premises&Estate)/Dy.General Manager (premises) 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 Assistant General Manager (Premises& Estate)/Dy.General Manager (premises) in writing in the manner and within the time aforesaid.

- ii. The Assistant General Manager (Premises& Estate)/Dy.General Manager (premises) shall give his decision in writing on the claims notified by the contractor. The contractor may within 30 days of the receipt of the decision of the Assistant General Manager (Premises& Estate)/Dy.General Manager (premises) submit his claims to the conciliating authority namely the Circle Development Officer/General Manager (Corporate Services) for conciliation along with all details and copies of correspondence exchanged between him and the Assistant General Manager (Premises& Estate)/Dy.General Manager (premises)
- iii. If the conciliation proceedings are terminated without settlement of the disputes, the contractor shall, within a period of 30 days of termination thereof shall give a notice to the concerned Chief General Manager/Dy.Managing Director &Corporate Development Officer 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.
- iv. 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 contractor as aforesaid and all claims of the Bank shall be referred for adjudication through arbitration.
- v. by the Sole Arbitrator appointed by the Chief General Manager/Dy.Managing Director &Corporate Development Officer. It will also be no 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 said Chief General Manager/Dy.Managing Director &Corporate Development Officer. 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 such Chief General Manager 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.

37.0 NA

38.0 POWER& WATER

38.1 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 be included in his tender prices. He shall pay all fees and charges required for the power supply and include the same in his tendered rates and hold the owner free from all such costs. He has to obtain necessary approval from the appropriate authorities, if required.

38.2 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:

- i. That the water used by the Contractor shall be fit for construction purpose to the satisfaction of the Architect/Consultant.
- ii. The Contractor shall make alternative arrangements for the supply of water if the arrangements 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 arrangements 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 the local authorities, if required, at his own cost. He shall restore the ground to its original condition after wells are dismantled on completion of work or hand over the well to the SBI without any compensation as directed by the Architect/Consultant.

39.0 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 the Bank immediately.

40.0 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.

41.0 Maintenance of Registers

The contractor shall maintain the following registers as per the enclosed format 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/Government from time to time.

- i. Register for secured advance
- ii. Register for hindrance to work
- iii. Register for running account bill
- iv. Register for labour

Clause 42.0

PRICE VARIATION ADJUSTMENT (PVA) FOR ALL MATERIALS = NOT APPLICABLE

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 events such as war, hostilities, revolution, riots, civil commotion, strikes, lockout, conflagrations, epidemics, accidents, fire, storms, floods, droughts, earthquakes or ordinances or any act of god or for any other cause beyond the reasonable control of the party affected or prevented or delayed. However a notice is required to be given

within 30 days from the happening of the 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 of such cessation and the actual delay incurred in such affected activity adducing necessary evidence in support thereof.

43.3 From the date of occurrence of a case of force majeure obligations of the party affected shall be suspended during the continuance of any inability so caused. With the cause itself and inability resulting there from having been removed, the agreed time of completion of the respective obligations under this agreement shall stand extended by a period equal to the period of delay occasioned by such events.

43.4 Should one or both parties be prevented from fulfilling the contractual obligations by a state of force majeure lasting to a period of 6 months or more the two parties shall mutually decide regarding the future execution of this agreement.

44. CONTRACTOR'S EMPLOYEES

45.1 The Contractor shall employ technically qualified / having appropriate skill and competent persons fully trained and adequately experienced Electricians, who are medically fit. They should be free from any contagious diseases. The Electricians shall be well mannered and properly dressed with shoes etc.

45.2 The contractor shall provide necessary training on safety measures while executing the work wherever necessary so as to avoid accident. The Bank shall not be responsible for any accident occurred or damage incurred or claims arising there from during the execution of work. The contractor shall also provide all risk insurance policy including third party insurance as may be necessary to cover the risk.

45.3 The contractor / firm shall be held responsible for any misdeeds / misbehaviour of their employees within the premises. Bank is not responsible for any damages or claims on account of the misbehavior / misdeeds of his employees. For this purpose, any person supplied by the contractor to be engaged on the work on regular basis or as an alternate arrangement, under the direct order or control of the Employer or his representative shall be deemed to be a person employed by the contractor.

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

- 45.5 No employee of the Bank is allowed to work as a contractor for a period of 2 years of his/her retirement from Bank Services without previous permission of the Bank. This contract is liable to be cancelled, if either the contractor or any of his employees is any time to be such a person who had not obtained the permission of Bank as aforesaid before submission of the tender or engagement in the contractor's service.
- 45.6 Contractor should not engage child labour in any of the activities in this contract.
- 45.7 The contractor shall not employ person who is not an Indian National.
- 45.8 The Electrician shall not over stay in the Bank premises other than the time permitted by the Bank or in the odd hours or holidays unless or otherwise required by the Branch for specific reasons like maintenance, repair works etc.
- 45.9 In respect of all labour employed directly or indirectly on the work for the performance of the contractor's part of work, the contractor at his own expense, will arrange for the safety provisions as per the statutory provisions, B.I.S recommendations, factory act, workman's compensation act, CPWD code and instructions issued from time to time.
- 45.10 The Contractor's workmen will not have any right whatsoever to get absorbed in the Bank. The Contractor shall be responsible for all the claims of the employees of the Contractor and shall not make and claim whatsoever against the Bank. The Contractor shall be responsible for all statutory requirements e.g. ESI, PF, labour registrations, Insurance coverage etc. The operator is responsible for compliance of all the rules & safety regulations etc.

Minimum wages as prescribed by the Labour Act shall be payable to the operator(s) by the contractor as the case may be. The Contractor shall bind himself and keep the Employer saved harmless and indemnified against claims if any of the workmen and all costs and expenses as may be incurred by the Employer in connection with any claim that may be made by any workmen.

46. WORKING HOURS AT THE SITE

As instructed by Bank. Contractor to ensure that the routine operations at the site are not affected by the contract work. If required, they have to work on the Bank Holidays in coordination with other agencies and Bank.

WORKING ON HOLIDAYS:

No work shall be done on Sunday or other Bank holidays that may be notified by the Architect & Employer, without the specific sanction in writing of the Architect & employer or his representatives

47.0 STORAGE OF MATERIALS

- 47.1 The contractor shall store their materials like fixtures, cables, conduits, wires, tools etc in the site with the permission of the Bank. However, the contractors shall be responsible for the custody and security of all materials and equipment at site. No claim for loss or theft will be entertained by the Bank.
- 47.2 Shelter or stay and other amenities for the electricians have to be arranged by the contractor at his own expense and responsibility.
- 47.3 On completion of the works, the contractor shall remove all tools, surplus materials, rubbish and temporary works of every kind and leave the whole of the site and the works clean and in a workmanlike condition to the satisfaction of the Bank

48.0 COMPLIANCE OF STATUTORY REGULATIONS

- 48.1 The contractor shall conform to the provisions of any Acts of the Legislature relating to the work, and to the Regulations and Bye-Laws of any authorities like Electricity, Pollution Control Boards, Municipal Authorities, water and Sewerage boards and shall before making any variations from the drawings or specifications that may be associated to so conform, give the Employer written notices specifying the variations proposed to be made and reasons for making them and apply for instruction thereon. The Employer on receipt of such intimation shall give a decision within a reasonable time.
- 48.2 The contractor/s shall arrange to give all notices required for by the said Acts, Regulations or Bye-laws to be given to any authority, and to pay to such authority or to any public officer all fees that may be properly chargeable in respect of the work and lodge the receipts with the Employer. The Contractor shall indemnify the Employer against all claims in respect of patent rights, designs, trademarks or name or the protected rights in respect of any equipment, machine, work or material used for or in connection with the works or temporary works and from and against all claims, demands, proceedings, damages, costs, charges, and expenses whatsoever in respect thereof or in relation thereto. The Contractor shall defend all actions arising from such claims, unless he has informed the Employer, before any such infringement and received their permission to proceed and shall himself pay all royalties, license fees, damages, coat and charges of all and every sort that may be legally incurred in respect thereof.
- 48.3 The contractor should strictly abide by the Central/State labour regulation for the Minimum Wages, Payment of wages, Workmen Compensation, PF, ESI, Contract labour, including the latest amendments, if any and other safety regulations.

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

49.0 INSURANCE & DAMAGE TO PERSONS AND PROPERTY ETC

49.1 The insurance shall be for an amount equal to 110 percent of the value of the contract on "All Risks" basis, valid until the Completion of the project or handing over whichever is later.

49.2 Should any loss or damage occur, the Vendor shall initiate and pursue claim till settlement and promptly make arrangements for repair and / or replacement of any 5damaged item to the satisfaction of the Bank, irrespective of settlement of claim by the underwriters.

49.3 The contractor shall be responsible for all injury to the work or workmen to persons, animals or things and for all damages to the structural and / or decorative part of property which may arise from the operations or neglect of himself or of any sub-contractor or of any of his or a sub-contractor's employees, whether such injury or damage arise from carelessness, accident or any other cause whatsoever in any way connected with the carrying out of this contract.

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

49.5 The contractor shall affect the insurance necessary and indemnify the Employer entirely from all responsibility in this respect.

49.6 The contractor shall be responsible for anything, which may be excluded from damage to any property arising out of incidents, negligence or defective carrying out of this contract.

49.7 The Employer shall be at liberty and is hereby empowered to deduct the amount of any damages, compensations, costs, charges and expenses arising or accruing from or in respect of any such claim or damages from any sums due to or to become due to the contractor.

50. TERMINATION OF CONTRACT BY BANK

If the contractor being a company go into liquidation whether voluntary or compulsory or being a firm shall be dissolved or being an individual shall be adjudicated insolvent or shall make an assignment or a composition for the benefit of the greater part, in number of amount of his creditors or shall enter into a Deed or arrangement with his creditors, or if the Official Assignee in insolvency, or the Receiver of the contractor in insolvency, shall repudiate the contract, or if a receiver of the contractor's firm appointed by the court shall be unable within

fourteen days after notice to him requiring him to do so, to show to the reasonable satisfaction of the Bank that he is able to carry out and fulfill the contract, and if so required by the Bank to give reasonable security therefore, or if the contractor shall suffer execution to be issued, or shall suffer any payment under this contract to be attached by or on behalf of and of the creditors of the contractor, or shall assign, charge or encumber this contract or any payments due or which may become due to contractor, there under, or shall neglect or fail to observe and perform all or any of the acts matters of things by this contract, to be observed and performed by the contractor within three clear days after the notice shall have been given to the contractor in manner hereinafter mentioned requiring the contractor to observe or perform the same or shall use improper materials of workmanship in carrying on the works, or shall in the opinion of the Bank not exercise such due diligence and make such progress as would enable the work to be completed within due time agreed upon, and shall fail to proceed to the satisfaction of the Bank after three clear das notice requiring the contractor so to do shall have been given to the contractor as hereinafter mentioned or shall abandon the contract, then and in any of the said cases, the Bank may notwithstanding previous waiver determine the contract by a notice in writing to the effect as hereinafter mentioned, but without thereby effecting the powers of the Bank of the obligations and liabilities of the contractor the whole of which shall continue in force as fully as if the contract, had not been so determine and as if the works subsequently executed by or on behalf of the contractor (without thereby creating any trust in favor of the contractor) further the Bank or his agent, or servants, may enter upon and take possession of the work and all plants tools scaffolding sheds machinery, steam, and other power, utensils and materials lying upon premises or the adjoining lands or roads and sell the same as his own property or may employ the same by means of his own servants and workmen in carrying on and completing the works or by employing any other contractors or other persons or person to complete the works, and the contractor shall not in any way interrupt or do any act, matter or thing to prevent or hinder such other contractors or other persons or person employed from completing and finishing or using the materials and plants for the works when the works shall be completed, or as soon thereafter as conveniently may be the Bank shall give notice in writing to the contractor to remove his surplus materials and plants and should the contractor to remove his surplus materials after receipt by him the Bank may sell the same by Public Auction and shall give credit to the contractor for the amount so realized. Any expenses or losses incurred by the contractor for the amount so realized. Any expenses or losses incurred by the Bank in getting the amount payable to the contractor by way of selling his tools and plants or due on account of work carried out by the contractor prior to engaging other contractors or against the Security Deposit.

51.0 DISPUTES/ARBITRATION:

51.1 All disputes or differences whatsoever arising between the parties out of or in connection with this contract or in discharge of any obligation arising out of the

Contract (whether during the progress of work or after completion of such work and whether before or after the termination of this contract, abandonment or breach of this contract), shall be settled amicably.

- 52.2 If however, the parties are not able to solve them amicably, either party (Bank or Vendor), give written notice to other party clearly setting out there in specific dispute(s) and/or difference(s) and shall be referred to a sole arbitrator mutually agreed upon, and the award made in pursuance thereof shall be binding on the parties.
- 52.3 In the absence of consensus about the single arbitrator, the dispute may be referred to joint arbitrator; one to be nominated by each party and the said arbitrators shall nominate a presiding arbitrator, before commencing the arbitration proceedings. The arbitration shall be settled in accordance with the applicable Indian Laws. Any appeal will be subject to the exclusive jurisdiction of courts at Hyderabad.
- 52.4 The Vendor shall continue work under the Contract during the arbitration proceedings unless otherwise directed by the Bank or unless the matter is such that the work cannot possibly be continued until the decision of the arbitrator is obtained.
- 52.5 Arbitration proceeding shall be held at Mumbai, India, and the language of the arbitration proceedings and that of all documents and communications between the parties shall be in English.
53. Governing Language:
- All communication with respect to the Bid, clarifications, replies, contract documents etc shall be in English.

54.0 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)
- i. Workmen's Compensation Act 1923 (Amended)
- ii. Contract Labour Regulation and Abolition Act 1970 and Central Rules 1971 (Amended)
- iii. Apprentice Act 1961 (Amended)
- iv. Industrial Employment (Standing Order) Act 1946 (Amended)
- v. Personal Injuries (Compensation Insurance) Act 1963 and any other modifications

- vi. Employees' Provident Fund and Miscellaneous Provisions Act 1952 and amendment thereof
- vii. Shop and Establishment Act
- viii. Any other Act or enactment relating thereto and rules framed there under from time to time.

55.0 SAFETY CODE:

Safety Guidelines for the Contractor:

The Contractor should follow the following General safety Guidelines while executing the work:

- 55.1 Smoking is strictly prohibited at workplace.
- 55.2 No one is allowed to work at or more than three meters height without wearing safety belt and anchoring the lanyard of safety belt to firm support preferably at shoulder level. Chinstrap of safety helmet shall be always on and safety boot is worn.
- 55.3 Usage of eye protection equipment shall be ensured when workmen are engaged for grinding, chipping, welding and gas-cutting. For other jobs eye protection has to be provided as per the need.
- 55.4 All safety appliances like Safety shoes, Safety gloves, Safety helmet, Safety belt, Safety goggles etc. shall be arranged before starting the job.
- 55.5 Excavated pits for earthing, cable laying shall be barricaded till the backfilling is done. Safe approach to be ensured into every excavation.
- 55.6 Preferably the work shall be carried out during the daytime. However, adequate illumination at workplace shall be ensured in case any work is carried out at night.
- 55.7 All the dangerous moving parts of the portable / fixed machinery being used shall be adequately guarded.
- 55.8 Ladders being used at site shall be adequately secured at bottom and top. Ladders shall not be used as work platforms.
- 55.9 Debris, scrap and other materials to be cleared from time to time from the workplace and at the time of closing of work everyday. Dismantled Material shall not be thrown from the height and shall be properly disposed off to prevent any injury to public/staff.
- 55.10 Other than electricians no one is allowed to carry out electrical connections, repairs on electrical equipment or other jobs related thereto.
- 55.10 All electrical connections shall be made using 3 or 5 core cables, having a earth wire.
- 55.11 Inserting of bare wires for tapping the power from electrical sockets is completely prohibited and plug tops of suitable capacity only shall be used.
- 55.12 All the unsafe conditions, unsafe acts identified by contractors, reported by Bank to be corrected on priority basis.
- 55.13 No children or physically challenged persons shall be allowed to enter the workplace and shall not be utilized for any service during execution of the work.
- 55.14 All the Gas cutting, sharp tools, flammable materials and tackles shall be stored properly and safely when not in use.
- 55.15 Clamps shall be used on Return cables to ensure proper earthing for welding works.
- 55.16 Return cables shall be used for earthing.

- 55.17 All the pressure gauges used in gas cutting apparatus shall be in good working condition and in case of any leakages, the same shall not be used.
- 55.18 Proper eye washing facilities shall be made in areas where chemicals are handled.
- 55.19 Connectors and hose clamps are used for making welding hose connections.
- 55.20 Tapping of power by cutting electric cables in between must be avoided. Proper junction boxes must be used.

56.0 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 report immediately to the competent authority whenever such report is required to be lodged by the law and take appropriate actions thereof.

57.0 BANK'S BUILDING PROJECTS - MAINTENANCE OF RECORDS

A.Registers at the site office of the Bank's Engineer:	
1	Measurement Books.
2	Drawings register
3	Materials at site register.
4	Hindrance Register .
5	File and Register for extra / variation items.
6	Materials test Register and File.
7	Site Order Book (in triplicate).
8	Labour Reports and progress Reports Register .
9	Site Visit & Instructions Register .
10	Certified true copies of the contracts.

SPECIAL CONDITIONS OF CONTRACT

1. ACCESS OF INSPECTION:

The contractor is to provide at all times, during the progress of the works and the maintenance period, means of access with ladders, gangways etc., and the necessary attendants to move and adopt the same as directed for the inspection or measurement of the work by the Architect and Employer or any other agency employed by the client.

2. PROGRAMME OF WORKS:

The contractor on starting the work shall furnish to the Employer and Architect a PERT/CPM programme, for carrying out the work stage by stage in the stipulated time, for the approval of Architects and Employer, and follow strictly the approved time schedule by incorporating changes, if any, so authorized by the Architect and Employer, to ensure the completion of construction work ins stipulated time. A graph or chart on individual item/group of items/trades of work shall be maintained, showing the progress both in terms of quantities and value, week by week. The contractor shall submit to the Employer and Architect a weekly progress report stating the number of skilled and unskilled laborers employed on the work, working hours done, quantity of cement, steel and other major items of materials (quantity and value wise) used and corresponding place, type and quantity of work done during the period.

The contractor must inform the Architects, 10 days in advance of requirement of respective drawings and details by him, from time to time. The contractor shall strictly adhere to the approved programme and arrange for the materials and labour etc., accordingly.

Despite repeated instructions, if the contractor fails to show satisfactory progress of the work, the Employer/Architect may take suitable action as deemed fit, including levying of liquidated damages not exceeding ½% of contract price for delay of every week or part thereof, subject to a limit of total liquidated damages levied under this clause to 5% of contract price without prejudice to any terms and conditions of the contract.

3. FACILITIES TO OTHER CONTRACTORS:

The contractor shall give full facilities and co-operation to all other contractors working at site doing plumbing, Electrical, civil works etc., as directed by the Architect & Employer and shall arrange his programme of work, so as not to hinder the progress of other works. The decision of the Architect & Employer, on any point of disputes between the various contractors, shall be final and binding on all parties concerned.

4. TESTING:

The contractor shall, as and when directed by the Architect & Employer, arrange to test materials and/or portions of the work at site in any approved laboratory at his own cost, in order to provide their soundness and efficiency. The contractor

shall transport all the materials from site to the approved laboratory at his own cost. The contractor shall carryout all the mandatory tests as per list attached at the frequencies stated therein. Even after such tests, any materials brought to site or incorporated in the works are found to be defective or unsound or not as per approved samples, the contractor shall remove the same and re-erect at his own cost and without any additional time/period for the same, with reference to the date fixed for completing the work. In case these tests are not carried out at the frequencies stated, then proportionate costs of materials not so tested, including cost of testing and quantities of items of work executed with such materials, if otherwise accepted for retention in the work, will be deducted from the dues to the contractor. The deductions will be worked out by the Architect/client and shall be final and binding on him.

Tolerance on various material and items of work shall be allowed laid down in the documents below and the order of precedence shall be:

- a) Relevant Indian Standards Specifications.
- b) Manufacturer's Specifications.

In absence of above Architect's decision basing on the general practice being following shall be final.

5. SITE MEETINGS:

A senior representative of the contractor shall attend weekly meetings at works site; and in additions, meetings as and when arranged by Architect & Employer to discuss the progress of the work and sort out problems, if any, and ensure that the work is completed in the stipulated time.

6. NOTICES:

Notices for the Employer, the Architect, or the Contractor may be served personally or by being left at or sent by registered post to the last known place of abode or business of the party to whom the same is to be given or in the case of the contractor by being left on the works. In case of a company or corporation, notices may be served at or sent by registered post to the Registered Offices of the Company or Corporation. Any notice sent by registered post shall be deemed to be served at the time, when in the ordinary course of post it would be delivered.

The contractor shall give all notices and pay all necessary and relevant fees and shall comply with all Acts and Regulations, for the successful completion of the contract work.

7. MEASUREMENT TO BE RECORDED BEFORE WORK IS COVERED UP:

The contractor shall take joint measurements with the Employer's representative (Project Management Consultant or any Engineer identified by the Bank) and Architect's representative before covering up or otherwise placing beyond the reach of measurement any item of work. Should the contractor neglect to do so, the same shall be uncovered at the contractor's expense or in default thereof, no payment or allowance shall be made for such work or the materials with which the same was executed.

8. ACTION WHERE THERE IS NO SPECIFICATION:

In case of any item/class of work, for which there is no specification mentioned (either in part or full), the same will be carried out in accordance with the relevant CPWD specifications (only for the specifications missing in the contract) and if not available even there (either in part or full) in, relevant standards of BIS shall be followed (only for the portions of specifications missing in the contract specifications and CPWD specifications). Indian standard specifications, subject to the approval of the Architect & Employer.

9. REPORTING OF ACCIDENT TO:

The contractor shall be responsible for the safety of all persons employed by him on the works and shall report serious accidents to any of them, whenever and wherever occurring on the works, to Employer who shall make every arrangement to render all possible assistance. This shall be without prejudice to the responsibility of the Contractor, under the Insurance clause of the General Conditions. Contractor shall take all the precautions as detailed in the safety code attached separately.

10. CLEARING THE SITE ON COMPLETION/DETERMINATION OF WORKS:

The contractor shall clear the site of works as per the instructions of the Architect. The site of works shall be cleared of all men, materials, sheds, huts etc., belonging to the contractor. The site shall be delivered in a clean and neat condition, as required by Architect, within a period one week after the job is completed. In case of failure by the contractor, the Employer, under advice to the Architect, have the right to get the site cleared to his satisfaction at the risk and cost of the contractor.

11. POSSESSION OF WORKS/ WORK COMPLETED:

The contractor shall hand over to the Employer possession of the completed works in stages, as and when required, and as directed by the Architect & Employer.

The Employer will take over the possession of completed works in stages as directed by the Architect, and defects liability period will commence only from the date of final handing over of all the work accordingly.

12. TYPOGRAPHIC, CLERICAL AND OTHER ERRORS:

The Architects/Employer's clarification regarding partially omitted particulars or typographical, clerical and other errors shall be final and binding on the contractors.

13. WORK PERFORMED AT CONTRACTOR'S RISK:

The contractor shall take all precautions necessary and shall be responsible for the safety of the work and shall maintain all lights, guards, signs, barricades, temporary passages or other protection necessary for the purpose. All work shall be done at the contractor's risk and if any loss or damage shall result from fire or from any other cause, the contractor shall promptly repair or replace such loss or damage free from all expenses to the Employer. The Contractor shall be responsible for any loss or damage to materials, tools or other articles used or held for use in connection with the work. The work shall be carried on to Employer or of others and without interference with the operation of existing machinery or equipment, if any.

14. INSPECTION BY THE CHIEF TECHNICAL EXAMINERS (VIGILANCE):

The proposed work covered under this tender, during the progress and/ or after completion, can also be inspected by the Chief Technical Examiner/ Technical Examiner or Officers of the Central Vigilance Commission, Government of India, on behalf of Architect & Employer to ascertain that the execution of the work has been done with materials and workmanship all as stipulated in the contract and as directed.

Contractor shall afford all reasonable facilities to the above vigilance staff and also provide them with ladders, tapes, tools and tackles etc., as required and directed and also necessary labourers skilled/unskilled to enable them to complete their inspection/study/technical scrutiny and no extra shall be admissible to the contractor on this account.

15. SPECIAL CONDITIONS OF CONTRACT:

In the event of any discrepancy with clauses mentioned anywhere else in the tender with the clauses mentioned within special conditions of contract, the clauses mentioned within the special conditions of contract shall supersede there mentioned elsewhere.

16. FAILURE BY CONTRACTOR TO COMPLY WITH ARCHITECT'S INSTRUCTIONS:

If the contractor after receipt of written notice from the Architect requiring compliance with such further drawings and/or Architects instruction, fails within seven days to comply with the same, the Architect and Employer may employ and pay other persons to execute any such work whatsoever as may be necessary to give effect thereto and all costs incurred in connection therewith shall be recoverable from the contractors by the employer on a Certificate by the Architect as a debit or may be deducted by him from any money due or which may become due to the contractors.

17. ARCHITECT'S DELAY IN PROGRESS:

The Architect may delay the progress of the works in case of rains or otherwise, without vitiating the contract and grant such extension of time with the approval of the Employer for the completion of the contract as he may think proper and sufficient in consequence of such delay, and the contractor shall not make any claim for compensation or damage in relation thereto.

18. BIS CODES

It is compulsory for the contractor to keep all the B.I.S. codes mentioned in this tender document at his cost at the site to ensure the proper supervision/quality of work and materials.

FORM OF SUBMISSION OF TENDER

(To be filled by the tenderer)

**The Regional Manager,
SBI**

Dear Sir/s,

Ref: TENDER FOR

I/We have examined the above tender and subsequent pre-bid clarifications/ modifications / revisions, if any, furnished by Bank and I/We have inspected the site of works and have made me / us fully acquainted with the local conditions in and around the sites of works and offer to undertake Contract as detailed in this tender by submitting my/our online bids in the Bank's e-tender portal.

1. While submitting this Bid, I / We certify that:
 - i. The undersigned is authorized to sign on behalf of the Bidder and the necessary support document delegating this authority is uploaded along with the bid.
 - ii. We certify that we have not made any changes in the contents of the tender document read with its amendments/clarifications provided by Bank, submitted by us in our Bid document.
 - iii. The rate quoted in the *price Bids are as per the tender* and subsequent pre-Bid clarifications/ modifications/ revisions furnished by the Bank, without any exception.
2. We agree to abide by all the Bid terms and conditions, contents of Agreement and the rates quoted in the bid, which shall remain binding upon us.
3. If our Bid is accepted, we undertake to enter into and execute at our cost, when called upon by the Bank to do so, a contract in the prescribed form and we shall be jointly and severally responsible for the due performance of the contract.
4. Until a formal contract is prepared and executed, this Bid, together with your written acceptance thereof and your notification of award, shall constitute a binding Contract between us.
5. It is further certified that the contents of our Bid are factually correct. We also accept that in the event of any information / data / particulars proving to be incorrect, Bank will have the right to disqualify us from the Bid.
6. We understand that you are not bound to accept the lowest or any Bid you may receive and you may reject all or any Bid without assigning any reason or giving any explanation whatsoever.
7. We hereby undertake that our name does not appear in any "**Caution**" list of RBI / IBA or any other regulatory body.
8. We also confirm that we have not been **blacklisted** by any Bank / PSU / State or Central Govt departments for any reasons.

9. We confirm that we do not have any **litigation / cases** pending against us in any Bank / PSU / State or Central Govt departments.
10. We confirm that we are responsible to obtain all necessary licenses, permission, NOC from all the statutory /local authorities for the smooth execution of this contract in Bank's premises.
11. We hereby confirm that all the materials/components/spare parts/equipment etc. to be supplied / used as a part of this contract shall be original / new materials / components / parts / equipment only, from respective OEMs of the products and that no refurbished / duplicate / second hand materials/components /parts/ equipment shall be supplied or shall be used.
12. For any type of deviation (to any of above or subsequent instructions), it will be my/ our responsibility to obtain the written instruction of the Engineer-in-charge for the same failing which it shall be deemed that I have carried out any such deviations at my own and I shall be duty bound to replace the all deviated material/ works from the site at my/ our cost as well as I shall be liable to penalized by the Bank as deemed fit and for all such loses made thereof, I/ we shall not have any right to arbitrate in any manner.

Yours faithfully,

Contractors Signature

Name:

Address:

FORMAT FOR PRE-BID QUERIES:

Sr. No.	Query Regarding	Page No. of RFP	Query	Reasons/Supporting data/papers

DRAFT COPY OF ARTICLES OF AGREEMENT

ARTICLES OF AGREEMENT made the _____ day of _____ 2021
between _____ SBICB _____
of _____
(hereinafter called the “Employer”) of the one part and
_____ of _____ (hereinafter called “The
Contractor”) of the other part, where as the Employer is desirous of getting the work of
“_____”
_____” executed and has caused drawings, conditions of contract, specifications and
schedule of quantities etc., describing the works prepared by M/s Nandu Associates,
Hyderabad.

AND WHEREAS the SAID DRAWINGS numbered as per list attached inclusive of and
the conditions of contract, specifications and schedule of quantities etc., have been
signed by or on behalf of the parties hereto.

AND WHEREAS THE CONTRACTOR has agreed to execute upon and subject to the
conditions set forth in the Schedule hereto (hereinafter referred to as “Said Conditions”) the
works shown upon the said drawings and described in the same specifications and
included in the said schedule of quantities for such sum as may be ascertained to be
payable in terms of the Bills of Quantities, and which sum is estimated to be Rs.
3,17,16,232.00/- (Rupees Three Crore Seventeen Lac Sixteen Thousand Two Hundred
and Thirty Two Only. (hereinafter referred to as “Said Contract Amount”).

NOW IT IS HEREBY AGREED AS FOLLOWS:

1. In consideration of the said sum to be paid at the times and in the manner set forth in the said conditions, the contractor shall upon and subject to the said conditions, execute and complete the work shown in the said drawings and described in the said specifications.
2. The Employer shall pay the contractor the said sum or such sums as shall become payable hereunder at the times and in the manner specified in the said conditions.
3. The term "Architect" in the said conditions shall mean the said M/s NanduAssociates, Architects and designers or in the event of their ceasing to be the Architect for the purpose of this contract, such other person 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 Arbitrator mentioned in the said conditions provided always that no persons subsequently appointed to be the Architect under this contract shall be entitled to disregard or over-rule any previous decision or approval or direction given or expressed by the Architect for the time being.
4. Tender documents containing work order Notice to the Contractor, Conditions of Contract, Appendix thereto, Special Conditions of Contract, Specifications and Schedule of Quantities with the rates entered therein, shall be read and studied 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 part respectively in such conditions contained.
5. The contract is neither a fixed lump sum contract or a piece work contract, but is a contract to carry out work in respect of the entire works to be paid for according to actual measured quantities, including variations from BOQ at the rates contained in the Schedule of rates and Probable bill of quantities or as provided in the said conditions.
6. The Employer through the Architect, reserves to himself the right of altering the drawings and natures of the work, of adding/substitution to or omitting any items of work or having portions of the same carried out through alternate agencies without prejudice to this contract.
7. Time shall be considered a the essence of this agreement and the contractor hereby agrees to commence the work soon after the site is handed over to him but within 15 days reckoned from the date of issue of work order to execute the work, as provided for in the said conditions and complete the entire work **in 120 days** subject to nevertheless to the provisions for extension of time.
8. This agreement and contract shall be deemed to have been made in Hyderabad and any questions or dispute rising out of or in any way connected with this Agreement and Contract shall be deemed to have arisen in Hyderabad and only the courts in Hyderabad shall have jurisdiction to determine the same. The limitation period will be 90 days from the date of dispute having arisen.

AS WITNESS our hand this _____ day of _____ 2021

Signed by the said in the presence of:

WITNESS :
SIGNATURE

NAME :

ADDRESS :

EMPLOYER

WITNESS :
SIGNATURE

NAME :

ADDRESS :

DRAFT FORMAT OF BANK GUARANTEE IN LIEU OF SECURITY DEPOSIT

(Site specific format shall be approved by the SBI prior to its execution)

(To be submitted on Non-judicial stamp paper of appropriate value purchased in the name of the issuing bank)

Place:.....

Date:.....

{Onnon-judicialstamppaperofRs ---/-}

BANKGUARANTEEINLIEUOFSECURITYDEPOSIT

B.G.No._____

ValueRs._____

StateBankofIndia,(

Address)

Sub:

**BankGuaranteeofRs.....towardsSecurityDepositfortheworkoffo
rStateBankofIndia.**

{NameofBranch/Office}

Dear Sir,

WHEREAS (Name and address of contractor/ vendor) (hereinafter called the Contractor) have entered into contract for (Name of Work) with State Bank of India (SBI) as mentioned in the letter of SBI's Consultants (Name & address of consultants) vide their letter No..... dated..... And the correspondence and tender relating thereto which is hereinafter referred to as "the said contract" the Contractor has now agreed to produce a Bank Guarantee amounting to 2% of the contract value less earnest money deposit of Rs (Rupees only), to State Bank of India for performing their part of the contract obligations.

AND WHEREAS in terms of said contract, the contractor is required to furnish to State Bank of India a Guarantee of a Scheduled Bank for a value of Rs..... to be valid upto (date).

AND WHEREAS (Name of Bank and its branch) having their office at (address) the Guarantor, at the request of the contractor hereby furnishes a PBG in favour of State Bank of India and Guarantees in the manner hereinafter appearing.

In consideration of the premise, we (name of Bank and its branch) having our office at (address) hereafter called the "Guarantor" (which expression shall include its successors and assigns) hereby expressly, irrevocably & unreservedly undertake and guarantee under that if the Contractor fails to execute the work according to his obligations under the said contract, then notwithstanding any dispute between State Bank of India and the contractor the Guarantor shall, on demand without demur and without reference to the contractor pay to State Bank of India immediately any sum claimed by State Bank of India under the said contract up to a maximum amount of Rs. ___ (Rupees only).

In case the amount demanded by State Bank of India is not paid within 48 hours of receipt of demand, the Guarantor agrees to pay the aforesaid amount of ₹ .

(i) Such payment shall be notwithstanding any right the contractor may have directly against State Bank of India or any disputes raised by the Contractor with State Bank of India or any suits or proceedings pending in any competent court or before any arbitrator. State Bank of India's written demand shall be conclusive evidence

to the Guarantor that such payment is payable under the terms of the Contract and shall be binding in all respect on the guarantor.

(ii) The Guarantor shall not be discharged or released from the the undertaking and Guarantee, by any arrangement, variations made between SBI and the Contractor and or indulgence shown to the contractor by SBI, with or without the consent and knowledge of the guarantor or by alterations in the obligations of the contractor by any forbearance, whether as to payment, time performance or otherwise.

(iii) This guarantee shall remain valid until or as may be caused to be extended by the contractor or until discharged by SBI in writing whichever is earlier.

(iv) This guarantee shall be a continuing guarantee and shall not be revocable during its currency except with the previous written consent of SBI.

(iv)(a) This guarantee shall not be affected by any change in the constitution of the contractor, by absorption with any other body or corporation or dissolution or otherwise and this guarantee will be available to enforceable against such body or corporation.

(v) In order to give effect to this guarantee SBI will be entitled to act as if the Guarantor were the Principal debtor and the Guarantor hereby waives all and any of its rights or suretyship.

(vi) This guarantee shall continue to be in force notwithstanding the discharge of the contractor by operation of law and shall cease only on payment of the full amount by the Guarantor to SBI of the amount thereby secured.

(vii) This guarantee shall be in addition to and not in substitution for any other guarantee or security for the contractor given or to be given to SBI in respect of the said contract.

(viii) Any notice by way of request and demand or otherwise here under may be sent by post or any other mode or communication to the guarantor addressed as aforesaid and if

sent by post it shall be deemed to have been given at the time when it would be delivered in due course of post and in providing such notice when given by post it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of SBI that the envelope was so posted shall be conclusive.

(ix) These presents shall be governed by and constructed in accordance with Indian Law.

Notwithstanding anything contained hereinbefore the liability of the guarantor under this guarantee is restricted to a sum of Rs. _____

This _____ guarantee will remain valid upto _____ unless a demand or claim under this guarantee is made in writing on or before _____ the guarantor shall be discharged from all liability under the guarantee thereafter.

Dated the

For (Name of Bank)

(Signature/with designation/sof signatory/ies) (Name and Stamp of Bank)

FORMAT FOR APPLICATION BY CONTRACTOR FOR EXTENSION OF TIME

1.	NameoftheContractor			
2.	Nameof the work as given inthe Agreement			
3.	AgreementWO			
4.	Tenderamount			
5.	Dateofcommencementofwork			
6.	Periodallowedforcompletionasper agreement			
7.	Dateofcompletionasperagreement			
8.	Periodforwhichextensionoftimehas beengiven			
		<u>Date</u>	<u>Month</u>	<u>Year</u>
	a) 1 st extensionvideBank'sLetterNo.			
	b) 2 nd extensionvideBank'sLetter No.			
	c) 3 rd extensionvideBank'sLetterNo.			
9.	Reasonsforwhichextensionshavebeenpreviouslygiven(copiesofthepreviousapplicati onsshouldbeattached)			
10.	Periodforwhichextensionisappliedforandthereasonsthereofincludinghindrances,tim eforextraworkassigned,ifanyetc.			

SignatureofContractor

FORMAT OF HINDRANCE REGISTER

Name of Work	
Name of Contractor	
Agreement No.	
Date of start of work	
Period of completion	
Date of completion	

Sr. No	Nature of Hindrance	Date of occurrence of hindrance	Date of which hindrance was removed	Period of hindrance	Signature Site Engineer/ Project Engineer	Remarks
1	2	3	4	5	6	7

INSTALLATION OF AIR CONDITIONERS:

17.1 The Contractor shall carry out and complete the AC installation work as per standard specifications / as stipulated in this contract and OEM's recommendations and to the satisfaction of the Bank. The Bank with approval of Bank issue further written instructions, detailed directions and explanations with respect to the specifications, quality or quantity of works or the addition or omission or substitution of any work.

17.2 SPLIT TYPE ACs:

17.2.1 Wherever split A.C. are planned in the new buildings, necessary openings in wall may be provided by use of 75 mm PVC pipe sleeves at suitable locations for taking refrigerant pipes and cable to outdoor unit, so as to avoid unnecessary cutting/ damage to walls at a later stage. The slope of sleeve of PVC pipe should be towards exterior to avoid seepage of water into the room. This opening should be sealed properly after installation to avoid entry of vermin, rodents and rain water.

17.2.2 If the Split ACs are installed in the existing buildings, the opening shall be made with suitable drilling equipment with slope towards the exterior wall side for free flow of drain water and avoid seepage of rain water inside. The opening shall be packed with glass wool and finished with cement to avoid entry of rodents through the opening.

17.2.3 For condensate drain, 25/32/40 mm PVC/ HDPE pipe be provided as per the site condition and taken to nearest drain or up to the stack for collection & disposal of condensate. The slope of such pipe also should be downwards. As far as possible, joints should be avoided in this pipe.

17.2.4 The length of connecting refrigerant pipes between outdoor and indoor unit be kept to minimum feasible at site. However, it should not exceed 9 m, as the efficiency of the unit gets severely affected on increase of distance. Where the OEM specifies more than 9m for the specific model being used, the refrigerant pipe may be increased.

17.2.5 The refrigerant pipes should be taken along the walls/ columns etc. duly clamped to their surface by saddles. If walls etc. are not available, tray be used to support the refrigerant pipes. No opening shall be made in the concrete roof to run the refrigerant pipe to avoid damage to the water proofing and leakage of water from the terrace. Where bending of refrigerant pipes is required, proper pipe bending tool should be used to avoid pinching of pipes.

17.2.6 The refrigerant pipes should be properly insulated as per the recommendations of the manufacturer of split type AC units. The insulation over refrigerant pipes be examined once in a year and in case of any deficiency/ defect the same may be replaced as a part of AMC.

17.2.7 The indoor unit shall be fixed on the wall or partition as per the direction/ instructions of the Bank. Care should be taken while fixing on the partition to ensure the holding capacity of the partition, to avoid the IDU from falling and getting damaged or causing injury. The installation of IDU shall be done in such a way to add to the ambience of the Branch. It shall be firmly fixed on the wall / partition.

17.2.8 The ODU shall be fixed in the external wall or in the terrace with suitable size MS supports fixed firmly with anchor fasteners or as specified in the BOQ.

17.2.9 If number of ODU's are installed in the terrace or external wall, the sufficient distance (vertical and horizontal) between ODU's shall be maintained to ensure optimum and efficient dissipation of Hot air to the atmosphere and to avoid short circuiting of the hot air between ODU's.

17.3 INSTALLATION OF CASSETTE ACs:

17.3.1 While installing Cassette type IDU's, the contractor has to check the distance between the roof and the false ceiling and ensure that the sufficient height is available for fixing the IDU as per the layout and any hindrance like sewerage pipe lines, electrical cables etc. Support to hang the IDU to be provided in the roof with threaded rods of suitable size, as per recommendation of OEM. The length of the rod shall be of sufficient length to make finer adjustments while balancing the IDU.

17.3.2 The drain pipe of the Cassette AC units shall be covered with the insulation and sealing tape to avoid leakage of water. As far as possible, Contractor should use full length of drain and refrigerant pipe for installation to avoid leakage of water or refrigerant gas.

17.3.3 The refrigerant pipes from the IDU to the nearest wall should be duly fixed with the slotted angle supports or trays of suitable size firmly fixed with the threaded rods to the ceiling.

17.3.4 To avoid rodent menace, the contractor shall close all openings made by him and also provide sufficient protection to the PCB, other parts of the IDU. No claim for additional amount towards rectifying the IDU on account of damages caused by rodents will be entertained during the warranty period or AMC period.

17.3.5 Sufficient amount of refrigerant should be topped up as per the length of the copper pipes as required by OEM recommendation to ensure the optimum and desired performance of the ACs.

17.3.6 If the works involves, some architectural features in the false ceiling, the contractor shall consult the interior contractor and BANK Engineers before installation of cassette ACs to avoid any damage or any hindrance to the proposed architectural features.

17.4 CONCEALING THE PIPES:

17.4.1 The contractor shall give due notice to the Employer whenever any work like copper piping, cabling, acoustic insulation of the ducts or any work is to be concealed in the wall/false ceiling/partitions or finished up or otherwise becoming inaccessible later on, in order that the work may be inspected and correct dimensions taken before concealing.

17.4.2 If the Contractor has concealed the items without informing BANK Engineer, the same shall be opened up for measurement and made good to the original finishing at the contractor's expenses. If the contractor refuses to do so, then the same will not be considered for measurement and no payment may be made for such materials.

17.4.3 The contractor shall not execute any extra work other than the Bank's or BANK's written instruction. No works, for which rates are not specifically mentioned in the price bid, shall be taken up without written permission of the Bank.

17.5 Should any dispute or differences arise after the execution of any work as to measurements etc., or other matters which cannot be conveniently tested or checked, the decision of BANK shall be accepted as correct and binding on the contractor.

17.6 It is the responsibility of the Contractor to arrange/provide the tools, ladder, stands or any other gadgets or supports required for the execution of the work at site and Bank will not provide or entertain such requests.

SPECIAL CONDITIONS OF CONTRACT

PAYMENT TERMS FOR CAMC:

- The comprehensive AMC charges per unit per year plus GST extra will be paid for four services in a year apart from any number of breakdown calls
- The amount of CAMC will be paid on quarterly basis after successful completion of the satisfactory service during the quarter of service.

Preventive and Breakdown Maintenance during Warranty Period & AMC:

1. All the Air-conditioners covered in this contract have to be maintained as per the standards of the original manufacturing company during the warranty period as well as AMC
2. The warranty would be on-site and comprehensive in nature and back to back support from the OEM. The vendor will warrant all the spares against defects arising out of faulty design, materials and workmanship etc. during the period of warranty. After the Warranty period of newly installed AC units expire, then these units are to be maintained by the Contractor till the expiry period of AMC.
3. In case of AMC of the existing ACs, the contractor has to repair /service/ maintain the air conditioners under the AMC in as is where is condition when handed over to them under AMC.
4. All required tools and tackles (in good working condition) necessary for carrying out repair and maintenance works of Air Conditioners under AMC have to be provided by the vendor.
5. Professionally qualified personnel who have expertise in the AC supplied by the vendor will be permitted to undertake Preventive Maintenance/repair services during the period of warranty and AMC period.

6. During the term of the contract, the vendor will maintain the equipment in perfect working order and condition and for this purpose will provide the repairs and maintenance services as under:

Type of Service	Warranty Period	AMC
Preventive Maintenance	Every Quarter	Every Quarter
Breakdown Maintenance	Within 48 hours of complaint	Within 48 hours of Complaint

Preventive maintenance: The Vendor shall conduct the following activities under Preventive Maintenance once within first 90 days of the installation of new ACs and once in every quarter thereafter, during the currency of this agreement or on a day and time to be mutually agreed upon. Notwithstanding the foregoing, the Vendor recognizes Bank's operational needs and agrees that Bank shall have the right to require the Vendor to reschedule preventive maintenance from any scheduled time to a date and time not later than 15 working days thereafter.

Sno	Activity
1.	Inspection of the AC – IDU and ODU for any abnormality in operation, sound etc
2.	Testing the Performance of AC for desired cooling
3.	Testing of Gas pressure if necessary and check for any leakages near the check nut etc or diagnose any other fault
4.	Checking of current consumption
5.	Remove the filter, water service and fix it back after drying
6.	Clean the drain tray and drain pipe and remove any choke for free flow of drain water
7.	Clean the Evaporator with brush and remove the dirt/dust. Check for any fungus formation or bad smell and wash it with chemical, if required.
8.	Lubricating /greasing of all Fans
9.	Water washing of Condenser Coil
10.	Topping of Refrigerant gas, if required
11.	Check the swing motor functions and rectify, if required
12.	In addition to the above, any other activity to ensure trouble free operation of AC
13.	Check the temperature setting and operation mode and advise the Branch on the optimum operation levels

7. This comprehensive Contract includes replacement of all faulty spares. Some of the spares are listed as under:

Compressors	Starting Capacitors
Fan Motors	Running Capacitors
Built – in Timer kit	Relays, Thermostats
Selector switches	Fan Capacitors
Contactors (Power / Control)	Gas charging
Micro Swing Motors	Fan blades
Electronic Control Circuitries	Air-Filters
Remote Control Units	Condenser Coils
External Electronic / Analog time switches for timed running of A.C's	Stabilizers
Outdoor unit mounting frames	Cabling from IDU to ODU
Parts of indoor / Outdoor unit enclosures	Existing copper piping from IDU to ODU
Display unit in AC	Existing drain piping from IDU to drain point

Note:The above list is only indicative.However, any parts which are not mentioned in the Tender Schedule of this Contract but required for the smooth and trouble free operation of the AC equipment are also required to be rectified or replaced with in the scope of this contract.

8. Working Hours for Repair and Maintenance:

All activities under the scope of the contract shall be undertaken during working hours i.e. from 10.00 A.M. to 6.00 P.M. on all working days (viz. Monday to Saturday). In case any defects, faults and failures in the AC could not be repaired or rectified during the said period, the technicians are required to accomplish their duties beyond the said schedules in case of any situation, if it warrants.

9. Replacement of Spare parts: The required spares shall be kept as stock with the vendor for readily replacing the faulty spares, without loss of time or delay. In cases where unserviceable parts of the equipment need replacement, the vendor shall replace such parts, at no extra cost to the Bank, with brand new parts or those equivalent to new parts in performance. Any worn or defective parts withdrawn from the equipment and replaced by the vendor during the warranty period shall become the property of the vendor and the parts replacing the withdrawn parts shall become the property of Bank.

Defective spares compressors / condensers are to be replaced with new compressors / condensers and repairing of the old compressors is not permitted. Whenever new compressors / condensers are used, the Contractor has to produce original invoice and Warranty Card of the new Compressor/ condenser if demanded by the Bank. The compressor/ condenser being replaced should match with the **original star rating** of the air conditioner.

10. Only original spare parts/quality approved by the Bank will be permitted to be used for the maintenance during the AMC Period. If duplicate, refurbished or second hand parts are used by the vendor during the AMC, the contract shall be cancelled immediately without any notice period.

11. It is the responsibility of the Contractor to accurately specify the damaged spare parts to the Bank and to rectification of the fault in A.C under maintenance.

Response Time on receiving the complaint:The maximum response time i.e. time required for Vendor's maintenance technicians to report to the Bank after a request call / fax /e-mail is made or letter is written by Bank shall not exceed 48 hours.

Apart from regular letter communications, all telephonic/E-mail or Whatsapp communications from Bank are to be treated as formal communication for all practical purposes.

Escalation Matrix:Themobile number, land line number and email ID of the Contractor/Supervisor/Help desk to whom the complaints have to be reported and that of Top Management level is to be provided to Bank for communication purpose. Any change in numbers shall be advised then and there to the Bank.

Time taken for Repairs/Rectification:In case of Minor technical problems same are to be rectified within 3 hours of diagnosing of fault. In case of major technical problems, the same are to be rectified within 24 hours of identifying the problem.

In the event of the equipment not being repaired or a workable solution not provided during Warranty period and the AMC period, a penalty as per the penalty clause will be charged to vendor. The vendor may provide temporary equivalent replacement as a workable solution to avoid the above penalty.

Insurance for the Workmen:The technicians deployed under AMC are to be covered by insurance under Workman Compensation Policy through reputed Insurance Companies during the AMC Period. If demanded, Copies of the Insurance Policies are to be submitted to the Bank by the vendor.

Bank is not responsible for any loss of life, damage, injury to the technicians while undertaking the Maintenance activity under AMC contract or during the installation of new AC units. Vendor to ensure that all safety protocols are strictly followed while execution of the work. Vendor shall indemnify the Bank against any claims, damages, compensation for such losses.

12. **Extended Period of AMC:** In case the Bank needs the AMC service beyond the period of AMC, additional AMC Charges will be paid on the pro-rata basis for the period for which these units are to be maintained at the same unit rate as applicable to similar item in the original AMC and on the same terms and conditions of the AMC.
13. **Increase / Decrease of ACs:** If Bank decides that the additional number of air-conditioners other than the quantity mentioned in the tender are to be maintained by the Contractor, the contractor shall agree and maintain the ACs till the expiry period of AMC as per the same terms and conditions of the Contract. Proportionate amount of AMC shall be paid by the Bank for the same.
14. If any units covered under these AMC are removed/dismantled/shifted from this location to another location, the Contract amount as per the unit rate of the Tender will be revised and suitable deductions made from the AMC bills.

Other:The Bank has installed its own transformer for the site premises, hence the power supply is stable and is well regulated. The bank will not admit any claim from the contractor that the fault/damage is caused due to quality of power supply and it will not absolve the responsibility of the contractor in rectifying the fault.

The successful Vendor has to rectify the faults or repairs to the AC machines arising due to rat bites also free of cost within the scope of the contract. Vendor should also analyze the site conditions and take efforts to secure the AC equipment from the rodent bites by proper wrapping of the critical components with suitable glass wool packing or any other material and closing the opening made for the AC piping & drains properly to avoid rodent entry.

15. Details of important programs / functions of the Bank such as Conference, Review Meeting, VVIP functions etc that may be held in the Office will be informed to the contractor and they should assist the Bank in maintaining smooth running of the air-conditioners on that day without failure even if they are held on Bank Holidays. Non-attendance of the technicians on such a day will attract penalty at the discretion of the Bank.

All security and safety regulations and guidelines as per the applicable law are to be followed. All guidelines/directions of Bank's Security Section must be followed.

Complaint / Service / Breakdown Register:

The Bank shall maintain a register at its site in which, the Bank's AC operator / Electrician or any other person identified by Bank shall record each event of failure and / malfunction of the ACs. The Vendor's technician shall enter the details of the air conditioners serviced/ maintained / repaired by him in this register. Additionally, every time a preventive or corrective maintenance is carried out, the Vendor's engineer shall make, in duplicate, a Service call report which shall be signed by him and thereafter countersigned by the Bank's official. One copy of the Service call report shall be handed over to the Bank's official. Spares taken outside the premises also to

be recorded with serial number of spare and in and out date and time. The Vendor shall provide replacement equipment if any equipment is out of the premises for repairs.

16. SHIFTING THE AC TO NEW LOCATION OR BRANCH:

18.1 If Bank desires to shift the AC to a new location/floor or department in the same premises or to another branch/office and install it thereof urgently, the Bank shall bear the charges for such shifting and the vendor shall dismantle and reinstall the AC as desired. The terms of this agreement, after such shifting to the alternate site and reinstallation thereof would continue to apply and binding on the vendor. The warranty terms would not be considered as violated due to the above shifting. The vendor, would not unreasonably assume that the causes lie with the shifting activity.

CONTRACTOR'S RESPONSIBILITY AFTER THE CONTRACT HAS EXPIRED

Successful bidder has to handover all the ACs in good running condition before expiring of CAMC contract. Security Deposit will be released only after verifying the same.

PENALTY CLAUSE FOR AMC:

Any penalty due during the Warranty/AMC period will be adjusted against the bills payable or retention money retained by the Bank as per following in case of non-satisfactory services provided under Warranty/AMC:

S. No.	Type of Defective Service	Penalty Amount / LD
1	Penalty for every air conditioner which is not repaired post completion of 72 hours of reporting the complaint till the day the complaint is rectified.	Rs 100/- per air conditioner per day till the day of rectification
2	Penalty for every air conditioner that breaks down for more than three times in a month	Rs 500/- per air conditioner per month
3	Penalty for not doing the Preventive Maintenance or Vendor does not fulfill the provisions of the contract in a quarter	only the proportionate maintenance charges for that period during the month will be considered payable by Bank without prejudice to the right of the Bank to terminate the contract.
4	Penalty for non-responsiveness to the calls of the Bank to repair or replace the faulty AC. If the vendor could not resolve the issues or not showing any interest to resolve the issue or non-responsive to Bank's calls	Bank will arrange to rectify the same through any other agency and recover the losses from the vendor by suitable deductions from the bills payable to the vendor or from the Security Deposit and contract cancelled.

5	Penalty for losses to Bank's property while performing the PM or repair work on account of any negligence, mishandling, non-adherence to the required safety protocols, commission or omission by the technicians of the Vendor and if any loss or damage caused to the Equipment or any Bank's property	Contractor to rectify or shall make good of the losses suffered by the Bank or Bank will recover the actual amount incurred by Bank
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2. If, in any quarter, the invoice was paid to the Vendor without deducting the penalty or LD, the Bank can deduct the same from future payments payable or the Vendor shall refund the amount forthwith to Bank on demand by Bank.
3. Further Bank reserves the right to terminate the contract at any time during the validity of the Contract period by giving 30 days' notice to the Contractor with or without any reason.

6. No term or provision hereof shall be deemed waived and no breach excused, unless such waiver or consent shall be in writing and signed by the party claimed to have waived or consented. Any consent by any party to or waiver of a breach by other, whether express or implied, shall not constitute a consent to or waiver of or excuse for another different or subsequent breach.

Date:

Place:

Signature and seal of the Bidder

TECHNICAL SPECIFICATIONS

VARIABLE REFRIGERATION SYSTEM

1. System

The system selected is a floor wise modular system, with number of indoor units connected to centrally locate outdoor units, as per detail design given in the tender. The outdoor units shall be air cooled type and mounted on terrace of the building. Indoor units in various areas shall be as per enclosed drawings/ Bill of Quantities.

All the VRV air conditioners shall be fully factory assembled, wired, internally piped & tested.

The outdoor unit shall be pre-charged with first charge of R 410A Refrigerant. Additional charge shall be added as per refrigerant piping at site. All the units shall be suitable for operation with 415 V +/- 10%, 50 Hz +/- 5%, 3 Phase supply for outdoor units & 230 V +/- 10%, 50 Hz +/- 5%, Single Phase supply for indoor units. Only one cable will be extended to each Outdoor unit and if any additional breakup of supply is required, the Contractor shall provide suitable outdoor distribution box as part of Unit cost.

The VRV system shall provide stable, trouble free & safe operation, with flexibility of Operating desired indoor units. The outdoor units must be capable of delivering exact Capacity proportional to the number of indoor units switched on & the heat load in the air conditioned area. The proportional operation shall be achieved by varying Speed of the compressor in the outdoor units.

The operation of the VRV system shall be through independent wired/ wireless remote controllers as specified.

2. Outdoor Unit.

Outdoors units of the VRV system shall be compact air cooled type.

The compressors of the outdoor units must be hermetically sealed scroll type. Each module of outdoor unit must have separate inverter operated compressor, suitable to operate at heat load proportional to indoor requirement.

The outdoor units must be suitable for up to min. 150 m refrigerant piping between outdoor unit & the farthest indoor units, with total piping length of 300 m for all the indoor units. Allowable level difference between outdoor unit & indoor units shall be min. 50 m in case of outdoor unit on top & min.40 m in case of outdoor unit at bottom. Allowable Level difference between various indoor units connected to one out door unit shall be up to min. 15 m.

Back up operation, in case of failure of one of the compressors of outdoor unit, for single module outdoor units or failure of one of the modules in case of multiple Module outdoor units shall be possible.

The outdoor unit shall employ system of equal run time for all the compressors, Inverter or on/ off type, within each out door unit - Single Module or Multi Module.

The outdoor units shall be suitable to operate within an ambient temperature range of - 5 Deg C to 45 Deg C, in cooling mode.

Air cooled condenser shall have Axial Flow, upward throw fan, directly coupled to fan motors with minimum IP 55 protection. The outdoor unit condenser fan shall be able to develop external static pressure up to 6 mm of water.

The entire operation of outdoor units shall be through independent remotes of indoor Units and a Common Floor wise Central controller. No separate Start/ Stop function is required.

Starter for the Outdoor Unit compressor shall be "Direct on Line" type. Inverter Compressor of the unit shall start first & at the minimum frequency, to reduce the inrush current during starting.

2.1 Compressor

The compressor shall be highly efficient, high COP scroll type and capable of inverter control. The inverter compressor shall change the speed in accordance to the variation in cooling or heating load requirement.

All outdoor units shall have multi-steps of capacity control to meet load fluctuation and indoor unit individual control. All parts compressor shall be sufficiently lubricated stock. Forced lubrication may also be employed.

Oil heater shall be provided in the compressor casing.

Inverter compressor shall preferably by Reluctance DC inverter compressor for higher efficiency and improved reliability.

2.2 Heat Exchanger

The heat exchanger shall be constructed with copper tubes mechanically bonded to aluminum fins to form a cross fin coil. The aluminum fins shall be covered by anti-corrosion resin film. The unit should be with e-pass heat exchanger to optimize the path of heat exchanger and for better efficiency of condenser. The unit shall be provided with necessary number of direct driven low noise level propeller type fans arranged for vertical discharge. Each fan shall have a safety guard.

2.3 Refrigerant Circuit

The refrigerant circuit shall include an accumulator, liquid and gas shut off valves and a solenoid valves at condenser end. The equipment must have in built refrigerant stabilization control for proper refrigerant distribution.

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

2.4 Safety Devices

VRV system shall be provided with all safety devices as required and to ensure safe operation of the system, but not restricted to the following:

- i. High pressure switch
- ii. Fan driver overload protector
- iii. Over current relay
- iv. Inverter Overload Protector
- v. Fusible Plug
- vi. Fan motor safety thermostat

2.5 Oil Recovery System

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

The system must be provided with oil balancing circuit to avoid poor lubrication.

3. Indoor Units

This section deals with supply, installation, testing, commissioning of various type of indoor units conforming to general specification and suitable for the duty selected. The type capacity and size of indoor units shall be as specified in detail Bill of Quantities.

Indoor unit shall be either ceiling mounted cassette type, or ceiling mounted ductable type or floor standing type or wall mounted type or other as specified in BOQ. Each unit shall have electronic control valve to control refrigerant flow rate respond to load variations of the rooms. The indoor units shall have following features:

The address of the indoor unit shall be set automatically in case of individual and group control.

b. In case of centralized control, it shall be set by liquid crystal remote controller.

c. The fan shall be dual suction, aerodynamically designed turbo, multi blade type, statically & dynamically balanced to ensure low noise and vibration free operation of the system. The fan shall be direct driven type, mounted directly on motor shaft having supported from housing.

d. The cooling coil shall be made out of seamless copper tubes and have continues aluminium fins. The fins shall be spaced by collars forming an integral part. The tubes shall be staggered in the direction of airflow. The tubes shall be hydraulically/ mechanically expanded for minimum thermal contact resistance with fins. Each coil shall be factory tested at 21kg/sq.mt air pressure under water.

e. Unit shall have cleanable type filter fixed to an integrally moulded plastic frame. The filter shall slide away type and neatly inserted.

f. Each indoor unit shall have computerized PID control for maintaining design room temperature. Each unit shall be provided with microprocessor thermostat for cooling and heating.

g. Each unit shall be with wired LCD type remote controller. The remote controller shall memorize the latest malfunction code for easy maintenance. The controller shall have self-diagnostic features for easy and quick maintenance and service. The controller shall be able to change fan speed and angle of swing flap individually as per requirement.

The indoor units shall generally be of following type:

3.1 Hi static Ductable Type Unit

Each Indoor unit shall be ceiling mounted ducted type, as specified in scope of work. 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. The unit shall have high static fan for Ductable arrangement.

3.2 Ceiling Mounted Cassette Type Unit (Multi Flow/ Round Flow Type)

The unit shall be ceiling mounted type. The unit shall include pre-filter, fan section and DX-coil section. The housing of the unit shall be powder coated galvanized steel. The body shall be light in weight and shall be able to suspend from four corners. The fan shall be aerodynamically designed diffuser turbo fan type. Noise level should not be more than 35 dB at low speed.

Unit shall have an external attractive panel for supply and return air. Unit shall have four way supply air grilles on sides and return air grille in center. Each unit shall have high lift drain pump, fresh air intake provision (if specified) Low gas detection system and very low operating sound. All the indoor units regardless of their difference in capacity should have same decorative panel size for harmonious aesthetic point of view. It should have provision of connecting branch ducts.

3.3 High Wall Mounted Units

The unit shall be wall mounted type. The unit includes pre filter, fan section & DX-coil section. The housing of unit shall be light weight powder coated galvanized steel. Unit shall have an attractive external casing for supply and return air.

4. Control System for VRV air conditioning system

Corded Remote Controller

1. Corded remote controller shall be supplied as specified in the "Bill of Quantities". The controller must have crystal display screen, which displays complete operating status. The digital display must allow setting of temperature with 1 deg. C interval. Remote shall be able to individually

program by timer the respective times for operation start and stop within a maximum of 72 hours. Remote must be equipped with thermostat sensor in the remote controller that will make possible more comfortable room temperature control. The remote shall be able to monitor room temperature & preset temperature by microcomputer & can select cool/ heat operation mode automatically.

2. The remote must constantly monitor malfunctions in the system & must be equipped with a "self-diagnosis function" that let know by a message immediately when a malfunction occurs.

3. It shall be possible to wire the remote up to 500 RM T.

4. Cordless Remote Controller: Cordless remote controller shall be supplied as specified in the "Bill of Quantities". The same operation modes & settings as with wired remote controllers must be possible. Compact light receiving unit to be mounted into wall or ceiling shall be included.

5. Central Remote Controller: Central Remote controller shall be supplied as specified in the "Bill of Quantities".

Following functions shall be possible:

- Control Max 64 Groups (128 indoor units)
- Zone control
- Malfunction code display
- All the functions available with corded remote controller
- It should be possible to wire the remote to 1000m

5. Installation and Commissioning

The Outdoor units shall be placed on vibration isolation pads etc., and leveled properly. The blower motor shall be ensured for balancing by operating the blower. All nuts bolts etc., shall be tightened and placed intact prior to the connections. The refrigerant system shall be vacuumed to 7m m Hg and maintained for 24 hours prior to charging. The contractors shall supply all lubricants and required charge of refrigerant.

6. Testing

The test shall be furnished in accordance with IS 5141- (revised up to date) and the results shall be computed. The test results shall tally with the listed figures furnished in the tender.

Additional supports wherever considered necessary by the Engineer -in - charge shall be provided. Supports shall be taken from steel members grouted in the RCC Work and fixing of steel members shall involve minimum damage. The entire supporting system s shall be met with the approval of the Engineer - in - charge.

Alternatively 50 x 50 x 6 mm cleats duly anchor bolted to the structural ceiling can be provided.

All duct supports, flanges, hangers shall be given two coats of red - oxide before Installation and one coat of aluminum paint after erection.

Where ducts are connected to the wall, such connections shall be made through Galvanized steel frame fixed to the wall through suitable shear fasteners. Ducts connecting to air moving apparatus shall be through 15 OZ mil dew resistant double canvass as directed by the Engineer-in-Charge. On all circular spigots the flexible materials are to be flanged and bolted with a backing flat or bolted to either backing flat.

REFRIGERANT PIPING

1. General Conditions

The scope of this section covers supply, laying, testing and commissioning of copper refrigerant piping. The tender drawings enclosed depict the schematic layout for the refrigerant piping routing. The contractor shall prepare his working drawings for approval by the consultant before execution at site.

The vendor shall design the piping and prepare working drawings showing full details of piping arrangement, pipe sizes and thickness, methods of supporting pipes and connections in various components for approval of Engineer-in-Charge. Work shall commence only after approval. Piping shall be able to withstand the thermal stresses and vibrations encountered during normal operations.

Refrigerant pipe sizes indicated in the tender is only tentative and the contractor shall confirm the same. Refrigerant piping shall be designed as per the requirement of the system. Suction risers shall be designed as per the minimum load requirement of the system. The contractor shall submit the design calculations for the same for the consultant's approval and then execute the same at site.

2. Construction

Hard drawn copper pipes shall be used for the refrigerant piping.

Fittings like bends, tees, and sockets shall be of copper or brass and shall be suitable for duty involved. Flare type compression fittings shall be allowed up to 15mm size for which annealed copper tubing is used. Tubes up to and including 15mm size may be bent to form 90deg. bends with inside radius not less than 3 tube diameters. For bigger sizes, bend fittings as mentioned above shall be used. Valves shall be of packed, back seating type, and shall be forged or cast brass construction.

Joints between pipes or pipes and fittings shall be of the socketed or flanged type. Brazing alloy of the silver-copper-Phosphorous type shall be used and joints shall be made by the flow of brazing alloy by capillary action along the annular space between the two mating surfaces. Ends of mating tubes shall be square cut and cleaned properly to remove burrs and dirt or oxide. For flare type fittings, tubes shall be fully annealed at the flare before and after flaring.

3. Piping Insulation

Refrigerant Pipe insulation thickness should be maintained as per the AC Unit manufacturers standards, different sizes for Suction & discharge pipelines such that the AC Unit cooling /efficiency should be in line with the design conditions.

Pipe Insulation minimum of 19 mm thick Fire Retardant (Class O) Nitrile Rubber/ cross linked closed cell polyethylene tube insulation shall be used for suction line and liquid line (Depends on expansion valve). Insulation shall have Fire retardant ultra violet barrier film for physical protection and for protection from sunlight. All joints shall be sealed with self-adhesive tape or with heat.

An air gap of 25 mm shall be present between adjacent insulation surfaces carrying chilled water or refrigerant. Before applying insulation, all pipes shall be brushed and cleaned. All Pipe surfaces shall be free from dirt, dust, mortar, grease, oil, etc. Thermal insulation shall be applied as follows or as specified in drawings or schedule of quantity:

Application

1. Insulating material in tube form shall be sleeved on the pipes.
2. On existing piping, slit opened tube of the insulating material (slit with a very sharp knife in a straight line) shall be placed over the pipe and adhesive shall be applied as suggested by the manufacturer.
3. Adhesive must be allowed to tack dry and then press surface firmly together starting from butt ends and working towards center.
4. Wherever flat sheets shall be used it shall be cut out in correct dimension. All longitudinal and transverse joints shall be sealed as per manufacturer recommendations.
5. The insulation shall be continuous over the entire run of piping and fittings.

4. Pressure Test

After completion of piping installation, the suction and liquid lines shall be pressure tested and repaired if necessary and further pressure tested to hold 1.5 times of working pressure for a minimum 24 hours with dry nitrogen prior to insulating the joints.

Systems shall be charged with Nitrogen to 4.5 kg/cm² (450 psi) gauge pressure and all joints shall be checked for leakages with soap solution. Leaks shall be marked, pressure released and repairs carried out. Brazed joints that leak shall be opened and redone. These shall not be required by addition of brazing alloy to the joint.

System shall be charged with nitrogen to the pressure specified as above. Leak detection and repairs to leaks shall be carried out till no leak exists.

After all leaks have been repaired; system shall be retested with test pressure maintained for not less than 8 hours. No measurable drop in pressure should be detected after pressure readings are adjusted for temperature changes. Pressure gauges and controls may be closed during pressure testing.

5. Charging

- Charge refrigerant in liquid form, through liquid line port
- Use weighing machine to charge exact calculated amount
- Weight the refrigerant cylinder before and after charging
- After complete charging open both suction and liquid ball valve of outdoor unit
- If full additional charge cannot be charge in liquid form, then charge balance amount in liquid form by using the suction service valve with system working in cooling mode

- After charging refrigerant remove manifold and refrigerant cylinder and replace caps of service valves
- Close (Front End) both suction and liquid service valves
- Check for leaks in service valve connections

6. Commissioning

After refrigerant charging, energize the power supply to outdoor unit so that crankcase heater is energized for minimum 4 hours.

- Set dip switch settings.
- Check continuity of communication wiring
- Check all electrical connections are tight
- Check incoming voltage at power terminals
- Operate the indoor units by unit controller or group controller
- Observe for any abnormal noise
- Observe parameters and inside conditions for 12 hours
- Handover the system to customer along with user manual

7. DRAIN PIPING

The drain piping shall be made out of rigid PVC pipes of 10 Kg/cm² class. The piping shall be supported by hitech clamping running continuously below the pipe. The piping shall be insulated with 6mm thick closed cell nitrile rubber sleeves.

The drain pans of IDUs shall be connected to rigid PVC pipe by braided PVC flexible pipe with appropriate adapters. U trap shall be providing in the drain connection of each IDU. All pipes support/clamps shall be painted with red oxide primer followed by two coats of synthetic enamel finish paint.

AIR DISTRIBUTION SYSTEM

1.0 DUCTING

1.1 Scope of work

The scope of work under the section comprises the supply, installation, testing and commissioning of all sheet metal ducts, dampers, grilles, diffusers, etc. as shown in the drawings and conforming to the specifications. Governing standards shall be SMACNA-1995 ("HVAC duct construction standards-Metal and Flexible-Second edition 1995"SMACNA) and IS -655.

1.2 GI Duct (Factory Fabricated ducting with factory fabricated flanges)

1.2.1 Materials & construction:

All ductwork including straight sections, tapers, elbows, branches, show pieces, collars, terminal boxes and other transformation pieces must be factory-fabricated or by equivalent technology and shall be made out of galvanized sheet steel coils of Class-VIII (120 GSM).Coil lines to ensure location of longitudinal seams at corners/folded edges only to obtain the required duct rigidity and low leakage characteristics. No longitudinal seams permitted along any face side of the duct.

All ducts, transformation pieces and fittings to be made on CNC profile cutters for required accuracy of dimensions, location and dimensions of notches at the folding lines.

All ducts wherever specified, shall be factory fabricated in box sections from G.I. continuous coils with all suitable joints, supports, sealing arrangements etc. The thickness of galvanized sheet and type of flange class at 1200 mm spacing shall be as follows.

Size of Duct	Sheet Thickness	Type of Flange / connectors
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Up to 450 mm	0.63 mm	24 G	C&S cleats
451 mm to 750 mm	0.63 mm	24 G	Rolamate - E
751 mm to 1000 mm	0.8 mm	22 G	Rolamate - F
1001 mm to 1500 mm	0.8 mm	22 G	Rolamate - H
1501 mm to 1800 mm	1.0 mm	20 G	Rolamate - I
1801 mm to 2100 mm	1.0 mm	20 G	Rolamate - J
2101 mm and above	1.2 mm	18 G	Rolamate - J

The gauges, joints and bracings for sheet metal ducting work shall further conform to the provision as shown on the drawings.

Ducts larger than 600 mm shall be cross broken or straight beaded. Duct sections up to 1200 mm length may be used with bracing angles omitted.

Changes in section of duct work shall be affected by tapering the ducts with as long a taper as possible. All branches shall be taken off at not more than 45° angle from the axis of the main duct unless otherwise approved by the Consultant / Owner representative.

All ducts shall be supported from the ceiling / slab by means of fully threaded GI rods of 9 mm - 12 mm dia. with M.S. slotted double - C channel of 3.0 mm thickness at the bottom. The rods shall be anchored to R.C.C slab using metallic expansion fasteners.

1.3GI Duct (Factory Fabricated ducting with angular iron flanges)

1.3.1 Materials & Construction:

All ducts wherever specified, shall be factory fabricated in box sections from G.I. continuous coils with all suitable joints, supports, sealing arrangements etc.

The material and the construction sheet metal ducts shall be as follows.

S.No.	Item Description	Material of Construction (MOC)
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1	GI sheet	Cold rolled sheets of factory fabricated (Rolastar/ equivalent) GSS ducting, continuous galvanized with Zinc coating of 120 gsm (Class VIII), sheets conforming to IS-277-2003
2	Flanges, Stiffeners & Supports	Mild Steel structural steel with one coat red-oxide primer and two coats of black enamel paint
3	Gasket	White neoprene rubber of minimum 3.2mm thick (1/8")
4	Bonding Sealant /	Silicon based food grade sealant/ RTV
5	Bolts, Nuts, Rivets & Washers.	Mild steel continuous galvanized with zinc coating (MS with hot dip galvanizing)

The ducts construction shall be Rectangular type of Low/Medium Pressure classification.

The construction of ductwork shall be in accordance with the following schedule.

Schedule of Ductwork Metal Gauges (Galvanized Steel), joints and Bracings:

Dimension of Longest Side Of Duct (mm)	Min. Sheet thickness (mm)	Type Of Transverse Joint Connection	Type Of Bracing
Up to 600	0.63 (24 SWG)	25 x 25 x 3 mm (1" x 1" x 1/8") companion flanges on 2.4 meter centers.	None
601 to 750	0.63 (24 SWG)	25 x 25 x 3 mm (1" x 1" x 1/8") companion flanges on 2.4 meter centers.	25 x 25 x 3 mm (1" x 1" x 1/8") Girth angles

			@1200mm (48")
751 to 1000	0.80 (22 SWG)	40 x 40 x 4 mm (1 1/2" x 1 1/2" x 3/16") companion flanges on 2.4 meter centers.	25 x 25 x 3 mm (1" x 1" x 1/8") Girth angles @1200mm (48")
1001 to 1500	0.80 (22 SWG)	40 x 40 x 4 mm (1 1/2" x 1 1/2" x 3/16") companion flanges on 2.4 meter centers.	40 x 40 x 4 mm (1 1/2" x 1 1/2" x 3/16") Girth angles @1200mm (48")
1501 to 2250	1.0 (20 SWG)	40 x 40 x 6 mm (1 1/2" x 1 1/2" x 1/4") companion flanges on 1.0 meter centers.	40 x 40 x 4 mm (1 1/2" x 1 1/2" x 3/16") Girth angles @600mm (24")
2251 and above	1.25 (18 SWG)	50 x 50 x 6 mm (2" x 2" x 1/4") companion flanges on 1.0 meter centers.	50 x 50 x 4 mm (2" x 2" x 3/16") Girth angles @600mm (24")
Plenums	1.6 (16 SWG)	50 x 50 x 6 mm (2" x 2" x 1/4") companion flanges on 1.0 meter centers.	50 x 50 x 6 mm (2" x 2" x 1/4") Girth angles @600mm (24")

Ducts larger than 600 mm shall be cross broken or straight beaded. Duct sections up to 1200 mm length may be used with bracing angles omitted

In addition to above the following points should be also taken into account while fabrication of ducts

- Girth angles and companion flanges shall be mitered and welded at corners and riveted to duct sheets at 75mm (3") centers.

- Flanges and joints shall be made with 9.5mm (3/8") GI bolts spaced at 100mm (4") centers and provided with 3.2mm (1/8") white neoprene rubber gasket.
- All joints and seams shall be rendered air tight with mastic sealant. Longitudinal seams shall be inside groove of Pittsburgh type. The use of sheet metal screws is forbidden. Rivets, nuts and bolts or some other device approved by the consultant / Owner.
- All reinforcing angles, bracing, etc. shall be painted with red oxide and black enamel paint after installation.
- All four sides of un-insulated ductwork of dimension 300mm or larger shall be cross-broken.

1.4 Duct work Supports

All horizontal ducts shall be supported by means of trapeze type hangers, consisting of angles and speed nuts and threaded hanger rods affixed to the structure. Hangers shall be affixed to wooden structure by lag screws, to concrete with screw concrete inserts or expansion cases, and to steel with C-clamps. All ducts shall be supported with mild steel rods not less than 6mm dia. The duct supporting details as follows.

Schedule of supporting rods, angle sizes and Spacing:

Duct perimeter (mm)	Rod. Dia. (mm/Inch)	Shelf Angle	Spacing mm
Up to 1500	9.0 (3/8")	40mm x 40mm x 5mm	2400
1501 to 2500	12.5 (1/2")	40mm x 40mm x 6mm	2400
Over 2500	15.0 (5/8")	50mm x 50mm x 6mm	2400

Vertical ductwork fastened on wall shall be supported by means of galvanized band hangers or angle brackets. The hangers shall be fastened to the wall by means of a fastener. The ductwork shall be bolted to the hanger. The angle brackets shall be 25mmx25mmx3mm for duct of longest side up to 600mm,

40mm x 40mm x 4mm for duct of longest side up to 1200mm and 50mm x 50mm x 6mm for duct of longest side over 1200mm. The spacing of angle bracket shall not be more than 2400.

For vertical ductwork, wherever possible shall be supported at floor levels by angle supports projecting beyond the opening in the floor. Angles shall be bolted to ducts. The angles shall be 40mm x 40mm x 4mm for duct of longest side up to 1500mm and 50mm x 50mm x 6mm for duct over 1500mm.

Additional hangers beyond those specified above shall be installed at bends, transformations (reducers / rectangular to circular vice versa) and take-off connections as required.

Notwithstanding the above, certain ductwork located in critical areas shall be supported by means of resilient supports or hangers.

1.5 Installation & testing

During the construction, the contractor shall temporarily close duct openings with sheet metal covers to prevent debris entering ducts and to maintain opening straight and square, as per direction of Engineer-in-Charge.

Great care should be taken to ensure that the ducting work does not extend outside and beyond height limits as noted on the drawings.

All duct work shall be of high quality approved galvanized sheet steel guaranteed not to crack or peel on bending or fabrication of ducts. All joints shall be air tight and shall be made in the direction of air flow. The ducts shall be reinforced with structured members where necessary, and must be secured in place so as to avoid vibration of the duct on its support.

All air turns of 45° or more shall include curved metal blades or vanes arranged so as to permit the air to make the abrupt turns without an appreciable turbulence. Turning vanes shall be securely fastened to prevent noise of vibration.

The ducting work shall be varied in shape and position to fit actual conditions at building site. All changes shall be subjected to the approval of the client representative. The contractor shall verify all measurements at site and shall notify the Engineer-in-Charge. The contractor shall verify all measurements at site and shall notify the Owner representative of any difficulty in carrying out his work before fabrication.

Self-adhesive sponge rubber / PVC gaskets of 6 mm maximum thickness shall be installed between duct flanges as well as between all connection of sheet metal ducts to walls, floor column, heater casing and filter casings. Sheet metal connections shall be made to walls and floor by means of wooden member anchored to the building structure with anchor bolts and with the sheet screwed to them.

Flanges & bracing angels shall be made out of M.S angel iron. All flanges and bracing angles shall be pre painted with black enamel paint. The connection shall be 4 bolts slip on type flange system with sealant injected within the flanges. Accessories such as damper blades and access panels are to be of materials of appropriate thickness and the finish similar to the adjacent ducting, as specified.

Joints, seams, sleeves, splitter, branches, take-offs and supports are to be as per duct details as specified, or as decided by client representative.

Hexagon nuts and bolts, stove bolts or buck bolts, rivets, or closed centre top rivets, or spot welding may fix joints requiring bolting or riveting. Self-tapping screws must not be used .All jointing materials must have a finish such as cadmium plating or galvanized as appropriate.

More generally, the ducting shall conform to Leakage Class CL-3 of HVAC Air duct Leakage Test Manual SMACNA 1985. This implies leakage equivalent to or less than 3% of total airflow rate at a static pressure of 50 mm of WC and also corresponds to a leakage rate of about 0.72 cmh-m² of duct surface area. All ducting & AHUs shall be tested at site to prove compliance with the above requirements.

The duct leakage testing rig could consist of a fan with damper (for varying flow rate) the flow measuring devices like Orifice plate assembly with manometer (for measurement of flow rate) and manometer (for measurement of static pressure) together with necessary ducting.

1.6 Duct Masonry

Unless, otherwise noted where ducts are shown connecting to masonry openings and/or along edges of all plenums at floor, walls, etc. There shall be provided a continuous 40mm x 40mm x 6mm pre-painted angle iron which shall be bolted to the structure and made air tight by caulking. This sheet metal at these locations shall be fastened to the angle irons.

1.7 Elbows and Bends in Ductwork

On all elbows or turns, the center line radius shall not be less than one and one-quarter times the duct width unless otherwise shown on the drawings. Where right-angle bends are used, double thickness aero foil turning vanes shall be incorporated.

2.0 DAMPERS

2.1 GI Volume Control dampers

The dampers shall be manufactured from 16 gauge galvanized sheet steel. The dampers shall be opposed blade type and has heavy cast iron indicating quadrant lever with wing nut. The damper shall complete with PVC knob operation, status indicator locable in closed/ or open position.

Both damper casing & blade shall be made out of 1.6 mm thick Galvanized sheet steel. The damper shall have chrome plated spindles and self-lubricating bronze bushes. The minimum depth of the damper shall be 150mm. For the dampers wider than 1200mm; two or more sections shall be used separated by a mullion and with blade tie rods inter-connected. The blades shall be mounted in an integral channel frame which shall be mounted on the duct. The blades shall be center and edge crimped and reinforced as required, and shall be supported on steel shafts running in oil impregnated bronze bearings. The

operating shafts shall extend through the duct wall for operation by a hand quadrant lever. Individual blades shall be connected by a mechanical linkage so that they operate in unison. The control arm must be fastened to the shaft by means of a steel dowel shaft key or a similar approved penetrating device.

Set screw alone will not be acceptable. The blades shall have rubber strips fastened securely to the edges to ensure tight enclosure. The complete assembly shall be rigidly constructed, be free from rattles and shall operate freely.

2.2 Fire Dampers

Fire dampers shall be supplied and fitted as and when shown on the accompanying drawings and within the thickness of the various fire break walls, partitions and floor slabs. The fire dampers shall comply in all respects and confirming to and tested as per UL555S. Fire dampers shall be type tested and approved by CBRI, Roorkee.

All supply/return air ducts at AHU/ fan section shall be provided with approved fire damper of at least 90minutes fire ratings.

- The damper shall be constructed to the following requirements:
- The damper shall be constructed of galvanized sheet steel of 16 gauge with welded joints and flanged ends for connecting to the ductwork.
- The blade shall be single or multi-blade of 16 gauge GI, weighted type steel plate arranged to swing freely and automatically into place when released by the fusible link mechanism.
- Internal small angle iron guide-stops shall be fitted to ensure an efficient seal when the damper blade is in closed position.
- The fire damper shall lock shut positively and shall be opened manually.

- The damper shut or opened position shall be indicated by means of an external indicator.
- Fusible links shall be arranged to break at 155°F at (68°C) and shall be connected and anchored to welded internal lugs by means of non-corrodible multicore wire. The position of the fusible links when assembled shall be chosen so that they may be easily inspected and adjusted through access panels cut in the G.S.S. ductwork. In all cases the ductwork access panels shall coincide with the removable portions of the false ceilings whenever they occur. The space between the fire damper body and the opening in the wall shall be filled with an approved compressible non-combustible material for the full thickness of the wall.

2.3 Insect Screens

Non-corrodible insect screens shall be provided and fixed behind all intake and discharge louvers grilles and openings where these occur on the outside of the building. The screens shall be of suitable bronze fine mesh and fixed in such a manner so as to be easily removable for periodic cleaning.

3.0 GRILLS /DIFFUSERS

3.1 Fresh Air Intake Louvers With Bird Screen

The fresh air intake louvers at least 50mm deep will be made of powder coated extruded aluminum construction. Bird / insect screen will be provided with the intake louvers. The blades shall be inclined at 45 degree on a 40mm blade pitch to minimize water ingress. The lowest blade of the assembly shall be extended out slightly to facilitate disposal of rain water without falling on door / wall on which it is mounted.

The intake louvers shall be provided with factory fitted volume control dampers in black finish

3.2 Diffusers, Register and Grille Finishers

All diffusers, grilles and registers provided and fixed shall be of natural anodized aluminum construction. Alternative colour finishes shall be provided where specified.

Where steel construction diffuser or grille is specified and supplied, the metal shall be cleaned of all rust and all welded flux and all grease removed and then painted with 1-coat of primer, 2-coat of undercoats and 1-top coat of full gloss paint. The finish shall be baked-enamel or equal approval.

3.3 Diffusers, Register and Grille Installation

All diffusers, grilles and registers must be rigidly fastened to the ducts in a neat and workmanlike manner. The joint between the supply grilles, etc. and the duct must be fitted with a felt or rubber gasket or other suitable means to make the joint air tight, so that air will not blow out between the grille frame and the duct opening producing duct streaks on the duct or wall.

Grille and register position shown on the drawings are approximate except where otherwise noted. The Contractor shall make such adjustments in position as and when necessary to ensure conformity with the Architectural drawings and the requirement of outlets by other trades without extra charge.

On furred-in ductwork, the sheet metal grille collar shall be suitably reinforced with a wood frame on the outside of the collar in order to prevent it from being forced out of shape.

3.4 Sample for Approval

Fully finish samples of supply and return diffusers/grilles as they will be fitted shall be submitted to the Owner for approval before any bulk manufacture or purchase is commenced.

3.5 Testing

The complete duct system shall be tested for air leakage & complete air distribution system shall be balanced in accordance with air quantities indicated on the approved drawing

Material and Process for Roof Under deck insulation

Unless otherwise noted, all the exposed roofs are thermally insulated with 32 mm thk closed cell nitrile rubber. The thermal conductivity shall be not more than $0.035\text{w/m}^\circ\text{k}$ at mean temperature of 20°C .

The application of insulation shall be as follows.

a) Roof surfaces shall be cleaned with wire brush & dry mopping cloth and shall be free from dust and other foreign particles.

b) For the cleaned roof surface, cut piece of insulation shall be stuck with fivicol /

Equivalent rubber adhesive and needs to wait up to 10 - 15 minutes and this will help

to form adhesive as a film to stuck.

b) Secure the insulation sheet in potion with the help of screws, rawl plugs, washers and 28G GI cross wire lacing to avoid any kind of sagging. End of net shall be overlapping by at least 25mm. Overlaps shall be screwed with GI screws to avoid rusting.

c) All longitudinal & transverse joints shall be sealed with 50 mm wide self-adhesive aluminum tape.

B. AIR DISTRUBUTION SYSTEM

SCOPE

Supply, Factory fabrication, installation and testing Double Wall thermal insulated of all sheet metal oval ducts & supply, installation, testing and balancing of all grills, registers and diffusers, in accordance with these specifications.

DUCTING

GENERAL

All ducts shall be factory fabricated from galvanized steel sheets of the following thickness as indicated in schedule of quantities & as described in the IS: 655 with latest edition. The ducting shall be made out of Lock former machine or factory fabricated to avoid site work to the minimum.

RECTANGULAR/ROUND DUCT

Dimensions of Ducts(mm)	Gauge	Alumini G.I	Type of Joints	Type of Slip joint
Upto 600	24	22	G.I Flange at 2.5 Center	Cross bracing's
601 to 750	24	22	25 x 25 x 3 mm angle frame with 6 mm dia nuts at 1500 mm from and bolt joints	25 x 25 x 3 mm MS angles bracing 6 mm
751 to 1000	22	20	25 x 25 x 3mm angle frame with 6mm dia nuts and bolts joints	25 x 25 x 3 mm MS angle bracing at 1500mm from
1001 to 1500	22	20	40x40x5 mm angle frame with 8mm dia nuts and bolts	40 x 40 x 3mm MS angle bracing at 1500mm from joints
1501 to 2250	20	16	50x50x3mm angle to be cross braced diagonally with 10mm dia nuts &	40 x 40 x 3mm MS angle bracing at 1200mm from joints or 40x 40 x 3mm

bolts at 125 center.

MS angle diagonal
bracing.

Sheet metal ducts shall be fabricated as per BIS/SMACNA Standards out of galvanized steel sheets. Sheets used shall be produced by hot dip process and galvanizing shall be Class VIII - Light Coating of zinc nominal 120 gm/sq. m.

Total ducting shall be iron angle flanges

HANGERS FOR DUCT (as per standards)

Duct Size(mm)	Spacing (Mtr)	Size of MS angle (mm x mm)	Size of rod dia (mm)
Up to 750	2.5	40 x 3	10
751 to 1500	2.0	40 x 3	12
1501 to 2250	2.0	50 x 3	15
2251&above	2.0	50 x 3	15

INSTALLATION

All ducts shall be installed generally as per the drawings prepared by the Contractor.

The Contractor shall provide and neatly erect all sheet metal work as may be required to carry out the intent of these specifications. The work shall meet with the approval of Owner's site representative in all its parts and details.

All necessary Allowances and Provisions shall be made by the Contractor for beams, pipes, or other obstructions in the building, whether or not the same are shown on the drawing. Where necessary to avoid beams or other structural work, plumbing or other pipes, and/or conduits, the ducts shall be transformed, divided or curved to one side, the required area being maintained, all as per the 'site requirements.'

If a duct cannot be run as shown on the drawing, the contractor shall install the duct between the required points by any path available, in accordance with other services and as per approval of Owners site representatives.

All ductwork shall be independently supported from the building structure. All horizontal ducts shall be rigidly and securely supported, in an approved manner

with trapeze hangers formed of galvanized MS rods and angle iron under ducts at not greater than 2 meter centers. All vertical duct work shall be supported by structural members at 2 Meters intervals. Air conditioning contractor shall supply and install all supports made of galvanized steel material and shall be of hi-tech supports only. The supports shall be designed to prevent vibration to be transmitted to the building structure by providing vibration isolation. If duct is passing through in such areas where space between ceiling slab to false ceiling is more than 1500 mm than duct should be supported by wall mounted brackets of 40 x 40 x 3mm angle.

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

All ducts shall be totally free from vibration under all conditions of operation. Whenever duct work is connected to fans, air handling units or blower coil units that may cause vibrations in the ducts, ducts shall be provided of fire retardant rubberized canvas cloth flexible connection. The flexible connections should be located close to the unit, in mutually perpendicular directions. The flexible sleeve should be at least 15cm long securely bonded and bolted on both sides. Sleeve shall be made smooth and the connecting ductwork rigidly held by independent supports on both ends. The flexible connection shall be suitable for pressures at the point of installation.

Air conditioning unit and exhaust fans shall be connected to duct work by inserting at air inlet and air outlet a double canvass sleeve. Each sleeve shall be minimum 150 mm securely bolted to duct and the connecting ductwork rigidly held in line with unit inlet or outlet.

SPLITTERS AND DAMPERS

Duct / collar dampers shall be opposed blade type of robust construction and tight fitting. They shall be made of G.S. sheet minimum 16swg thick and shall have brass bushes. The design, method of handling and control shall be suitable for the location and service required. Dampers shall be provided with suitable links, levers and quadrants as required for their proper operation. Control or setting devices shall be made robust, easily operate-able and accessible through suitable access doors in the ducts. Every damper shall have an indicating device clearly showing the damper position at all times. Handles will be provided with extended arms to account for insulation thickness. Dampers shall be placed in ducts and at every branch supply or return air duct connection, whether or not

indicated on the drawing, for the proper volume control and balancing of the system.

FIRE DAMPERS

All supply / return air ducts of air handling units and return air openings shall be provided with approved fire dampers of at-least 1 1/2 hour fire rating. These shall be of approved make. The damper shall be fabricated of 16gauge GSS housing with blades formed out of 1.6 mm sheets. The damper shall be pivoted on both ends using chrome plated spindles in bronze bushes. The stop seals shall be provided on top and bottom of the damper housing. The damper blades shall be held in horizontal position using spring actuator bimetallic fusible link. The damper blades shall close in the event of fire by motor actuation capable of taking signal from the controller.

SUPPLY AND RETURN AIR GRILLS

Supply and return air grilles shall be of anodized extruded Aluminium construction with adjustable bars. Supply air grills shall be generally double deflection type backed with GI damper. The supply/return air grills being provided with removable key operated volume control dampers. Aluminium supply and return grills shall be powder coated and should have the color of client's choice as per bill of quantities.

SUPPLY AND RETURN AIR DIFFUSERS

The supply air diffuser shall be provided with removable key operative volume control dampers. Aluminium supply and return air diffusers shall be powder coated and should have the colour of client's choice or shall be extruded Aluminium. Supply/return air linear diffuser shall be Extruded Aluminium construction, square, rectangular, or round diffusers with flush fixed pattern or adjustable flow pattern. Diffusers for different spaces shall be selected in consultation with the Client/Consultants

TESTING / ADJUSTING / BALANCING - TAB -AIR SIDE :

Scope: Scope of this section comprises of the Testing, Adjusting and Balancing (TAB), of Air distribution system confirming to the specifications.

GENERAL CONDITIONS: After completion, all duct systems shall be tested for air leakage.

The entire air distribution system shall be balanced to supply the air quantities as required in the various regions and rooms to maintain the specified room conditions.

The air quantity shall be measured and if need be the motor pulley need to be changed to site requirement when balancing the system.

The entire air distribution system shall be balanced to supply the air quantities as required in the various regions and rooms to maintain the specified room conditions.

The final balance of air quantities and its temperatures through each grille, register or diffuser shall be tested and recorded and submitted to the project manager for approval.

AIR BALANCING: On completion of the work, the system shall be demonstrated to the satisfaction of the Engineer and air flow at each fan outlet and all air distribution outlets is correctly adjusted and regulated, to fulfil its specified functions and as per designed airflow rate.

The work shall be carried out in accordance with the approved commissioning schedule and shall cover, but not necessarily be limited to, the following activities. 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 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.

Air circuit clean-up shall be carried out and all internal debris and foreign matter removed prior to the commencement of commissioning. The functioning of the total system and all ancillary units shall be demonstrated and shown to be operating consistently within the prescribed limits.

• After Total System balance, the following values shall be measured and recorded.

1. FanRPM
2. Motor voltage and amperes
3. Static pressure entering the Fan
4. Static pressure leaving the fan

BALANCING AIR TERMINALS PROCEDURE

- Depending upon location and access to air terminals, various types of airflow measuring instruments will be utilized to record the actual airflow at terminals.
- Assuming adequate access provided, a direct reading balometer would be used which gives a direct reading of volume rather than velocity, which cancels out the need for effective grille areas, terminal configuration consideration and velocity corrections.
- If access is restricted then a rotating vane anemometer shall be used and the velocity reading obtained would be converted to volume (velocity x free area = volume) and a comparison between the pitot traverse reading will be made to obtain a correction factor which would be incorporated to give a true velocity reading.
- Alternatively, the effective area provided by the register / grille manufacturer will be incorporated in the design velocity calculations.
- Test results shall be recorded in the approved test sheets and documents.

**LIST OF PREFERRED MANUFACTURERS / NATURAL SOURCES OF MATERIALS
TO BE USED IN THE HVAC (AIR CONDITIONING) WORKS SUBJECT**

TO THE APPROVAL OF SAMPLES BY BANK

<u>S.No.</u>	<u>Material Name.</u>	<u>Brand / Manufacturer / Recommended Make.</u>
1.	Inverter Split/Cassette AC	1. Daikin
		6. Hitachi
		2. Bluestar
		7. Panasonic
		3. Mitsubishi Heavy
8. LG		
4. O'General		
5. Toshiba		
2.	GI Sheets	TATA / HSL / SAIL / NIPPON DENRO or approved equivalent.
3.	Fire Damper	Caryaire / AirMaster / Air Breeze / Ravistar or approved equivalent.
4.	Vibration Isolators / Flexible Connectors	Resistoflex / Dunlop or approved equivalent.
5.	INSULATION / Fibre glass	UP Twiga / Kimmco / Owens corning or approved equivalent.
6.	Power Cables	CCI / ICC / Gloster / UCL or approved equivalent.
7.	Control Cables	Finolex / Delton or approved equivalent.
8.	Aluminum Grilles / Diffusers / Linear Grilles	Caryaire / Air Master / Air Breeze / SRIFABS or approved equivalent.
9.	Filters	Klenzoids / Airtech / Aerosol / Anfilco or approved equivalent.
10.	Cooling Coils / Heating Coils	Bluestar / Rohini / Ethos / Carrier / Jaypee / Coil Company / ZECO or approved equivalent.
11.	Nitrile rubber	Armaflex / vedoflex / AERO FLEX / ARMACELL or approved equivalent.

NOTE : The contractor shall use only above mentioned material or equivalent make to be approved by Bank. All other materials shall confirm to the specifications laid down. The tenderer shall take this into account while tendering rates / prices.

PRICE BID

Sl. No.	DESCRIPTION	UNIT	QTY	SUPPLY RATE	TOTAL SUPPLY RATE
A	PART - A: HIGH SIDE BOQ				
1	Supply, installation, testing and commissioning of variable refrigerant volume (VRV) / variable refrigerant flow (VRF) type air conditioning system's outdoor unit capacity of 12 HP equipped with highly efficient hermetic scroll compressor or twin rotary type compressors, equipped with inverter control capable of changing the speed in accordance to the cooling load requirement, heat exchanger, low noise condenser fan, outdoor unit multiple connecting unit, including first charge of R410a refrigerant & oil, etc. The inverter shall be IGBT type to be efficient and quiet operation. The outdoor unit shall have the multi-step of capacity control to meet load fluctuation., complete. Note: The quoted rate for this item deemed to include the cost for necessary hardware, software, gateway, interface, controller etc. with 5 years machine and 10 years compressor warranty. With 5 years machine and 10 years compressor warranty.	Nos.	1		
2	Supply, installation, testing and commissioning of variable refrigerant volume (VRV) / variable refrigerant flow (VRF) type air conditioning system's indoor unit of 4 way Cassette type of capacity not less than 2.02 TR, 830 CFM with cordless remote for individual unit, cooling coil, expansion valve, multi speed fan, motor, high lift drain pump, power wiring from nearest power socket to indoor unit etc. The blower shall be dynamically balanced and designed for silent operation, the drain pan shall be fabricated out of heavy sheet steel with insulation, MS brackets / supports, all	Nos.	5		

Signature of the contractor with seal Page 97 of 106

Signature of the Bank Official

	as specified and / or directed etc., complete.				
3	Supply, installation, testing and commissioning of variable refrigerant volume (VRV) / variable refrigerant flow (VRF) type air conditioning system's indoor unit of 4 way Cassette type of capacity not less than 1.28 TR, 830 CFM with cordless remote for individual unit, cooling coil, expansion valve, multi speed fan, motor, high lift drain pump, power wiring from nearest power socket to indoor unit etc. The blower shall be dynamically balanced and designed for silent operation, the drain pan shall be fabricated out of heavy sheet steel with insulation, MS brackets / supports, all as specified and / or directed etc., complete.	Nos.	1		
PART:A					
B	PART - B: LOW SIDE WORKS				
4	Supply and installation of Suitable refnut joints to connect the VRF indoor units with outdoor unit.	Nos.	5		
5	Addition gas charging	Lot	1		
6	Supply and laying of Communication / Control cable connecting the Indoor units / Outdoor units / Controller of suitable size as recommended by the OEM. The external communication / control cabling shall be run in MS conduit and inside building control cabling shall be run in PVC conduit including all clamps, screws, fittings, supporting items etc., all as specified and/or directed etc., complete. Note: 1) The cost for MS and PVC conduit shall be measured and paid seperately under relevant item of SOQR	Rmt	105		

Signature of the contractor with sealPage98of106

Signature of the Bank Official

7	<p>Supply, installation, testing and commissioning of size 6.4 mm dia refrigerant grade copper piping of 20 gauge including nitrile rubber tubular insulation with factory laminated glass cloth, adhesive tape, including all kinds of valves / joints viz., refnet joint / header, refrigerant joint / header, distribution / branch unit, tees, valves, ball valves, fittings like bends, elbow, collars, tees, reducers, flanges, supports, etc for interconnecting the liquid and suction lines between the outdoor units and the indoor units and flare connection to indoor units. Refrigerant joints supplied by OEM only shall be used. The piping shall be carried out of soft / hard drawn copper pipes brazed socket fittings. Both the suction and liquid lines shall be insulated with closed cell nitrile rubber tubular insulation of thickness as specified in tender including pressure testing and charging of refrigerant and oil. Refrigerant piping and cables in wall crossings shall be provided in suitable steel / PVC sleeve all as specified and/ or directed etc., complete. Note: 1) Only the cable tray supports provided for exposed refrigerant pipes will be measured and paid under the relevant item of SOQR.</p>	Rmt	10		
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8	<p>Supply, installation, testing and commissioning of size 9.5 mmdia refrigerant grade copper piping of 20 gauge including nitrile rubber tubular insulation with factory laminated glass cloth, adhesive tape, including all kinds of valves / joints viz., refnet joint / header, refrigerant joint / header, distribution / branch unit, tees, valves, ball valves, fittings like bends, elbow, collars, tees, reducers, flanges, supports, etc for interconnecting the liquid and suction lines between the outdoor units and the indoor units and flare connection to indoor units. Refrigerant joints supplied by OEM only shall be used. The piping shall be carried out of soft / hard drawn copper pipes brazed socket fittings. Both the suction and liquid lines shall be insulated with closed cell nitrile rubber tubular insulation of thickness as specified in tender including pressure testing and charging of refrigerant and oil. Refrigerant piping and cables in wall crossings shall be provided in suitable steel / PVC sleeve all as specified and/ or directed etc., complete. Note: 1) Only the cable tray supports provided for exposed refrigerant pipes will be measured and paid under the relevant item of SOQR.</p>	Rmt	40		
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9	<p>Supply, installation, testing and commissioning of size 12.7 mm dia refrigerant grade copper piping of 20 gauge including nitrile rubber tubular insulation with factory laminated glass cloth, adhesive tape, including all kinds of valves / joints viz., refnet joint / header, refrigerant joint / header, distribution / branch unit, tees, valves, ball valves, fittings like bends, elbow, collars, tees, reducers, flanges, supports, etc for interconnecting the liquid and suction lines between the outdoor units and the indoor units and flare connection to indoor units. Refrigerant joints supplied by OEM only shall be used. The piping shall be carried out of soft / hard drawn copper pipes brazed socket fittings. Both the suction and liquid lines shall be insulated with closed cell nitrile rubber tubular insulation of thickness as specified in tender including pressure testing and charging of refrigerant and oil. Refrigerant piping and cables in wall crossings shall be provided in suitable steel / PVC sleeve all as specified and/ or directed etc., complete. Note: 1) Only the cable tray supports provided for exposed refrigerant pipes will be measured and paid under the relevant item of SOQR.</p>	Rmt	30		
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10	<p>Supply, installation, testing and commissioning of size 15.9 mm dia refrigerant grade copper piping of 20 gauge including nitrile rubber tubular insulation with factory laminated glass cloth, adhesive tape, including all kinds of valves / joints viz., refnet joint / header, refrigerant joint / header, distribution / branch unit, tees, valves, ball valves, fittings like bends, elbow, collars, tees, reducers, flanges, supports, etc for interconnecting the liquid and suction lines between the outdoor units and the indoor units and flare connection to indoor units. Refrigerant joints supplied by OEM only shall be used. The piping shall be carried out of soft / hard drawn copper pipes brazed socket fittings. Both the suction and liquid lines shall be insulated with closed cell nitrile rubber tubular insulation of thickness as specified in tender including pressure testing and charging of refrigerant and oil. Refrigerant piping and cables in wall crossings shall be provided in suitable steel / PVC sleeve all as specified and/ or directed etc., complete. Note: 1) Only the cable tray supports provided for exposed refrigerant pipes will be measured and paid under the relevant item of SOQR.</p>	Rmt	30.0		
11	<p>Supply, installation, testing and commissioning of size 19.1 mm dia refrigerant grade copper piping of 20 gauge including nitrile rubber tubular insulation with factory laminated glass cloth, adhesive tape, including all kinds of valves / joints viz., refnet joint / header, refrigerant joint / header, distribution / branch unit, tees, valves, ball valves, fittings like bends, elbow, collars, tees, reducers, flanges, supports, etc for interconnecting the liquid and suction lines between the outdoor units and the indoor units and flare connection to indoor units. Refrigerant joints supplied by OEM</p>	Rmt	20.0		

Signature of the contractor with sealPage102of106

Signature of the Bank Official

	<p>only shall be used. The piping shall be carried out of soft / hard drawn copper pipes brazed socket fittings. Both the suction and liquid lines shall be insulated with closed cell nitrile rubber tubular insulation of thickness as specified in tender including pressure testing and charging of refrigerant and oil. Refrigerant piping and cables in wall crossings shall be provided in suitable steel / PVC sleeve all as specified and/ or directed etc., complete. Note: 1) Only the cable tray supports provided for exposed refrigerant pipes will be measured and paid under the relevant item of SOQR.</p>				
12	<p>Supply, installation, testing and commissioning of size 22.2 mmdia refrigerant grade copper piping of 18 gauge including nitrile rubber tubular insulation with factory laminated glass cloth, adhesive tape, including all kinds of valves / joints viz., refnet joint / header, refrigerant joint / header, distribution / branch unit, tees, valves, ball valves, fittings like bends, elbow, collars, tees, reducers, flanges, supports, etc for interconnecting the liquid and suction lines between the outdoor units and the indoor units and flare connection to indoor units. Refrigerant joints supplied by OEM only shall be used. The piping shall be carried out of soft / hard drawn copper pipes brazed socket fittings. Both the suction and liquid lines shall be insulated with closed cell nitrile rubber tubular insulation of thickness as specified in tender including pressure testing and charging of refrigerant and oil. Refrigerant piping and cables in wall crossings shall be provided in suitable steel / PVC sleeve all as specified and/ or directed etc., complete. Note: 1) Only the cable tray supports provided for exposed refrigerant pipes will be measured and paid under the relevant item of SOQR.</p>	Rmt	8.0		

Signature of the contractor with sealPage103of106

Signature of the Bank Official

13	<p>Supply, installation, testing and commissioning of size 28.6 mmdia refrigerant grade copper piping of 18 gauge including nitrile rubber tubular insulation with factory laminated glass cloth, adhesive tape, including all kinds of valves / joints viz., refnet joint / header, refrigerant joint / header, distribution / branch unit, tees, valves, ball valves, fittings like bends, elbow, collars, tees, reducers, flanges, supports, etc for interconnecting the liquid and suction lines between the outdoor units and the indoor units and flare connection to indoor units. Refrigerant joints supplied by OEM only shall be used. The piping shall be carried out of soft / hard drawn copper pipes brazed socket fittings. Both the suction and liquid lines shall be insulated with closed cell nitrile rubber tubular insulation of thickness as specified in tender including pressure testing and charging of refrigerant and oil. Refrigerant piping and cables in wall crossings shall be provided in suitable steel / PVC sleeve all as specified and/ or directed etc., complete. Note: 1) Only the cable tray supports provided for exposed refrigerant pipes will be measured and paid under the relevant item of SOQR.</p>	Rmt	20		
14	<p>Supply, installation, testing and commissioning of cPVC (SDR11) pipes of 25 mmdia, with 9 mm thick elastomeric nitrile rubber tubular insulation with FRP/ Glass cloth rapped over insulation for condensate water drain from the AC indoor units to nearest drain point, fittings, support including core cutting in brick/ concrete wall as required and making surface good etc. complete .</p>	Rmt	40		

15	Supply, installation, testing and commissioning of cPVC (SDR11) pipes of 32 mm dia, with 9 mm thick elastomeric nitrile rubber tubular insulation with FRP/ Glass cloth rapped over insulation for condensate water drain from the AC indoor units to nearest drain point, fittings, support including core cutting in brick/ concrete wall as required and making surface good etc. complete .	Rmt	15		
16	Supply, installation, testing and commissioning of initial Charge of refrigerant gas - R 410 A, Pressure testing of the entire system with Nitrogen and vaccumizing the nitrogen	HP	12		
17	Associated Civil Works				
	Chasing the wall openings for Copper piping & Drain openings in rooms etc as per site requirement includes closing.	Lot	1		
18	MS WORK				
	Detail specification, Frame work using 75x75x6mm Angles MS Trips 3mm x 20mm complete fabricated at site for mounting of ODU's, The Couple flame work shall be approved by Architect. Required Supports.	Kgs	30		
PART:B					
19	COMPREHENSIVE ANNUAL MAINTENANCE CONTRACT				
1	Comprehensive Annual Maintenance Contract for above ACs for 1st year which starts after expiry of 1 year defect liability period	1st year	1		
2	Comprehensive annual Maintenance contract for above ACs for 2nd year	2nd year	1		

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3	Comprehensive annual Maintenance contract for above ACs for 3rd year	3rd year	1		
4	Comprehensive annual Maintenance contract for above ACs for 4th year	4th year	1		
5	Comprehensive annual Maintenance contract for above ACs for 5th year	5th year	1		
6	Comprehensive annual Maintenance contract for above ACs for 6th year	6th year	1		
7	Comprehensive annual Maintenance contract for above ACs for 7th year	7th year	1		
8	Comprehensive annual Maintenance contract for above ACs for 8th year	8th year	1		
				PART:C	
				Grand Total (PART:A + PART:B+PART:C)	
				Discounts if any	
				Grand Total	

NOTE: Above quoted amount shall be excluding GST.

GST will be paid extra as applicable.

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