

NIT NO	HYD202001546
DATE	04.01.2020



**SBI INFRA MANAGEMENT SOLUTIONS PVT LTD  
(WHOLLY OWNED SUBSIDIARY OF SBI)**

**INVITES TENDERS ON BEHALF OF LHO, HYDERABAD.  
IN A TWO BID THROUGH E-TENDERING PROCESS.**

**HVAC (AIR-CONDITIONING) VENDORS [ Original Equipment Manufacturers  
(OEMS)/ Authorized Dealers of Hitachi/ Blue star / O'General/ Mitsubhi Heavy, Toshiba and  
Daikin Original Equipment Manufacturers (OEMS) nominate by only single dealer ]**

**FOR**

**HVAC (AIR-CONDITIONING) WORKS FOR PROPOSED KOTHAGUEM BRANCH AT  
NEW OFFICE BUILDING, KOTHAGUEM OF STATE BANK OF INDIA**

**Last date for submission of E Tender: 3.00 P.M. (IST) on 17.01.2020**

**Opening of E Tenders: 3.10 P.M. (IST) on 17.01.2020**



**M/S abhikram-s**

**architects, interior designers, urban planners  
valuers & project managers**

**#3-6-134 Flat no 302**

**Svc Royal Dm apartments**

**Street no 18, Himayatnagar**

**Hyderabad-500029**

**Ph.no 040-23261158**

**abhikramarchitects@gmail.com**

**The Vice president,  
SBI Infra Management Solutions Pvt. Ltd.  
Hyderabad Circle, Adjacent to Commercial Branch  
SBI LHO campus,  
Bank Street, Koti,  
Hyderabad – 500 095**

## NOTICE INVITING TENDER (NIT)

**NAME OF WORK: On behalf of SBI, SBIIMS invites e-TENDER FOR HVAC WORKS FOR PROPOSED KOTHAGUDEM BRANCH AT NEW OFFICE BUILDING, KOTHAGUDEM OF STATE BANK OF INDIA.**

1.	Name of the Work	<b>HVAC WORKS FOR PROPOSED KOTHAGUDEM BRANCH AT NEW OFFICE BUILDING, KOTHAGUDEM OF STATE BANK OF INDIA.</b>
2.	Eligibility of the contractor	As specified in NIT
3.	Estimated cost of work:	<b>Rs.15,01,800.00/- plus GST as applicable</b>
4.	Earnest Money Deposit. (EMD)	<b>Rs. 15,000/-</b> all Drafts/BCs shall be in favor of "SBIIMS, Hyderabad". Payable at Hyderabad.
5.	Tender Cost	<b>Rs.3000/-</b> to be paid through State Bank Collect <b>ONLY</b> as detailed under; 1) login <a href="https://www.onlinesbi.com">https://www.onlinesbi.com</a> 2) Select SB Collect from Top Menu, click the check box and "Proceed" 3) Select "All India" in "State of Corporate/Institution" & Select "Commercial Services" in "Type of Corporate/Institution" then "Go" 4) Select "SBI Infra Management Solutions pvt. Ltd" in Commercial Services Name and "Submit" 5) Select "Tender Application Fee" in "Payment Category" and enter the "Tender ID" exactly as given in first page top of this tender(characters in uppercase only). 6) Fill up all fields such as email, GST No., Mobile No, Vendor/Firm Name etc and make payment. 7) Enclose payment receipt having unique reference Number. along with EMD.
6.	Time of Completion:	<b>30 (Thirty) DAYS.</b>
7.	Payment terms	<b>Minimum 8.00 Lakhs in each running bill</b>
8.	Date of download of tender documents from Bank's web site <a href="http://www.sbi.co.in">http://www.sbi.co.in</a> under "procurement news".	<b>From 06.01.2020 to 17.01.2020</b>
9.	Last date and time for submission of online e-tender. at <a href="https://etender.sbi">https://etender.sbi</a>	<b>Date: 17.01.2020 by 3.00 P.M.</b>
10.	Date and Time of opening of e-Tenders: (Technical Bid and Price Bid)	<b>Date: 17.01.2020 at 3.10 P. M. (IST).</b>
11.	Address of opening of tender	Vice President & Head, SBI Infra Management Solutions Pvt. Ltd., Office, Ground floor, Adj to commercial branch, SBI LHO campus, Bank Street, Koti, Hyderabad - 500095. Technical Bid of those firms / contractors who do not submit EMD shall be rejected. Those who are already submitted the onetime EMD need not to be submitted again. 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.
12.	EMD & Tender cost to be submitted at:	EMD & tender cost along with a letter from the Original Equipment Manufacturer (OEM should be submitted physically at above mentioned address before due date.. Contact: Vice President. 040-23466346. <a href="mailto:vg.reddy@sbi.co.in">vg.reddy@sbi.co.in</a> or <a href="mailto:headhyd.sbiims@sbi.co.in">headhyd.sbiims@sbi.co.in</a>
13.	Bidder Contact Details.	Bidder to provide following information. 1) Name of Company. 2) Contact Person. 2) Mailing address with Pin Code. 4) Telephone number and Fax number. 5) Mobile Number and E-MAIL.

14.	Agency for arranging online bidding.	e-Procurement technologies Limited, Ahmedabad. Primary Contact Numbers:- M:- 9081000427, 9904407997  Sujith Nair:- 079-68136857, <a href="mailto:sujith@eptl.in">sujith@eptl.in</a>  1. Jaymeet Rathod:- 079-68136829, <a href="mailto:jaymeet.rathod@eptl.in">jaymeet.rathod@eptl.in</a> 2. Vinayak Khambe:- 079-68136835, <a href="mailto:vinayak.k@eptl.in">vinayak.k@eptl.in</a> 3. Nadeem Mansuri:- 079-68136853, <a href="mailto:nadeem@eptl.in">nadeem@eptl.in</a> 4. Nandan Valera:- 079-68136843, <a href="mailto:nandan.v@eptl.in">nandan.v@eptl.in</a> 5. Hemangi Patel:- 079-68136852, <a href="mailto:hemangi@eptl.in">hemangi@eptl.in</a> 6. Kanchan Kumari:- 079-68136820, <a href="mailto:kanchan.k@eptl.in">kanchan.k@eptl.in</a> 7. Deepak Narekar:- 079-68136863, <a href="mailto:deepak@eptl.in">deepak@eptl.in</a> 8. Anshul Juneja:- 079-68136840, <a href="mailto:anshul.juneja@eptl.in">anshul.juneja@eptl.in</a> 9. Salina Motani:- 079-68136831, <a href="mailto:salina.motani@eptl.in">salina.motani@eptl.in</a> 10. Devang Patel:- 079-68136859, <a href="mailto:devang@eptl.in">devang@eptl.in</a>  Alternate Contact No.:- Mr. Yashrajsinh Rathod:- 079-68136815, 9879996111, <a href="mailto:yashrajsinh@auctiontiger.net">yashrajsinh@auctiontiger.net</a>
15.	Initial Security Deposit	2% including EMD. in favor of SBI, Payable at Hyderabad.
16.	Defects Liability Period	12 Months (Twelve months)
17.	Total Security Deposit	5 % of contract value including initial security deposit.
18.	Liquidated Damages	0.50% per week subject to max 5%of the value of work
19.	Validity	90 days

The SBIIMS reserves the right to accept or reject any or all the tenders without assigning any reason whatsoever.

**MINIMUM ELEGIBILITY CRETIRIA**

**MINIMUM ELIGIBILITY CRITERIA (Mandatory)**

**Please note that before quoting the tender, we request you to upload the following documents in PDF format**

- 1. Scanned copy of EMD**
- 2. Copy of Tender cost**
- 3. Copy of GST No:**
- 4. Scanned copy of signed tender document.**
- 5. The bidders have to submit the authorization letter from the OEM for this project( format of authorization attached in the tender)**
- 6. Average annual financial turnover during the last 3 years preceding current financial year ended 31<sup>st</sup> March'19 should not be less than Rs.4,50,540.00.**
- 7. Submit the copy of work order/ agreement and satisfactory service certificate from the Clients. **The** Experience having successfully completed works at in the state of Telangana / Andhra Pradesh only during last 7 years ending last day of months previous to the one in which applications(31.12.2019) are invited should be either of the following:-**
  - (a) Three works, each work not less than ₹.6,00,720.00 Plus GST or
  - (b) Two works, each work not less than ₹.7,50,900.00 Plus GST or
  - (c) One work not less than ₹.12,01,440.00 Plus GST

Definition of similar works: Applicants should have executed VRF HVAC systems in Govt Departments/ PSUs / Banks /Financial Institutions/ Reputed Corporate Offices / IT, Pharma & Chemical Industries etc which is acceptable to the SBIIMS.

Note: Bidders has to submit work order/ experience letter from the client and contact no & address of the client.

**INSTRUCTIONS TO CONTRACTORS.**

1. This tender is for the **"HV AC (AIR-CONDITIONING) WORKS FOR PROPOSED KOTHAGUDEM BRANCH AT NEW OFFICE BUILDING, KOTHAGUDEM OF STATE BANK OF INDIA.** It is a Single Bid containing Technical and Price Bid.

In their own interest the contractors are advised to use their own specific seals and desist from using currency coins for the purpose. Tenders with incomplete or broken seals are liable to be rejected, the matter solely resting at the discretion of the EMPLOYER / ARCHITECTS. If a Contractor does not quote for one or more items, the Tender will be considered as incomplete and will be rejected.

2. Clients/Architects reserve to itself the right to accept or reject any tender without assigning any reason for doing so and do not bind itself to accept the lowest or any other tender.

3. General Specifications are for guidance only. The latest ISI codes and Specifications and mode of measurements will be referred to during execution.

4. The term "THE ARCHITECTS" in the said conditions shall mean **M/S ABHIKRAM-S Architects, Interior Designers, Urban Planners, Valuers & Project Managers. #3-6-134, Flat No-302, SVC Royal DM Apartments, Street No-18, Himayat Nagar, Hyderabad-500029.**

5. Employer or Client shall mean Vice President, State Bank of India Infra Management Solutions Pvt. Ltd.,

6. Tenders are to be uploaded directly to M/S e-procurement Technologies Limited. E-mail: yashrajsinh@auctiotiger.net.

## 1. TENDER FORM

**PROJECT: PROPOSED HVAC (AIR-CONDITIONING) WORKS FOR PROPOSED KOTHAGUEDEM BRANCH AT NEW OFFICE BUILDING, KOTHAGUEDEM OF STATE BANK OF INDIA.**

**REF : HVAC (AIR-CONDITIONING) WORKS**

Dear Sirs,

I/We the undersigned have carefully gone through and clearly understood after visiting the site and the Tender drawings and tender documents comprising of the tender form, Notice to contractors, and conditions for building contract, Special Conditions, Specifications and Schedule of Probable quantities and Draft Agreement prepared by your Architects **M/S ABHIKRAM-S Architects, Interior Designers, Urban Planners, Valuers & Project Managers. #3-6-134, Flat No-302, SVC Royal DM Apartments, Street No-18, Himayat Nagar, Hyderabad-500029.**

I/We do hereby undertake to execute and complete the whole or part of the work (as desired by you) at the respective rates which/I/We have quoted for the respective items of the Probable Bill of Quantities and at which rate the items specified amount **to Rs. 15.01 Lakhs.**

I/We are depositing as Earnest Money a sum of **Rs. 15,000/- (Rupees Fifteen Thousand Only)** in favor of **'Vice President, SBI Infra Management Solutions Pvt Ltd, Hyderabad.'** along with this tender for due execution of the work at my/our tendered rates together with any variations which shall be adjusted by the Architects at prices based on our tendered rates. I/We shall deposit further sum equivalent to 2% of tender amount, less EMD paid in the event of my/our tender being accepted, towards initial security deposit.

In the event of this Tender being accepted I/We agree to enter into an agreement as and when required and execute the contract according to your form of Agreement, within 15 days of receipt of work order, in default thereof, I/We do hereby bind my-self/ourselves to forfeit the aforesaid initial security deposit.

I/We further agree to complete the work covered in the said schedule of quantities within 12 months from the 30<sup>th</sup> day reckoned from the date of issue of the work order to commence the work or on which contractor is instructed to take possession of the site, whichever is later.

I/We agree not to employ Sub-contractors other than those that may be specifically approved by your Architects for this contract work.

I/We agree to and to get the work, workers, employees (of contractor, Architect & Employer) engaged on the work at site and all materials at site for execution of the work shall be insured comprehensive insurance including fire/accidents/ rain/ floods/riots/CAR policy (contractor's all risk insurance policy) and the insurance shall cover the period from date of start of work to date of actual completion of work plus 3 months. In case part work is taken over by the Employer before final completion of the whole work, such parts may not be covered by the insurance from the date of taking over that part of work by the Employer. Draft Insurance deed will be got vetted by the Architect, before obtaining the same. All the rates quoted by me/ us are inclusive of the same in full and nothing extra shall be claimed anytime on account of any of these.

I/We agree to pay Income tax, to be deducted at source, at the rate prevailing from time to time on the Gross value of the work done, and the rates quoted by me/we are inclusive of same.

Yours faithfully,

Signature of the Contractor

Contractor's Signature

Address:

Date:

---

---

---

---

## 2. NOTICE TO CONTRACTOR

ADDRESS:

---

---

---

**PROJECT: PROPOSED HVAC (AIR-CONDITIONING) WORKS FOR PROPOSED KOTHAGUDEM BRANCH AT NEW OFFICE BUILDING, KOTHAGUDEM OF STATE BANK OF INDIA.**

**REF : HVAC (AIR-CONDITIONING)**

Dear Sirs,

1. On behalf of our clients, **M/s SBIIMS Hyderabad**, we have pleasure in inviting you to tender for the aforesaid work.
2. *The scope of work broadly as given below is for **Proposed HVAC (AIR-CONDITIONING) WORKS FOR PROPOSED KOTHAGUDEM BRANCH AT NEW OFFICE BUILDING, KOTHAGUDEM OF STATE BANK OF INDIA***
3. **Tender Documents should be filled and uploaded on the site of M/S e-procurement Technologies Limited. E-mail: [yashrajsinh@auctiotiger.net](mailto:yashrajsinh@auctiotiger.net)**
4. The tenderer must obtain for himself, on his own responsibility and at his own expenses, all the information which may be necessary for the purpose of filling this tender and for entering into a contract for the execution of the same and must examine the drawings and inspect the site of the work and acquaint himself with all local conditions and matters pertaining thereto.
5. Each of the tender documents page is required to be signed by the person or persons submitting the tender in token of his/their having acquainted himself/themselves with the General conditions etc., as laid down. Any tender with any of the documents not so signed will be rejected.
6. The tender documents must be filled in English and all the entries must be made by hand and written in ink. If any of the documents are missing or un-signed, the tender shall be considered invalid.
7. Each and every one of all erasures and additions/alterations made, while filling the tender, must be attested by initials of the tenderer. Over-writing of figures must be attested by initials of the tenderer. Overwriting of figures is not permitted. Failure to comply with either of these conditions will render the tender void. After submission of the tender no advice or any change in rate or conditions will be entertained. All the rates should be quoted both in figures and words. In-case of any discrepancy in rates quoted in words/figures and the amounts, the rate quoted in words shall be taken as final and binding.
8. The tender shall be valid for a period of 90 days from the date of opening.

- 9 TOTAL SECURITY DEPOSIT : shall comprise of:
- a. Earnest Money deposit
  - b. Initial Security deposit
  - c. Retention money
- 9.1 The intending tenderer shall deposit with **SBIIMS HYDERABAD** , by Demand Draft a sum of **Rs. 15,000/- (Rupees Fifteen Thousand Only)** as the Earnest Money, as a guarantee of good faith, which amount shall be forfeited as liquidated damages, in the event of any evasive/direct refusal or delay in starting the work and or signing the contract. The deposit of the unsuccessful tenderers will be returned, without interest, immediately after a decision is taken regarding the award of the contract. The Earnest money of the successful tenderer will be adjusted towards Security Deposit. A tender not accompanied by Earnest money deposit will not be considered.
- 9.2 **The successful tenderer will have to pay further sum equivalent to 2% of his contract value, less EMD already paid, as initial Security Deposit (ISD) by means of a D.D./Banker's cheque in favour of Vice President, SBI Infra Management Solutions Pvt Ltd, within 14 days from the date of issue of work order to commence work. The EMD and Security deposit thus paid shall be held by the State Bank of India as Security deposit, for due execution and fulfillment of the contract, till the completion of the work and defect liability period in all respects and shall not bear any interest.**
- 9.3 Together with the money paid under clause 11.1 & 11.2 above, further retention of 10% of the value of the work done will be deducted from every running bill, till total retention, including EMD and initial SD paid earlier, comes to 5% of the contract value, and same shall be held by the Bank as Total Security Deposit. On the Architect's certifying the completion of work, 50% of the total security deposit shall be released to the contractor along with the final certificate of payment, and the balance amount will be retained in the manner stated elsewhere for a further period of twelve months after the completion date recorded in completion certificate, issued by the Architects and agreed to by the Bank. Also refer condition 23(ii) on Page 7 of Volume 1.
10. Within one month of the receipt of intimation from the Architects of the acceptance of his/their tender, the successful tenderer shall be bound to sign an agreement, on a stamp paper in accordance with the Draft Agreement and conditions of contract attached herewith, but the work order or the written acceptance of a tender by the Employer will constitute a binding agreement between the Employer and the person tendering whether such formal contract is or not signed by the contractor.
11. All compensation or other sums of money payable by the contractors to the clients, under the terms of this contract, may be deducted from the Security Deposit or from any sum that may be or may become due to the contractor on any account whatsoever, and in the event of the Security deposit being reduced by reasons of any such deductions, the contractor shall within 30 days of being asked to do so make good in cash or cheque, any sum which have been deducted from his security deposit.
12. The rates quoted by the Contractor shall include all eventualities, such as heavy rain, sudden floods, accidents, fire, riots etc., which may cause damage to the executed work or which may totally wash out the work. Until the completion certificate is issued to the Contractors, neither the Architect nor the clients will be responsible for such damage or wash out of the construction work.



13. Time is the essence of the contract. The work should be completed **within 30days** from the date of commencement. The date of commencement shall be within ONE day after confirmation.
- a) The day two weeks from the date of issue of work order.
- Or**
- b) The day on which the contractor receives the possession of the site whichever is later.
- Or**
- c) The contractor is asked in writing to take over the possession of the site.

The successful contractor will have to give a CPM/PERT chart of various activities of work to be done so that the work gets completed within the stipulated time. The chart shall be submitted within 15 days from the date of acceptance of the tender.

14. If the contractor fails to complete the work by the Scheduled date of completion or within any sanctioned extended time, he will have to pay liquidated damages at the rate of ½% of contract amount for each week of delay the work remains incomplete beyond the completion(Original/extended date), subject to maximum of 5% of the contract value (without extra items) as per clause 31 of the General conditions of contract.
15. The quantities contained in the Schedule are only indicative. The work as actually carried out and done will be measured up from time to time, for which payment will be made subject to the terms and conditions of contract.
16. The unit prices shall be deemed to be fixed prices. In case of extra items, a record of labour charges paid shall be maintained and shall be presented every month for extra/substituted items regularly to the Architects for checking. The settlement will be made based on figures arrived at jointly and taking into account unit prices of items of work mentioned in the contract assigned to the successful tenderers. In case, of extra items, where similar or comparable items are quoted in the tender, extra rates shall invariably be based on those tender rates to the extent reasonable.
17. Our clients, SBIIMS, do not bind themselves to accept the lowest or any tender and reserve to themselves the right to accept or reject any or all tenders, either in whole or in part, without assigning any reason whatsoever for doing so.
18. No employee of the bank or SBIIMS is allowed to work as a contractor for a period of two years of his retirement from bank service, without the previous permission of the bank or SBIIMS. This contract is liable to be cancelled, if either the contractor or any of his employees is found at any time to be such a person who had not obtained the permission of the bank or SBIIMS as aforesaid before submission of the tender or engagement in the contractor's service.
19. The tenderer, apart from being a competent contractor must associate himself with agencies of the appropriate class who are eligible to tender for (1) Electrical (2) Interior (3) Fire fighting systems & (6) Interiors (fixed furniture), as the case maybe.

20. Release of security deposit:

- i) 50% of the total security deposit will be released along with the final certificate of payments as stipulated under para 9 on page 12 of Volume I, Appendix to General Conditions of contract,
- ii) Balance 50% of Retention money will also be released as noted under(i) above, subject to submission of a Bank Guarantee, to the satisfaction of SBI for an equivalent amount. This Bank Guarantee shall be valid upto completion of defects/removal liability period plus 3 months.

**ARCHITECTS:**

**M/S abhikram-s**  
**architects, interior designers, urban planners**  
**valuers & project managers**  
**#3-6-134 FLAT NO 302**  
**Svc Royal Dm apartments**  
**Street no 18, Himayatnagar**  
**Hyderabad-500029**  
**Ph.no 040-23261158**  
**abhikramarchitects@gmail.com**

### 3. ARTICLES OF AGREEMENT

ARTICLES OF AGREEMENT made the \_\_\_\_\_ day of \_\_\_\_\_ 2019

between \_\_\_\_\_

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 ABHIKRAM-S Architects,Interior Designers, Urban Planners, Valuers & Project Managers. #3-6-134, Flat No-302, SVC Royal DM Apartments, Street No-18, Himayat Nagar, Hyderabad-500029.**

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. \_\_\_\_\_ (Rupees \_\_\_\_\_) (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 ABHIKRAM-S Architects,Interior Designers, Urban Planners, Valuers & Project Managers. #3-6-134, Flat No-302, SVC Royal DM Apartments, Street No-18, Himayat Nagar, Hyderabad-500029**, 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 30days 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 **30 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 30 days from the date of dispute having arisen.

AS WITNESS our hand this \_\_\_\_\_ day of \_\_\_\_\_ 2019

Signed by the said in the presence of:

WITNESS : SIGNATURE

NAME :

ADDRESS : EMPLOYER

WITNESS : SIGNATURE

NAME :

ADDRESS :

#### 4. APPENDIX TO GENERAL CONDITIONS OF CONTRACT

1. Earnest Money Deposit (EMD) : **Rs 15,000/-**
2. Initial Security Deposit (ISD) : 2% of contract value including EMD.
3. Period of completion : 30 DAYS
4. Defects Liability period : 12 months after completion as recorded in the completion certificate.
5. Agreed Liquidated Damages : ½% of contract amount per week of delay subjected to a maximum of 5% of contract value.
6. Period of final measurement : Three months after completion as recorded in the completion certificate.
7. Minimum value of work to be Executed for issue of interim Certificates for making payment : Minimum Rs.8.00 Lakhs
- 8.a) Retention money from each bill : 10% of gross value of each interim bill, subject to 8(b) below.
- b) Total retention money including Earnest money and initial security Deposit : 5% of the contract value.
9. Release of Security deposit after Virtual completion. : 50% of the total security to be released along with final certificate of payment, but only after removing all his materials, equipment, labour, huts/force, temporary sheds/stores, all his installations, machinery etc., from the site. Balance payment to be released on submission of Bank Guarantee on any Scheduled Bank, Other than SBIIM, and its associated banks in the prescribed manner and valid till the completion of defects liability period of 12 months plus 3 months.
10. Period for honouring certificate : 30 working days from date of Architects certificate of payment for interim bills and 45 working days for final certificate.

WITNESS :

DATE : SIGNATURE OF THE CONTRACTOR WITH DATE

## 5. INDEX TO GENERAL CONDITIONS OF CONTRACT

1. Interpretations
2. Scope of Contract
3. Drawings and Specifications
4. Schedule of Quantities
5. Sufficiency of Schedule of Quantities
6. Errors in schedule of Quantities
7. Contractor to provide everything necessary
8. Authorities, Notices, Patent rights and royalties
9. Materials and workmanship to conform to description.
10. The setting out
11. Removal of all offensive matters
12. Opening up works
13. Contractor's superintendence and representative on the work
14. Dismissal of workmen
15. Access to works
16. Employer's representative/PMC
17. Assignment of sub-letting
18. Sub contractors
19. Variations not to vitiate contract
20. Measurement to works
21. Prices of Extras etc., Ascertainment of
22. Unfixed materials
23. Removal of improper work and materials
24. Defects after completion
25. Certificate of virtual completion

26. Other persons engaged by the Employer
27. Insurance in respect of damage to persons and property
28. Contractor's All risk policy
29. Minimum amount of third party Insurance
30. Commencement and completion
31. Delay and extension of time
32. Damages for Non-completion
33. Failure by contractor to comply with Architect's instructions
34. Architect's delay in progress.
35. Supervision of works
36. Prime cost and provisional sums
37. Certificates and payments
38. Notices
39. Termination of contract by the Employer.
40. Termination of contract by the contractor.
41. Matters to be finally determined by the Architects
42. Settlement of dispute (Arbitration)

## SPECIAL CONDITIONS.

1. Contractor shall not be entitled to any compensation for any loss suffered by him on account of delays in commencing or executing the work, whatever the cause of the delays may be, including delays arising out of modifications to the work entrusted to him or in any subcontract connected there with or delays in awarding contracts for other trades of the project or in commencement or completion of such works in obtaining water and power connections for construction purpose or for any other reason what so ever and the Employer shall not be liable for any claim in respect thereof. The Employer does not accept liabilities for any sum besides the tender amount, subject to such variations as are provided for herein.
2. The successful tenderer is bound to carry out any items of work necessary for completion of the job if such instructions in respect of such additional items and their quantities will be issued in writing by the Architects with the prior consent in writing of the Employer.
3. The contractor must bear in mind that the work shall be carried out strictly in accordance with specifications made by the Architects.
4. The rates quoted in tender shall also include electric consumption charges for power. If no power is available at site the contractor shall have to make his own arrangement to obtain power connection and maintain at his expense an efficient service of electric light and power and shall pay for the electricity consumed. The Employer shall give all possible assistance to the contractor to obtain the requisite permission from the various authorities, but the responsibility for obtaining the same shall be that of contractor.
5. Contractor shall strictly comply with the provisions of safety code in addition to all local rules and regulations.
6. The contractor shall be responsible for the observance of all rules and regulations framed by the government under the contract labour act. The Employer shall be entitled to deduct all losses, damages that he might suffer on account of non-observance of these rules by the contractor, from the amount payable to the contractor.
7. Time shall be considered the essence of this contract. The entire work must be completed within 30DAYS from the commencement of the work. If the completion of the work is delayed beyond 1 month, a penalty at the rate of  $\frac{1}{2}$  % per week over the contract value will be imposed subjected to a maximum of 5%.

If the work is delayed beyond 30 days after the date of completion, the remaining work will be carried out through other agencies at the risk and cost of the contractors under the contract with prevailing market rates.



8. The successful tenderer shall submit the phased programme of execution of different items of work within 2 days after receipt of acceptance letter.
9. Payment will be made subjected to a minimum of **Rs.8,00,000/- (Rupees Eight Lakhs Only)** and will be made within a period of TWO weeks after the bill is submitted to the Employer's Office with Architects Certificate.
10. Before filling in the tender the contractor will check all the drawings and schedule of quantities and will get an immediate clarification from the employer / Architects on item not clearly understood. No claims for any loss or compensation will be entertained on this account.
11. All the work shall be carried out as per detail drawings and specifications or as directed by employer / Architects.
12. The rates quoted in the tender shall be for the finished items of work They shall include all the charges labour, materials, transportation of material equipment, double scaffolding water and electric charges, tool and plants, marking out and cleaning of site, to do all things necessary to provide complete finished item for work consistent with the specifications attached to this tender document. The rates shall be inclusive of octroi duty, excise duty, packing and forwarding, loading or unloading or any other duties or fees levied by any government, public or local bodies. The rates shall be firm and shall not be subject to exchange variations, labour conditions or any other conditions whatsoever.
13. The calculations made by the tenderer should be based upon the probable quantities of the several items of work which are furnished for the tenderer's convenience in the schedule of quantities ,but it must be clearly understood that the contract is not a lumpsum contract , that neither the probable quantities nor the value of individual items nor the aggregate value of the entire tender will form part of the contract and that the employer / Architects do not in any way assure the tenderer or guarantee that the work would correspond there to.
14. Adequate engineering and technical staff to be appointed at site. HVAC (AIR-CONDITIONING) contractor should inform of their number and qualification. An Approval of employer / Architects should be taken prior to appointing such technical staff on site.

15. **The contractor shall keep the tender submitted by him open for acceptance for a minimum period of three months from the date of its submission.** When once the tender is accepted the rates quoted by the successful tenderer shall be firm the variation in rates of any one or all the items on any account shall not be allowed during the entire duration of the contract
16. During the execution of work, contractor must check the work with his drawings .The contractor shall be responsible for all the errors in this connection and shall have to rectify all the defects at his own cost, failing which the client reserves the right to get the same rectified at the risk and cost of contractor.
17. No claim for extra item or deviation from specification shall be entertained unless the same is pointed out and accepted as such before the work is taken in hand or within 30days of work by the successful tenderer.
18. The contractor shall comply with all bye- laws and tax regulations (including GST) of local and other statutory authorities having jurisdiction over the works and shall be responsible for the payment of all the fees and other charges and for giving and receiving of all necessary notices drawings and test certificates.
19. The successful tenders shall properly safeguard against damage or injury to the public and to any property or thing and shall alone be responsible for any such damage and injury to any person or persons or thing arising in connection with its execution of work .The successful tenderer shall protect and hold harmless the employer against any or all claims for any such injury or damage.
20. The work in every respect during the progress and till final acceptance by the employer, including raw materials delivered to the site to be incorporated or used in HVAC (AIR-CONDITIONING) work by the successful tenderer will be at his own risk . Any loss or damage to any such material or work shall immediately be replaced by the successful tenderer at his own expense.
21. The employer shall have the right to direct the contractor to purchase and use the materials from any source for proper execution of work.
22. The employer / SBIIM / Architects or their authorized representatives shall have full power for inspecting the contractor's works or at any place from which the material is obtained. Acceptances of any such materials shall no way relieve the contractor of his responsibility for meeting the requirements and /or analysis not called for in the specifications shall be borne by the employer in

case the material or work is found defective or of inferior quality .tests and /or analysis shall be done in the laboratory approved by the client and the contractor shall permit the SBIIM and or the client's or their authorized representative to be present during any of the tests and /or analysis.

23. INSURANCE

The contractor shall indemnify SBIIM up to CAR Policy (Contractor's All Risk Policy) against all claim which may be made against SBIIM by any member of the public or the third party in respect of anything which may arise in consequence thereof and shall at his own expense arrange to effect and maintain up to one month after the virtual completion from an office approved by SBIIM a policy of insurance in the joint names and deposit such policy or policies with SBIIM from time to time during the currency of this contract. The contractor shall also indemnify SBIIM against all claims which may be made upon the SBIIM under the workman's compensation act or any other statute in force during the currency of this contract or at common law in respect of any employee of the contractor or any sub contractor and shall at his own expenses effect and maintain upto one month after virtual completion of the contract from an office approved by SBIIM a policy or policies of insurance in the joint names of SBIIM and the contractor as aforesaid .The contractor shall be responsible for any other thing which may exclude from the insurance policies above referred to and also for any other damage to any property arising out of and incidental to the negligent or defective carrying out of this contract.

He shall also indemnify the employer in respect of any costs,. charges or expenses arising out of any claim or proceedings and also in respect of any award of compensation or damage arising therefrom. The employer shall be at liberty and is hereby empowered to deduct the amount of any damages, compensation caused, charges and expenses arising or occurring from or in respect of any such claims or damages from any sum or sums due or to become due to the contractor.

24. WORKMAN AT SITE :

The contractors workpeople shall not be allowed to live on the site at any time throughout the contract nor to trespass beyond the limits of the site. The contractor will be held responsible for any acts of trespass by his workpeople.

25. DIMENSIONS :

Figures dimensions are to be taken in preference to scaled dimensions in all cases. Before commencing any work the contractor shall verify all measurements. If any discrepancies are found they shall immediately be brought to the notice of the Architects.

26. DISCREPANCIES

All the items shown on the drawings or specifications are taken to be included in both. Any discrepancies, which occur in either the drawings or specifications, shall immediately be brought to the attention of the Architects.

27. CUTTING AND MAKING GOOD

Where it is found necessary to interfere with finished work in order to execute this contract, the contractor will be required to do all necessary work at his expenses. Only approved hangers and bolts or other metal fixing devices shall be used to secure frames panels and other units in position. Wooden plugs will not be permitted .Holes shall be formed with electric drills whenever possible .Structural members shall not be cut or drilled without prior consent of the client.

28. MAINTENANCE AND GUARANTEE

The whole of the work to be performed under this contract shall be completed to the satisfaction of the Architects / Bank.

The contractor without additional charge to the employer renew or replaces any works which prove faulty from workmanship or materials and fully maintain the whole installations for a period of 6 months after the commencement of defects liability period of the main contract and a sum of 5% of the contract amount shall be retained by the employer for his period.

29. PREVENTION OF SPOIL DUMPING

The contractor shall take all reasonable steps to prevent spoil, rubbish, debris surplus materials etc.. Arising from a work being dumped on an area other than a recognized or approved tipping area and the Contractor will be held responsible for and shall indemnify the employer against any claim or loss arising therefrom.

30. LEAVE PERFECT:

The Contractor shall remove all rubbish and superfluous material from the site of the works with all reasonable speed from time to time and at completion. On no account shall W.C' S or the employer's receptacles to be used for this purpose.

The client reserves its right to clear contractors un cleared debris at contractors own cost without any reasons & not more than one notice will be given for this.

31. 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 of materials used on the work or as to any other question, claim, right matter or thing whatsoever in any way arising out of our 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 work or after the cancellation, termination, completion or abandonment thereof shall be dealt with as mentioned hereinafter:

- (a) 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 Vice President, SBI Infra Management Solutions Pvt. Ltd., Hyderabad Circle Adjacent to Commercial Branch State Bank of India, LHO Campus Bank Street, Kothi, HYDERABAD - 500 095** 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 have been given by the Contractor **The Vice President, SBI Infra Management Solutions Pvt. Ltd., Hyderabad Circle Adjacent to Commercial Branch State Bank of India, LHO Campus Bank Street, Kothi, HYDERABAD - 500 095** 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 Vice President, SBI Infra Management Solutions Pvt. Ltd., Hyderabad Circle Adjacent to Commercial Branch State Bank of India, LHO Campus Bank Street, Kothi, HYDERABAD - 500 095** in writing in the manner and within the time aforesaid.
- (b) **The Vice President, SBI Infra Management Solutions Pvt. Ltd., Hyderabad Circle Adjacent to Commercial Branch State Bank of India, LHO Campus Bank Street, Kothi, HYDERABAD - 500 095** 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 Vice President, SBI Infra Management Solutions Pvt. Ltd., Hyderabad Circle Adjacent to Commercial Branch State Bank of India, LHO Campus Bank Street, Kothi, HYDERABAD – 500 095** submit his claims to the conciliating authority namely the Circle Development Officer, State Bank of India, Local Head Office, Hyderabad for conciliation along with all details and copies of correspondence exchanged between him and **The Vice President, SBI Infra Management Solutions Pvt. Ltd., Hyderabad Circle Adjacent to Commercial Branch State Bank of India, LHO Campus Bank Street, Kothi, HYDERABAD – 500 095.**

- (c) If the conciliation proceedings are terminated without settlement of the disputes, the contractor shall, within a period of 30 days of termination thereof shall give a notice to the concerned Chief General Manager of the Bank for appointment of an arbitrator to adjudicate the notified claims failing which the claims of the contractor shall be deemed to have been considered absolutely barred and waived.
- (d) Except where the decision has become final, binding and conclusive in terms of the contract, all disputes of differences arising out of the notified claims of the contractor as aforesaid and all claims of the Bank shall be referred for adjudication through arbitration by the Sole Arbitrator appointed by the Chief General Manager. 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. 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 as aforesaid should act 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 settlement 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.

32. TERMINATION OF CONTRACT BY EMPLOYER:

If the contractor (being an individual or a firm) commit any " Act of Insolvency ", or shall be adjudged as insolvent, or shall make an assignment or composition of the greater part in number of amount of his creditors, or shall enter into a Deed of Assignment with his creditors, or (being an incorporated Company) shall have an order made against him or pass an effective Resolution for winding up either compulsorily, or Subject to the supervision of the court or voluntarily, or if the official Assignee of the contractor shall repudiate the Contract, or if the Official Assignee or the Liquidator in any such winding up shall be unable, within seven days after notice to them requiring him to do so, to show to the reasonable satisfaction of the Architect that he is able to carry out and fulfill the Contract and if required by the Architect to give a security there for, or if the contractor shall suffer any payment under this contract to be attached by or on behalf of any of creditors of the Contractor, if the Contractor shall assign or sublet the contract without the consent in writing of the Architect first obtained, or if the contractor shall charge or encumber this Contract for any payments due or which may become due to the Contractor thereunder, or if the Architect shall certify in writing to the Employer that in his opinion the Contractor:

- (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 work for fourteen days after receiving from the Architect written notice to proceed, or
- (c) Has failed to proceed with the work with such due diligence and failed to make such due progress as would enable the works to completed within time agreed upon or
- (d) Has failed to remove materials from site or to pull down and replace works within seven days after receiving from Architect written notice that the said materials or work were condemned and rejected by the Architect under these conditions or

- (e) Has neglected or failed persistently to observe and perform all or any of the acts, matters or things required by this Contract to be observed and performed by the Contractor for seven days after written notice shall have been given to the Contractor requiring the contractor to observe or perform the same, or
- (f) Has to the detriment of good workmanship or in defiance of the Architects instructions to the Contrary, submit any part of the contract or has used in the permanent works important materials which are substandard and not as per specification fraudulently making the Architect / Employer to believe that it is the specified material.

Then and in any of the said caused the Employer with the written consent of the Architect may, notwithstanding any previous waiver, after giving seven days notice in writing to the Contractor, determine the contract, but without thereby affecting the powers of the Architect or the obligations and liabilities of the Contractor, the whole of which shall continue to be in force as fully as if the contract has not been so determined and as if the works subsequently executed and being executed by or on behalf of the contractor. And further, the Employer with the consent of the Architect by his agents or servants may enter upon and take possession of the works and all plant, tools, scaffoldings, shed, machines, steam and other power utensils and materials lying upon premises or the adjoining lands or roads, and use the same as his own property or may employ the same by means of his own servants and workman in carrying on and completing of the works or by employing any other Contractor or any other person or persons 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 Contractor or other person or persons employed for completing and finishing or using the materials and plant for the works, when the work shall be completed, or as soon thereafter as convenient, the Architect shall give a notice in writing to the Contractor, to remove his surplus material and plant and should the Contractor fail to do so within a period of fourteen days after receipt thereof by him, the Employer may sell the same by public auction and shall give credit to the Contractor for the amount so realized. The Architects shall thereafter shall assertion and certify in writing under his hand what (if anything) shall be due or payable to or by the Employer, for the value of the said plant and materials so taken possession of by the Employer, and the expense or loss which the Employer shall have been put to in getting the works to be so completed, and the amount, if any owing to the Contractor and the amount which shall be so certified shall, thereupon, be paid by the Employer to the Contractor or by the Contractor to the Employer as the case may be, and the certificate of the Architect shall be final and conclusive between the parties.

33. The mode of measurements shall be as per IS: 1200.

34. The contractor should co-ordinate with other agencies viz., INTERIOR, ELECTRICAL, Civil, LAN cabling etc.,

Signature of the Contractor



35. CONTRACTOR SHOULD WORK AT ODD HOURS, ON HOLIDAYS TO KEEP UP TIME SCHEDULE.
  
36. The Contractor shall not be eligible for any material advance.

## SPECIAL CONDITIONS OF CONTRACT

### GENERAL

- 1.1 These conditions are meant to amplify the specifications. If any discrepancy is noticed between these conditions, Specifications, Bill of Quantities and Drawings the most stringent of the above shall apply for execution of the work.
- 1.2 The materials, design and workmanship shall satisfy the specifications contained herein and Codes referred to. Where the technical specifications stipulate the requirement in addition to those contained in the Standard Codes and specifications those additional requirements shall also be satisfied. In the absence of any Standard/Specifications covering any part of the work covered in this tender document, the instruction/directions of Consultant will be binding on the contractor. The contractor shall quote as per specification and shall not be accepted to deviate from the same. No alternative offer shall be accepted for the works.
- 1.3 The scope of this section is to describe materials and systems for Heating, Ventilation & Air Conditioning (HVAC) which form together with the project documents, a complete volume of work and quality description.
- 1.4 All HVAC works shall be of high quality, complete and fully operational including all necessary items and accessories whether or not specified herein. All HVAC works shall be completed in accordance with the regulations and standards to the satisfaction of the Consultants. The general provisions, special provisions and general requirements apply to the entire installation.
- 1.5 During the progress of work completed portion of the building may be occupied and be put to use by the owner but the contractor shall remain fully responsible for the maintenance of Heating, Ventilation & Air-conditioning works till the entire work covered by this contract is satisfactorily completed by him and handed over to the owner.
- 1.6 Contractor shall calculate the capacities for areas and confirm the inside conditions specified in the basis of design. Contractor shall be liable to make do any changes/modifications to the system for achieving the inside conditions without any extra expenditure to the client.

### 2.0 RATES

- 2.1 The rates quoted shall be deemed to allow for all minor extras and constructional details which are not specifically shown on or given in the specifications but are essential in the opinion of SBIIM / Owner / Consultants to the execution of works to conform to good workmanship and sound engineering practice. The SBIIM / Owner/Consultants reserve the right to make any minor changes during the execution without any extra payment.
- 2.2 The Consultants decision to clarify any item under minor changes, minor extras and constructional details shall be final, conclusive and binding on the Contractor.

- 2.3 The rates quoted by the Contractor shall be nett so as to include all the requirements described in the contract agreement and no claim whatsoever due to fluctuations in the price of material and labour will be entertained.
- 2.4 The rates quoted by the Contractor shall include for supplying materials and labour necessary for completing the work in the best and most workmanship like manner to the satisfaction of the SBIIM / Owner/Consultants and which in the opinion of the Consultants cannot be made better. The rates shall be complete in all respects including cost of materials, erection, fabrication, labour, supervision, tools and plant, transport, sales and other taxes, royalties, duties and materials, contingencies, breakage, wastage, sundries, scaffoldings etc on the basis of works contract. The rates quoted shall include all taxes, duties, transport, Insurance's, octroi, or any other levies applicable under the statute.
- 2.5 In case the rates of identical items under different sub-heads/parts are different, the lowest of these will be taken for the purpose of making the payments.
- 2.6 The rates for different items are for all heights, depths, widths and positions, unless otherwise specified against the item. No claim in respect of any leads/lifts for any item specified in the Schedule of Quantities, for which separate items for lead/lift do not exist in that schedule, will be entertained.

### 3.0 AWARENESS OF SITE CONDITIONS AND CARRYING OUT OF SITE INSPECTION PRIOR TO TENDER SUBMISSION

3.1 Prior to the preparation and submission of his Tender, the Contractor shall make visits to the site and carry out all the necessary inspections and investigations in order to obtain all information and to make his own assessment of the conditions and constraints at site, including the means of access to it. The Contractor shall make himself aware of all the features of the site and the working conditions and space and shall, in general, be responsible for obtaining all the necessary and requisite information needed for him to prepare and submit his Tender.

3.2 Should the Contractor require any clarifications he shall seek these in writing from the Owner before submitting his Tender. At no stage will any extra claims be entertained or allowed on any matter or for any reason arising from or as a consequence of the Contractor's failure to comply with all the requirements stipulated in this Clause.

### 4.0 WORK AND WORKMANSHIP

To determine the acceptable standard of workmanship, SBIIM / Owner/Consultant may order the Contractor to execute certain portions of works and services under the close supervision of the SBIIM / Owner/Consultant. On approval, they shall be labelled as guiding samples so that further works are executed to conform to these samples.

### 5.0 ASSOCIATED CIVIL WORKS

5.1 Major Civil works associated with Heating, Ventilation & Air conditioning installation are excluded from the scope of this tender. These shall be executed by other agencies to suit the requirements of Heating, Ventilation & Air conditioning

contractor. Minor Civil & finishing works have to be carried by the Air conditioning Contractor.

5.2 RCC/PCC Foundation for units shall be carried out by other agencies.

5.3 False ceiling to cover the ducts and piping in corridor shall be carried out by other agencies.

## 6.0 ASSOCIATED ELECTRICAL WORKS

6.1 The electrical works included in the scope of this proposal are the main panel in the plant room controlling the Equipment, power and control cabling of various equipment and sub panels for Air handling units and FCU's. Supply, Installation, Testing and commissioning of control cables from field components viz., Thermostats, Pressure cut out, Level Sensing devices, Flow Switches and other control/protection components required for proper sequencing and control of major of equipment shall be carried out by the HVAC contractor.

## 7.0 PROTECTION OF OTHER CONTRACTOR'S WORKS AND SAFETY OF PERSONNEL AT SITE

7.1 In view of other contractors and agencies being engaged on site and shall be working simultaneously, the Contractor shall ensure at all times that during the execution of his work or during the operations and movements of equipment and supply vehicles and machinery no damage or injury is caused to the work or property or personnel of other contractors and agencies.

7.2 In case of any such loss or damage the Contractor shall take full responsibility for the same and shall bear all cost and expenses thereof. The Contractor shall be responsible and liable for all delays caused due to such damage and or injury and for the consequences which the other Contractors and Agencies may have to face or to which they may be subjected to or be accountable for as a result of such delays.

## 8.0 SAFETY OF MATERIALS AND MEN

The contractor shall provide proper and adequate storage facilities to protect all the materials and equipment including those issued by the owner against damage/theft from any cause whatsoever. The contractor should also protect the personnel/ inmates from any mishap, which could occur due to negligence of Air conditioning contractor.

## 9.0 TOOLS, TACKLES, EQUIPMENT & SCAFFOLDING

Tools, Tackles & Equipment, necessary for the electrical installation and testing, shall be provided by the contractor. The quoted rates shall take into account for providing any such equipment, which may not form part of the installation, but are necessary for the execution of the job Contractor shall be responsible to make his own arrangement to provide scaffolding/supports etc., necessary for his work.

## 10.0 ACTUAL ROUTE OF PIPE LINES

10.1 The location of the HVAC duct and pipe lines, indicated in the drawing is only indicative. The actual route of HVAC pipelines may differ from the plans according to the details of the building construction and the conditions of executions of the installations.

10.2 The contractor shall supply and install at his own expense all secondary materials and special fittings found necessary to overcome the interference and to supply the modifications on the route of HVAC duct and pipe lines that are found necessary during the work to the complete satisfaction of SBIIM / Owner/Consultants.

#### 11.0 RATING

Rating of all items shall be appropriate for the conditions on the particular site on which the item will be used. All the equipment shall be fit for continuous work under the most severe conditions of site and shall berated for the following ambient condition.

- Outdoor temperature 44° C
- Temperature under shade 42° C

#### 12.0 INSPECTION AND TESTING

12.1 The SBIIM / Owner/Consultant reserves the right to request inspection and testing at manufacturer's works at all reasonable times during manufacture of items for this contract. Tests on site of completed works shall demonstrate among other things.

12.2 That the equipment installed complies with specification in all particulars and is of the correct rating for the duty and site conditions.

12.3 That all items operate efficiently and quietly to meet the specified requirements.

12.4 The contractor shall provide all necessary instruments and labour for testing shall make adequate records of test procedures and readings, shall repeat any tests requested by SBIIM / Owner/Consultants and shall provide test certificates signed by a properly authorized person. Such test shall be conducted on all materials and equipment's and on completed work as called for by SBIIM / Owner/ Consultants.

12.5 If it is proved that the installation or part thereof is not satisfactorily carried out then the contractor shall be liable for the rectification and re-testing of the same as called for by SBIIM / Owner/Consultants at the cost of the contractor. The SBIIM / Owner/Consultants decision as to what constitutes a satisfactory test shall be final.

12.6 The above general requirements as to testing shall be read in conjunction with any particular requirements specified elsewhere. A test house approved by SBIIM / Owner/Consultants shall carry out all tests.

#### 13.0 TESTING

13.1 All types of routine and other/tests shall be carried out at the works of the Contractor or the manufacturers of the components. The SBIIM / Consultants shall be free to witness any or all tests, if they so desire.

13.2 On completion of the installation, the Contractor shall arrange to carry out various initial tests as detailed below, in the presence of and to the complete satisfaction of the Consultants or his representative. Any defects or short comings found during the tests shall be speedily rectified or made good by the Contractor at his own expense. The initial tests shall include but not be limited to the following:

- 13.3 To operate and check the proper functioning of all electrically operated components viz. Compressor motor, fan, Air handling unit etc as well as other electrical motors.
- 13.4 To test and check the proper functioning of electrical switch gear, safety and other controls to ensure proper functioning.
- 13.5 To check the air distribution system and to provide design airflow in all areas by adjusting the grills, diffusers and dampers for air conditioning.
- 13.6 To check & balance/adjust the water flow in the water circuits for smooth and noiseless flow.
- 13.7 To check the systems against leaks in different circuits, alignment of motor, 'V' belt adjustments, control setting and all such other tests which are essential for smooth functioning of the plant.
- 13.8 On the satisfactory completion of all 'Initial' tests the plant should be considered to the 'Virtually Complete" for the purpose of taking over by the employer.
- 13.9 In addition to the 'Initial' test the Contractor shall also give two or three continuous running tests of the plant, each of (3) three days duration, and each one during the full specified outside conditions (when the ambient 13.8 On the satisfactory completion of all 'Initial' tests the plant should be considered to the 'Virtually Complete" for the purpose of taking over by the employer.
- 13.9 In addition to the 'Initial' test the Contractor shall also give two or three continuous running tests of the plant, each of (3) three days duration, and each one during the full specified outside conditions (when the ambient conditions are close to the specified ambient conditions). The first running test may be taken on the completion of the initial test, provided the ambient temperature and Humidity are near their peak.
- 13.10 The Contractor shall provide all necessary tools, instruments, gauges, flow meter, Anemometer, etc. as may be required for conducting the various tests. He shall also provide necessary lubricant etc and required personnel for the tests.
- 14.0 SAMPLES AND CATALOGUES
- 14.1 Before ordering the necessary material for these installations, the contractor shall submit Technical data sheets for Compressors, Condensers, Fan Coil Units, Air handling units, Ductable units, Motors, Insulation material, Piping, Valves & all other instruments & controls to the SBIIM / Owner/Consultants for approval. A sample of every kind of material such as pipe, fittings, insulation of ducts etc., shall be supplied.
- 14.2 Also the contractor shall ensure that the dimensional details of the equipment fit into the allotted space provided in the building.
- 15.0 VENDOR AND SHOP DRAWINGS

- 15.1 The contractor shall prepare and submit to SBIIM / Owner/Consultants for his approval six (6) sets of detailed layout of all HVAC equipment and piping layouts/ ducting layouts.
- 15.2 He shall prepare shop drawings incorporating the details given by manufacturers for the items included in his contract and also owner supplied items and any other items which need to be coordinated with other contractors for interfacing.
- 15.3 Before starting the work, the contractor shall submit to SBIIM / Owner/Consultants for his approval in the prescribed manner, the shop/execution drawing for the entire installation.
- 15.4 The SBIIM / Owner/Consultants, reserves the right to alter or modify these, if they are found to be insufficient or not complying with the established technical standards or if they do not offer the most satisfactory performance or accessibility for maintenance. Contractor shall supply in eight (8) sets of all approved shop drawings for execution.

#### 16.0 "AS BUILT"

At the completion of work and before issuance of certificate of virtual completion the contractor shall submit eight (8) sets to SBIIM / Owner/Consultants, layout drawing drawn at appropriate scale indicating the complete system "as installed".

#### 17.0 INSTRUCTION / MAINTENANCE MANUAL

The Contractor shall prepare and produce instruction, operation and maintenance manuals in English for the use, operation and the maintenance of the supplied equipment and installations and submit to SBIIM / Owner/Consultants in (8) copies at the time of handing over.

The manual shall generally consist of the following:

- a) Description of the project.
- b) Operating instructions.
- c) Maintenance instructions including procedures for preventive maintenance.
- d) Manufacturers catalogues.
- e) Spare parts list with prices.
- f) Trouble shooting charts.
- g) Schematic & control wiring diagrams.
- h) Type and routine test certificates of major items.
- l) One (1) set of reproducible 'As Built' tracings on cloth.

#### 18.0 COMPLETION CERTIFICATE

On completion of the HVAC installation a certificate shall be furnished by the contractor countersigned by the licensed supervisor, under whose direct supervision the installation was carried out.

#### 19.0 GUARANTEE:

At the close of the work and before issuance of final certificate of virtual completion by SBIIM / Owner/Consultants, the contractor shall furnish written guarantee indemnifying the owner against defective materials and workmanship for a period of one year after

completion. The contractor shall hold himself fully responsible for reinstallation or replacement free of cost to owner, the following:

1. Any defective work or material supplied by the Contractor.
2. Any material or equipment supplied by the owner, which is damaged or destroyed as a result of defective workmanship by the contractor.
3. Any material or equipment damaged or destroyed as a result of defective workmanship by the contractor.

#### 20.0 RATE ANALYSIS

At any time and at the request of SBIIM / Owner/Consultants the contractor shall provide details or break-up costs and prices of any part or parts of the works.

#### 21.0 WATER AND POWER

The contractor will make his own arrangement for water and electricity. If arranged by the Owner the same shall be supplied at one point only and the contractor shall be required to make his own arrangement for distribution lines required for the work. Recovery for the same shall be made at the prevailing rates based on the meter readings to be installed by the contractor at the source point. In case the Owner does not provide power/water they should make arrangements for themselves for carrying out the works.

#### 22.0 MAINTENANCE OF PLANT AND TRAINING OF PERSONNEL

22.1 The Contractor shall arrange to provide, at no extra cost, necessary personnel and material to carry out all routine and special maintenance of the plant as required regularly for a period of twelve (12) months from date of handing over including monthly inspection by contractor or his technical representative during the guarantee period.

22.2 The contractor shall train the employer's personnel to operate the plant and carry out routine checks. During the period of installation and testing, if found necessary, the employer shall train such personnel at his works at no extra cost to the Owners.

#### 23.0 PERIOD AND TIME LIMIT FOR VIRTUAL COMPLETION OF WORKS

The period and time limit for Virtual Completion of the Works shall be 8(Eight) calendar months from the date of issue of Work Order to commence works or handing over of site in respect of the award of Contract.

#### 24.0 PROFESSIONAL INTEGRITY AND TEAM SPIRIT

It is the intent of SBIIM / Owner / Architect that this project will be executed in a spirit of team and full professional integrity. Contractor is expected to cooperate with all the agencies involved in the project to fulfil this objective.

#### 25.0 LIST OF APPROVED MAKES

The Contractor shall quote for one of the makes of materials from the list of approved makes. The contractor shall clearly indicate the list of materials proposed to be used by him & enclose the same with the tender.



## 26.0 WORK PROGRESS REPORT

The Contractor shall provide the following while carrying out the execution/planning of works:

1. Detailed schedule of events with completion date
2. Fortnightly report showing progress of work
3. Program of works for upcoming weeks every fortnightly
4. Updated PERT charts with monthly progress
5. Material flow as well as cash flow scheduling at the beginning of the job. The SBIIM / Owner/Consultant for work scheduling shall approve the same. On completion of detailed engineering the contract shall submit the bill of quantities which will be within a variation of upto5% of approved drawings from the customer/consultant.

## 27.0 NOISE CRITERION

27.1 All air conditioning equipment and materials (like pumps, chillers, motors, ducts, grilles, acoustic lining etc.) will be selected, designed and installed in such a manner that the inside noise criterion for all conditioned spaces will be in the range NC-30 to NC-35. The noise levels in conditioned occupied spaces due to all air conditioning equipment will not exceed 50 dB at 125Hz when measured at any point in the occupied spaces less than 1.5 meter above floor level and not closer than 1.5 meter from any supply air register or 1 meter from any return air grill.

27.2 When taking noise level measurements, the background noise level without the equipment operating shall be at least 7 dB below the actual background noise level when the equipment is in operation.

## 28.0 DESIGN PARAMETERS

Performance rating of the units shall be based as per the requirement.

Temperature of condensing Refrigerant = 135° F

Compressor speed not exceeding = 2950

Refrigerant = R 32 / R134A / R407 / R410 - Ozone Friendly and Non CFC Refrigerant

Piping shall be sized for the following design Parameters

Maximum flow velocity = 8 Ft/Sec.

Maximum friction = 5 Ft W C/100 Ft.

Design Parameters for duct design shall be:

Maximum flow velocity for A/c ducts = 1500 Ft/Min

Maximum velocity at supply air outlet = 500 Ft/Min

## 29.0 MODE OF MEASUREMENTS:

Mode of Measurement for payment of items of ducting and piping & their insulation shall be as follows:

### 29.1 PIPING:

Signature of the Contractor

Shall be measured in units of length along the centre line of installed pipes including all pipe fittings, flanges (with gaskets and nuts and bolts for jointing), unions, bends, elbows, tees, concentric and/or eccentric reducers, inspection pieces, expansion loops etc. The above accessories shall be measured as part of piping length along the centreline of installed pipes and no special rates for these accessories shall be permitted. The quoted unit rates for centre line linear measurement of piping shall include all wastage, allowances, pipe supports includes hangers, MS channel, wooden bunches, nuts and check nuts, vibration isolator suspension where specified or required, and cost of excavation, bedding back filling and finishing as required to complete the piping installation as per the specification. None of these items will be separately measured and paid for. However, all valves (gate/globe /butterfly /check -balancing/purge/drain etc.), strainers, orifice plates, temperature gauge, pressure gauges shall be separately measured and paid as per their individual unit rates, which shall also include their insulation as per specifications, piping measurements shall be taken before application of the insulation. The cost shall also include any excavations and making masonry valve chamber with steel cover etc.

## 29.2 PIPING INSULATION:

Shall be measured in units of length along the centreline of the installed pipe, strictly on the same basis as the piping measurements described above. The linear measurements shall be taken before the application of the insulation, it may be noted that for piping measurements, all valves, orifice plates and strainers are separately measurable and their quoted unit rates shall include the insulation cost in the valve required and as specified.

## 30.0 TESTS AT SITE:

### 30.1 GENERAL:

The Contractor must perform all inspection and tests of the system as a whole and of components individually as required, under the supervision of the Engineer, in accordance with the provisions of the applicable 'ASHRAE' standards or approved equal and as per site requirements. All tests shall be recorded in the format approved by SBIIM / Consultant/Owner.

### 30.2 PIPING SYSTEM:

In general pressure tests shall be applied to piping only before connection of equipment and appliances. In no case shall piping, equipment appliances be subjected to pressures exceeding their test ratings. Tests shall be completed and approved before insulation is applied. After tests have been completed, the system shall be drained and cleared of all dust and foreign material. All strainers, valves and fittings shall be cleaned of all dirt, fillings and debris. All water piping shall be tested and proven tight under hydrostatic pressure of 10 Kg/Sq cm, unless stated otherwise in the specifications. The prescribed pressure shall be maintained at least three complete days of Twenty Four hours each.

### 30.3 ELECTRICAL EQUIPMENT:

All electrical equipment shall be cleaned and adjusted at site before connection of power. The contractor as per relevant IS/IE rules shall carryout the following minimum tests.

Wire and Cable continuity tests.

Insulation resistance test, phase to phase and phase to earth and phase to neutral on all circuits and equipment, using a 1000 volt Megger. The earth resistance between conduit system and earth must not exceed half (0.5)

OHM.

The phase rotation tests Operating tests on all protective relays to prove their correct operation before energizing the main equipment including secondary injection test at site. Operating tests on all starters, circuit breakers, etc.

#### 30.4 PERFORMANCE TESTS:

The installation as a whole shall be balanced and tested upon completion and all relevant information including the following shall be submitted to the Owner.

- i) Air volume passing through each unit duct, grill etc.,
- ii) Differential pressure readings across each filter, fan, coil and through each Pump, Chiller and Condenser.
- iii) Electrical current reading in Amperes of full and average load running and starting together with name plate, current in each electrical motor. Daily records should be maintained of hourly readings, taken under varying degrees of internal heat load and use and occupation, of wet and dry bulb temperatures, upstream 'ONCOIL' of each cooling coil. Also suction temperatures and pressures for each refrigerating unit. The current and voltage drew by each machine. Any other reading shall be taken which the Engineer may subsequently specify.

#### 30.5 MISCELLANEOUS:

The above tests are mentioned here in amplification but not by way of limitation to the provisions of conditions of contract and specification. Duration of the test shall be continuous 72 working hours. Contractor shall carry out three seasonal tests each of 72 hours duration defect liability period of the approved dates. The date of commencement of all tests listed above shall be subject to the approval of the Engineer and in accordance with the requirements of this specification. The contractor shall supply the skilled staff and all necessary instruments and carry out any test of any kind on a piece of equipment, apparatus, part of system or on a complete system if the owner requests such a test for determining specified or guaranteed data as given in the specifications or on any damage resulting from the tests shall be repaired and/or damaged material replaced all to the satisfaction of the Owner. In the event of any repair or any adjustment having to be made giving sufficient notice, in order that P.M.G or his nominated representative may be present. The contractor must inform P.F.G. when such tests are to be made, giving sufficient notice, in order that P.M.G or his nominated representative maybe present. Complete records of all tests must be kept and 3 copies of these and location must be furnished to the P.M.G. The contractor may be required to repeat the test as required, should the ambient conditions at the time not given, in the opinion of the P.M.G sufficient and suitable indication of the effect and performance of the installation as a whole or of any part, as required.

### 31.0 MAINTENANCE

The contractor shall maintain the system in the plant room for a period of 12 months, from the date of successful commissioning of the plant. The contractor shall provide all necessary tools and tackles for maintaining of the plant. In case of poor workmanship or system breakdown the contractor shall repair/replace the defective parts without any extra expenses to the client. This clause shall be in vogue till the guarantee period of the system.

32.0 The Tenderer shall quote his best competitive price for the job in line with the specification.

### 33.0 PENALTY

In case the units supplied by the manufacturer is not within the specified limits as per tender schedule he shall compensate the for client the expenses incurred by virtue of power or any other means. Over and above he shall compensate for the expenses incurred in running the plant until it is put back to the rating specified and confirmed by SBIIM / consultants/owner. In case the job is not completed within the stipulated time, the contractor shall be penalized at rate of 0.5% of the total contract value per week of delay up to a maximum of 10% of the total contract value.

### 34.0 TENDER DOCUMENT

The contractor shall submit the tender document duly signing every page of the document. He shall also submit the technical information totally as per the tender document. In case, any technical information is left unfilled the tender would be summarily rejected without any further intimation to the contractor.

## TECHNICAL SPECIFICATIONS FOR VRF SYSTEM

### General specification for VRV System:

1.1 The system selected is a modular system, with number of indoors connected to centrally located outdoor units, as per detail designing given in the tender. The outdoor units for all the system 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/F 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 + 3%, 3 Phase supply for outdoor units & 220 V + 10%, 50 Hz + 3%, 1 Phase supply for indoor units.

The VRV/F 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/F system shall be through independent wired/ wireless remote controllers as specified. The entire system shall have the optional feature of Centralized control and Monitoring system through a PC with desired specifications and also shall be able to be integrated with intelligent building management system of leading vendors like Honeywell/ Johnson Controls/ Staefa etc, through BAC Net Gateway. The detailing of operation required through BMS system are detailed under specifications of BMS system.

### **1.2 Specification of Outdoor units.**

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

All the compressors of the outdoor units must be all inverter type compressor(s) only, and System ISEER shall not be less than - 4.0 at tender design outside conditions and suitable to operate at heat load proportional to indoor temperature requirement.

The compressor shall be of highly efficient scroll with all inverter control capable of changing the speed in accordance to the cooling load requirement.

The outdoor unit shall have the linear capacity control to meet load fluctuation and indoor unit individual control.

### **Manufacturers can offer alternate Outdoor/Indoor Capacities in case of not meeting the tender capacities of TR/CFM as per the data sheet.**

Factory coated (High) "Anti Corrosive" treatment for Al/Black/Blue/Golden fins of Condenser Coils is mandatory. The treatment should be suitable for areas of high pollution and salt laden air. 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 VRV/F outdoor unit shall always be supplying at least 30% of back up operation, of the full load capacity.

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

The outdoor units shall be suitable to operate within an ambient temperature range of 15 Deg C to 50 Deg C, in cooling mode & -22 Deg C to 15 Deg C in heating 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 H<sub>2</sub>O.

The entire operation of outdoor units shall be through independent remotes of indoor units. No separate Start/ Stop function shall be required.

Starter for the Outdoor Unit compressor shall "DOL or Star Delta" type. Inverter compressor of the unit shall start first & at the minimum frequency, to reduce the inrush current during starting.

Refrigerant control in the outdoor unit shall be through Electronic Expansion Valve. Complete refrigerant circuit, oil balancing/ equalizing circuit shall be factory assembled & tested.

Noise level of outdoor units shall not exceed 64dB (A) at a distance of 1.5 m from the unit.

Outdoor units shall be complete with following safety devices:

High pressure switch

Fan driver overload protector

Over current relay

Inverter Overload Protector

Fusible Plug

Unit shall be supplied with

Installation manual

Operation Manual

Connection Pipes

Clamps

### **1.3 Specifications for Indoor Units**

#### **Cassette type indoor units**

These units shall be installed between the bottom of finished slab & top of false ceiling. The maximum allowable height for the cassette type units shall be 288 mm.

The unit must have in built drain pump, suitable for vertical lift of 450 mm. The unit casing shall be Galvanized Steel Plate.

Unit must be insulated with sound absorbing thermal insulation material, Polyurethane foam. The noise level of unit at the highest operating level shall not exceed 42 dB (A), at a vertical distance of 1.5 m from the grille of the unit.

Unit shall have provision of connecting fresh air without any special chamber & without increasing the total height of the unit (288 mm maximum). The unit shall be supplied with suitable decorative panel. The unit shall be supplied with Resin Net filter with Mold Resistance. The filter shall be easy to remove, clean & re install.

The unit will be connected in series to a suitable outdoor unit & it must be possible to operate the unit independently, through corded/ cordless remote specified in the "Bill of quantities". The unit will be further connected to Intelligent Building Management System & it shall be possible to operate the unit through this IBMS system.

The unit shall be supplied with following from the factory

Operation Manual

Installation Manual

Paper pattern for installation

Drain hose/ Clamp metal/ Washer fixing plate/ Sealing pads/ Clamps/ Screws/

Washer for hanging bracket/ Insulation for fitting Wired Remote Controller

Wired remote controller shall be supplied as specified in the "Bill of Quantities"

The controller must have large 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. 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. It shall be possible to wire the remote up to 500 RMT.

### **Wireless Remote Controller**

Wireless 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.

### **Central Remote Controller - If Specified**

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 wired remote controller  
It should be possible to wire the remote to 1000m

## CHAPTER-1

### ELECTRICAL WORK

#### 1.0 SCOPE

The scope of work covers the requirements for the electrical works associated with air conditioning applications, namely, switch boards (MCCs), power cabling, control wiring, earthing, and remote control-cum-indicating panels. Electric motors are not covered here, as these are covered as part of the respective equipment specifications.

#### 1.1 GENERAL

- i) Unless otherwise specified in the tender specifications, all equipments and materials for electrical works shall be suitable for continuous operations on 415 V / 240 V  $\pm$  10% (3 phase / single phase), 50 Hz. AC system. Where the use of high voltage equipments is specified in particular works, all the respective equipments shall be suitable for continuous operation on such specified high voltage.
- ii) All electrical works shall be carried out complying with the Indian Electricity Rules, 1956 as amended to date.
- iii) All parts of electrical works shall be carried out as per appropriate CPWD General Specifications for Electrical work, namely, Part I (Internal) 2005 and National Building Code 2005 all as amended to date.
- iv) All materials and components used shall conform to the relevant IS specifications amended to date.

#### 1.2 SWITCH BOARDS / MOTOR CONTROL CENTRE

- i) The main switch board in the Each AHU room shall be floor mounted, free standing cubical type and shall be factory built fabricated by one of the reputed switch board manufacturer. It shall be suitable for termination of the incoming cable(s)/ bus trunking from top/ bottom as per site conditions. The switchboards in air handling unit (AHU) rooms shall be wall mounted, or floor mounted as feasible at site and as approved by the Engineer- in - Charge, but they shall be cubical designed, unless otherwise specified and from open able from front.
- ii) The capacity of switch gear, starters etc. shall be suitable for the requirements of loads fed/controlled. Starting currents shall be duly considered in case of motor loads.
- iii) MPCB shall be used up to and including 63 A for motor applications and MCCB shall be used for other loads. ACB shall be used for 630 A and above ratings.
- iv) All MCCBs / MPCBs shall be of AC 23 duty as per IS: 4064-1978 as amended up to date.
- v) Switch boards controlling motors shall house starters for motors, unless otherwise specified. The starter shall be located adjacent to the controlling switch gear.
- vi) One-volt meter with selector switch, a set of indicating lamps and fuses for voltmeter and lamps shall be provided at each switchboard. One ammeter with CTS, and selector switch shall be provided with each motor starter. Instruments shall be flush mounted with the panel and have a glass index not higher than 1.5. The instruments and accessories shall be provided whether or not specifically indicated in the tender specifications.



- vii) The fabrication of switchboard shall be taken up only after the drawings for the fabrication of the same are approved by the Engineer-in-Charge.
- viii) Switchboards shall be fabricated as per specifications indicated in sub-para above.
- ix) The layout of bus bars and cable alleys shall be designed for convenient connections and inter-connections with the various switchgear. Connections from individual compartments to cable alleys shall be such as not to shut down healthy circuits in the event of maintenance work becoming necessary on a defective circuit.
- x) Care shall be taken to provide adequate clearances between phase bus bars as well as between phase bus bars, neutral and earth.
  - i) Where terminations are done on the bus bars by drilling holes therein, extra cross section shall be provided for the bus bars. Alternatively, terminators. Cables connected to the upper tiers shall be duly clamped within the switchboard.
  - ii) Provision shall be made for proper termination of cables at the switchboards such that there is no strain either on the cables, or on the terminators. Cables connected to the upper tiers shall be duly clamped with the help of PVC cable ties within the switchboard.
  - iii) Identification labels shall be provided against each switchgear and starter compartment, using plastic engraved labels.
  - iv) Metallic danger conforming to relevant IS shall be fixed on each electrical switchboard / MCC.

### 1.3

#### **POWER CABLING**

- i) Unless otherwise specified, the power cables shall be XLPE insulated, PVC outer sheathed aluminium / copper conductor, armoured cables rated for 1100 V grade as per IS: 1554 (Part 1) - 1988. The power cables shall be of 2 core for single phase, 4 core for sizes up to and including 25 sq.mm, 3-1/2 core for sizes higher than 25 sq.mm for 3 phase. Where high voltage equipments are to be fed, the cables shall be rated for continuous operation at the voltages to suit the same.
- ii) Power cables shall be of sizes as indicated in the tender specifications. In all other cases, the sizes shall be as approved by the Engineer-in-Charge, after taking into consideration the load, the length of cabling and the type of load.
- iii) Cables shall be laid in suitable metallic trays suspended from ceiling, or mounted on walls, or laid directly in ground or clamped on structures, as may be required. Cable ducts shall not be provided in plant rooms. Cable trays shall be sheet steel with adequate structural strength and rigidity type, designed with adequate dimensions for proper heat dissipation and also access to the cables with necessary supports and suspenders shall be provided by the Air-conditioning contractor as required.
- v) Cable laying work shall be carried out in accordance with 15.3(iii) above. The scope of work for the Air-conditioning contractor shall include making trenches in ground and refilling as required, but excludes any masonry trenches for the cable work.

#### **1.4 CONTROL WIRING**

- i) Control wiring in the plant rooms and AHU rooms shall be done using ISI marked PVC insulated and PVC sheathed, 1.5 sq.mm copper conductor, 250V grade, cables drawn in ISI marked steel or PVC conduits. Alternatively, armoured multi-core copper conductor cables may also be used for the purpose. The control cables

interconnecting the plant room and the AHU rooms shall be of multi-core armoured type only, and suitable for laying direct in ground.

- ii) The number and size of the control cables shall be such as to suit the control system design adopted by the Air-conditioning contractor.
- iii) ISI marked steel conduits pipes, wherever used, shall be of gauge not less than 1.6 mm thick for conduits upto 32 mm dia and not less than 2.0mm thick of higher sizes. All conduit accessories shall be threaded type with substantial wall thickness.
- i) Control cables shall be of adequate cross section to restrict the voltage drop.
- ii) In the case of control wires drawn through steel conduits, the wire drawing capacity of conduits as specified under the CPWD general specifications for Electrical Works (Part I) 2005 shall not be exceeded.
- iii) Runs of control wires within the switchboard shall be neatly bunched and suitably supported/clamped. Means shall be provided for easy identification of the control wires.
- iv) Control wiring shall correspond to the circuitry/sequence of operations and interlocks approved by Engineer-in -Charge.

## 1.5 EARTHING

- i) Provision of earth electrodes and the type of earthing shall be as specified in the tender specifications.
  - ii) The earth work shall be carried out in conformity with CPWD Specifications for Electrical works (Part-I), Internal 2005 / NBC 2005.
  - iii) Metallic body of all medium voltage equipments and switch boards shall be connected by separate and distinct earth conductors to the earth stations of the installations; looping of such body earth conductors is acceptable from one equipment, or switch board to another.
  - iv) G.I. plate earthing shall be provided for PTAC plants and reciprocating central AC plants upto 100 TR capacity. Above 100 TR reciprocating units, copper plate earthing shall be provided.
  - v) The size of earth conductors for body earthing of equipments shall be as under:-

Motor upto and including 10 HP rating	2Nos.3mm dia copper wire / 2 nos. 4mm dia GI wire
12.5 HP to 40 HP	2Nos.4mm dia copper wire / 2 nos. 6mm dia GI wire
50HP to 75 HP	2Nos.6mm dia copper wire / 2 nos. 25x3mm GI strip
Above 75 HP	2Nos.25mm x 3mm copper strip / 2 nos. 25x6mm GI strip
- Switch boards with incoming rating upto
- |                       |   |
|-----------------------|---|
| 100 A                 | 2Nos.3mm dia copper wire / 2 nos. 4mm dia GI wire |
| 125 A to 200 A rating | 2Nos.6mm dia copper wire / 2 nos. 25x3mm GI strip |

- Above 200 A rating 2Nos.25mm x 3mm copper strip / 2 nos.  
25x6mm GI strip
- vi) Armouring of cables shall be connected to the body of the equipments/switch board at both the ends. Compression type glands shall be used for all such terminations in the case of PVC cables.

## 1.6 MOTOR STARTER

- i) The motor starter shall conform to IS: 1822 "Motor starters of voltage not exceeding 1000 volts" and shall be air insulated and suitable for 415 volts,  $\pm 10\%$ , 50 Hz, 3 phase AC supply. Enclosures shall have protection of IP 52 for Indoor applications and IP 55 for outdoor applications.
- ii) Starter for the motor shall be direct on line (D.O.L) for motors up to and including 7.5 H.P. rating and automatic star-delta close transition type for motors of higher ratings unless otherwise specified in the tender specifications. Starters shall be rated for intermittent duty. Starting current should not exceed two times the full load current.
- i) The starter shall be mounted on the main electrical control panel/ unit mounted / self mounted as specified.
- ii) Each starter shall be provided with the following protections:-
- Thermal overload on all the three phases with adjustable settings,
  - Under voltage protection, and
  - Independent single phasing preventor. (current sensing type)
- iii) Adequate number of extra NO / NC contacts for interlocks, indicating lamps etc. shall be provided on the starter / contractor.

## 1.7 PAINTING

All panels shall be supplied with the manufacturer's standard powder coating.

\*\*\*

**CHAPTER- 2.0**  
**INSPECTION, TESTING AND COMMISSIONING**

**2.0 SCOPE**

This chapter covers the initial inspection and testing of condenser, AHUs at manufacture's works, initial inspection of other equipments/ materials on receipt at site, final inspection testing & commissioning of all equipment at site & description of testing requirements & procedure.

**2.1 INITIAL INSPECTION AT MANUFACTURE'S WORKS**

**Compressor**

- i) Salient features such as model, No. of cylinders, capacity control, provision of crank case heaters, type of lubrication etc. shall be verified against the requirements visually without opening the compressors.
- ii) Manufacturer's internal test certificates shall be scrutinized to check compliance with the requirements as specified in the order.
- iii) Rate of leak test shall be checked by developing 7 Kg/sq.cm (gauge) pressure on HP side and 1 Kg/ sq.cm on LP side using dry Nitrogen air or carbon dioxide. The leakage through the valves, shaft seal, cylinder heat gasket etc should not be more than 0.3 Kg/sq.cm per cylinder in 4 minutes time. Alternatively this may be demonstrated through vacuum.
- iv) Pneumatic pressure test shall be carried out at 22 Kg/ sq.cm and by submerging the compressor in water for 1 hour & there shall be no leakage.
- v) Free running test shall be carried out at the rated speed specified in contract. This test shall be carried out for 30 minutes in open space. During this running test following operations are to be noted:
  - i) Manual loading / unloading of capacity control
  - ii) Lubrication oil pressure
  - iii) Safety valve operation
- vi) Vacuum test for the compressor for 0.5mmHg..

**2.2 Condensers**

- i) Salient features like number of tubes, inside diameter of tubes (from which the gauge of the tube can be verified), no. of passes, material of fins, length of condenser, provision of fittings like safety valve, water, gas connection shall be verified during stage inspection. The tube thickness shall be checked.
- ii) Manufacturer's internal test certificates shall be furnished and it shall be verified against contract requirements.
- iii) Pneumatic pressure test at twice the normal condensing pressure for gas side of condenser shall be carried out.

**2.3 Air Handling Units:**

- i) Salient features such as model, size, physical dimensions, and other details of various sections, fan motor details, fan dia, static pressure etc. shall be verified against the contract requirements.
- ii) Manufacturer's internal test certificates for the motor and air handling unit shall be furnished and scrutinized as per contract requirements.

- iii) Test certificate for static and dynamic balancing of the fan/ blower should be furnished. Fan balancing may be witnessed by Engineer-in-Charge or his authorized representative.
- iv) Salient features like, type, material, no. and gauge of fins and tubes and no. of rows of cooling coil shall be furnished and verified with reference to contract requirements during stage inspection.
- v) Hydraulic pressure to the extent of 10 Kgf/sq.cm or pneumatic pressure of 21 Kgf/sq.cm shall be applied to cooling coil and this pressure should be maintained for 1 hour and no drop should be observed indicating any leaks.

## **2.4 INITIAL INSPECTION AT SITE**

### **Ducting**

- i) The sheet used for ducting shall be checked for physical test at site. The physical test should include the sheet thickness and bend test as per relevant IS specifications.
- ii) Zinc coating of GSS sheet as mentioned in the tender documents may be got tested from a laboratory to verify that same meets the contract requirements.

### **Switch Gear, Control Gear, and Measuring Instruments**

These should be of specified make. For air circuit breaker manufacturer's test certificate shall be furnished by contractor and the same shall be verified as per contract requirements.

### **Electric Motors**

Electric motors should be of specified make, manufacturer's test certificate for electric motor shall be furnished.

### **Insulation and acoustic lining**

- i) Physical verification for thickness and make should be made as per contract before application of insulation.
- ii) Manufacturer's test certificate for density should be furnished.

Note: Accuracy of testing instruments shall be as mentioned in the final inspection procedure.

## **2.5 FINAL INSPECTION**

- i) After completion of the entire installation as per specification in all respects, the AC contractor shall demonstrate trouble free running of the AC equipments and installation for a period of minimum 120 hours of running as detailed under following points:
  - After the installation work has been completed by the contractor, he will conduct tests and make adjustments as may be necessary to satisfy himself that the plant including low side equipments is capable of continuous running. There after he will offer to the department a running-in period of 7 days subject to a minimum aggregate of 120 hrs at his cost. The duty cycle of the plant during this running in period shall be same as that specified in the tender documents. In case of multiple compressor installations, all the compressors should be run by rotation. The plant will be operated and a log of all parameters will be maintained during this period. The contractor will be free to carry out necessary adjustments etc during this period without stopping the plant. Record of inside conditions will be made during this period to check the same are as per NIT requirements. The plant will be said to have successfully completed the

running-in-period, if no break down or abnormal/ unsatisfactory operation of any machinery occurs during this period. After this the plant will be made available for beneficial use. After the plant has operated without any major break down/ trouble and inside conditions are maintained as per NIT requirements for the above specified running in period, it shall be taken over by the department subject to guarantee clause mentioned elsewhere in the tender. This date of taking over of plant after trouble free operation during the running in period shall be the date of acceptance.

## 2.6 TESING REQUIREMENTS AND PROCEDURES

**Balancing of all air systems and all tests as called for in the specification shall be carried out by the HVAC contractor in accordance with the specifications and relevant local codes if any. Performance tests of individual equipment and control shall be carried out as per manufacturer's recommendation. All tests and balancing shall be carried out in the presence of Engineer-in-Charge or his authorized representative.**

The whole system balancing shall be tested with microprocessor based hi-tech instruments with an accuracy  $\pm 0.5\%$ .

The instrument shall be capable of storing data and then down loading into a P.C. The HVAC contractor shall provide a minimum but not limited to the following instruments:

- Microprocessor based calculation meter to measure DB and WB temperature, RH and Dew Point
- Velo meter to measure air volume and air velocity
- Pitot tube
- Electronic rotary vane Anemometer
- Accubalance flow measuring hood

The contractor shall be responsible to provide necessary sockets and connections for fixing of the testing instruments, probes etc.

### 2.6.1 Air Systems

Systems are to be balanced by first adjusting the total flow at the fan, then by adjusting main dampers and branch dampers. Only final minor adjustments are to be made with register and diffuser dampers. Balancing of the air system shall be accomplished without causing objectionable air noise. Baffles and orifice plates required for proper air balance shall be furnished and installed by the contractor. Basically the following tests and adjustments are required.

- i) Test all fan systems to provide proper cfm/ cmh.
- ii) Adjust fresh air, return air and exhaust dampers to provide proper air quantities in all modes of control.
- iii) Test and record fresh air, return air and mixed air temperature at all air handling units. Test and record data at all coil after air and hydronic systems are balanced. Measure wet and dry bulb temperature on cooling coils.
- iv) Make point tube transverse at all main supply and return ducts to set proper air quantities. Adjust all zone and branch dampers to proper cfm /cmh.
- v) Test and adjust each register, grills, diffusers or other terminals equipments to within 5% of design air quantity. Each opening shall be defined on the test report by size, manufacturer's model, room location, design cfm and actual cfm. Outlets shall be adjusted to minimize objectionable drafts.

- i) Test and record static pressure drop across all filters and major coils.
- ii) High velocity duct systems shall be tested for leakages. If excessive or audible leakage is detected, the defect shall be repaired by the contractor. Sufficient static pressure readings shall be taken from the air handling units to the terminal units to establish system static pressure.

**2.6.2 Balancing Tolerance**

System shall be balanced with in the following tolerance:

- 1. Duct leakage rates ( at operating pressures )
  - Low pressure ducts (0 to 0.5 Kpa) 5% of full flow
  - Medium pressure ducts (0.5 to 3 Kpa) 1% of full flow
  - High pressure ducts (greater than 3 Kpa ) 1% of full flow
- 2. Air flow rates
  - Under 70 L/S 10% of flow
  - Over /at 70 L/S 5% of flow
- 3. Water flow rates
  - Chilled Water 2% of flow
  - Other 5% of flow
- 4. Heat flow rates
  - Heat exchangers 5% of design capacity

**Procedure:**

Review all pertinent plants, specifications, shop drawings and other documentation to become fully familiar with the systems and their specified and intended performance. Furnish equipment and instruct sheet metal trade on proper use for conducting duct leakage tests. Conduct first test as a way of instructing the above trades in the presence of the Department’s representative.

Test performance and continuously record on a 24 hour basis, temperature and humidity levels where control equipment is provided for that purpose in certain critical areas.

Before commissioning of the equipment, the entire electrical installation shall be tested in accordance with relevant BIS codes and test report shall be furnished by a qualified and authorized person.

**2.6.3 Reports**

Provide 3 copies of the complete balancing and testing reports to the department. Report shall be neatly typed and bound suitable for a permanent record. Report forms shall contain complete test data and equipment data as specified and safety measures provided as follows:

- i) **Safety measures**  
All equipments shall incorporate suitable safety provisions to ensure safety of the operating personnel at all times. The initial and final inspection reports shall bring out explicitly the safety provisions incorporated in each equipment.

## 2.6.4 Final documentation

The contractor shall leave the system operation in complete balance with water and air quantities as shown on drawings. Set stops on all balancing valves and lock all damper quadrants in proper position. Secure all automatic damper and valve linkages in proper positions to provide correct operating ranges. Proper damper positions shall be marked on ducts with permanent indication. Notify the department of any areas marginal or unacceptable system performance.

The above tests and procedures are mentioned herein, for general guidance and information only, but not by way of limitation to the provisions of conditions of contract and design/performance criteria.

Upon commissioning and final handover of the installation, the HVAC contractor shall submit (within 4 weeks) to the Engineer-in-Charge/ department 6 (six) portfolios of the following indexed and bound together in hard cover ring binder (300 x 450 mm) in addition to the completion drawings as follows:

### Completion Drawings

Three sets of following laminated drawings shall be submitted by the contractor while handing over the installation to the Department. Out of this one of the sets shall be laminated on a hard base for display in the AC plant room. In addition one set will be given on compact disc.

- a) Plant installation drawings giving complete details of all the equipments, including their foundations,
- b) AHU room installation drawings
- c) Piping layout drawings including insulation giving sizes and lengths of all the pipes and the sizes and locations of all types of valves, and including isometric drawings for entire piping including pipe connections to the various equipments and insulation details wherever required.
- d) Duct layout drawings with their sizes and locations, and sizes and locations of all dampers, grills and diffusers.
- e) Line diagram and layout all electrical control panels giving switchgear ratings and their disposition, cable feeder sizes and their layout,
- f) Control wiring drawings with all control components and sequence of operations to explain the operation of control circuits.
- g) Comprehensive operation and maintenance manual
- h) Test certificates, consolidated control diagram and technical literature on all controls.
- i) Equipment warranties from manufacturers
- j) Commissioning and testing reports
- k) Rating charts for all equipment
- l) Log books as per equipment manufacturers standard format
- m) List of recommended spares and consumables
- n) Any special tools required for the operation or the maintenance of the plant shall be supplied free with the plant.

At the close of the work and before issue of final certificate of completion by the Engineer - in-Charge, the contractor shall furnish a written guarantee indemnifying the department against defective materials and workmanship for the Defects liability period. The contractor



shall hold himself fully responsible for re installation or replaced free of cost to the department.

- Any defective material or equipment supplied by the contractor.
- Any material or equipment supplied by the department which is proved to be damaged or destroyed as a result of defective workmanship by the contractor.

### 3.0 FILL THE TECHNICAL DETAILS FOR ALL OUTDOOR AND INDOOR UNITS

TECHNICAL DETAILS FOR OUTDOOR UNIT			
S.No	Paramater	Unit	Details
1	Make and Origin		
2	Model	Model	
3	Capacity	HP	
4	Operating Ambient Temperature Range	degC	
5	Power Supply		
6	Refrigerant		
7	Refrigerant Precharge Quantity		
8	Number of compressors		
9	Compressor Type		
10	Cooling Capacity	Kw	
11	Cooling Capacity	BTU/HR	
12	Power Input	Kw	
13	Tonnage	TR	
14	EER		
15	ISEER		
16	IKW / TR	Kw	
17	Dimension (In MM)	H x W x D	
18	Net weight	Kg	
19	Shipping Weight (apprx)	Kg	
20	Refrigerant pipe connections		
21	Liquid		
22	Gas		
23	Air cooled condensor		
24	Type		
25	Fan Type		
26	Number of fans		
27	Air Quantity	CFM	
28	Motor Type		

<b>TECHNICAL DETAILS FOR INDOOR UNIT</b>			
<b>S.No</b>	<b>Paramater</b>	<b>Unit</b>	<b>Details</b>
1	Tonnage		
2	Make and Origin		
3	Model	Model	
4	Airflow Rate	CFM	
5	Number of speeds		
6	External static	Pa	
7	Capacity at nominal conditions (TR)		
8	Temperature control		
9	Refrigerant control		
10	Operating sound	dB	
11	Power Input	Kw	
12	Number of fan motor in evoporating and rating		
13	Casing material and finish		
14	Dimension in mm	H x W x D	
15	Net weight	Kg	
16	Filter material and rating		
17	Evaporator copper tube size & thickness (OD) and refrigeration		
18	Surface area on air side and refrigeration		

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

TO THE APPROVAL OF SAMPLES BY SBIIMS/ CONSULTANT.

<b>S.No.</b>	<b>Material Name.</b>	<b>Brand / Manufacturer / Recommended Make.</b>
1.	VRV/F Out Door Unit	Daikin/Mitsubishi Heavy/Hitachi/ Blue Star/ O General /Toshiba
2.	VRV/F- Indoor Units Cassette Type	Daikin/Mitsubishi Heavy/Hitachi/ Blue Star/ O General/Toshiba
3.	VRV/F-Indoor Units Hi Wall Type	Daikin/Mitsubishi Heavy/Hitachi/ Blue Star/ O General/
4.	Refrigerant Joints	Daikin/Mitsubishi Heavy/Hitachi/ Blue Star/ O General/Toshiba
5.	Refrigerant Piping	Mandev / Rajko
6.	Drain Piping	Mandev / Rajko
7.	Nitrille Rubber Insulation	Aerolam / Armacell / Trocellene
8.	Control cum Transmission wiring	Delton/ Finolex/Polycab
9.	Cable Tray	MEK/ Indian/ Patney
10.	Software Integration	Daikin/Mitsubishi Heavy/Hitachi/ Blue Star/ O General/Toshiba

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

O.E.MANUFACTURERS AUTHORISATION FORM

(in Original Letter Head of OEM)

(To be mandatorily submitted along with the Technical Bid document)

OEM CAN NOMINATE MAXIMUM FIVE DEALERS OR OEM CAN PARTICIPATE IN THE TENDER

To

Vice President  
SBI Infra Management Solutions Pvt. Ltd.,  
Ground Floor, Adj to commercial branch, Local Head Office campus,  
State Bank of India  
Bank Street, Koti, Hyderabad- 500095

Dear Sir,

Subject: **Direct Manufacturers Authorization for the Installation**

**Name of Work: - SITC OF HVAC WORKS AT KOTHAGUDEM BRANCH.**

We .....an established and ..... reputable ..... manufacturer ..... of professional.....(Product) having Corporate ...../Registered ..... office at ..... do hereby authorize .....as our Distributor to submit a above bid ..... dt ..... and subsequently negotiate and sign the contract with SBIIMS for the supply of ..... Make of Air-conditioning Units as per tender specifications and terms & conditions.

We hereby confirm and extend our full guarantee and warranty for 1 year or as per manufacturer’s warranty whichever is more as per standard service procedure for the products offered for supply by the above firm only against the invitation for bids ..... dt ..... and only duly authorize the said firm to act on our behalf in fulfilling any or all installation, technical support and maintenance obligation as required by the contract. Also undertake to carry out comprehensive AMC for at least 8 years after the defect liability period of one year.

Yours faithfully,  
for .....

**Signature of Officer Authorized to sign this Document on behalf of the OEM.**

## TERMS & CONDITIONS TO THECAMC SERVICE PROVIDERS:

1. The comprehensive AMC charges per unit per year will be paid for four services in a year apart from any number of breakdown calls with a response period of 3 hours on receipt of complaint. The scope of work includes water wash for every quarter & filter cleaning as and when required.
2. Failure to repair/service the equipment in question within 8 hours for minor & 3 days for major repairs without justifiable reason or to return the repaired machine within two days at the maximum may attract proportionate deduction. In case of any delay beyond 8 hours for minor & 3 days for major repair works, supplier has to arrange standby AC. If fails to arrange standby AC, penalty will be imposed @ 1% of the contract value per day of delay of the particular quarter.
3. If the work is found unsatisfactory or if the firm dishonours the contract, the job will be entrusted to any other firm /party at the risk/expense of the contractor.
4. The amount of CAMC will be paid on quarterly basis after successful completion the satisfactory service during the quarter of service.
5. The successful bidder has to rectify the faults due to rat bites free of cost.
6. Successful bidder has to handover all the ACs in good running condition before expiring of CAMC contract.
7. The successful bidder has to rectify the faulty condenser, or coil free of cost.
8. The Contractor shall bear all the costs and expenses in respect of all charges, including stamp duty, registration etc. of this agreement and/or any other documents/agreements, which are required to be executed.
9. All necessary tools like vacuum pump, drilling machines, pliers, pressure gauge and other essential tools for effective maintenance of the ACs equipments shall be provided by the contractor
10. The contractor / firm shall be held responsible for any misdeeds / misbehavior of their employees within the premises.
11. Since the maintenance works are to be carried at all levels & high, technician should wear necessary proactive gear such as life belts, helmet, gloves, shoes, etc.
12. The bidder should take third party insurance coverage and adequate insurance coverage to the workers for life and limb and the same should be submitted before entering into a agreement.

**BOQ OF HVAC WORKS FOR THE PROPOSED KOTHAGUEDEM BRANCH AT NEW OFFICE BUILDING, KOTHAGUEDEM OF STATE BANK OF INDIA.**

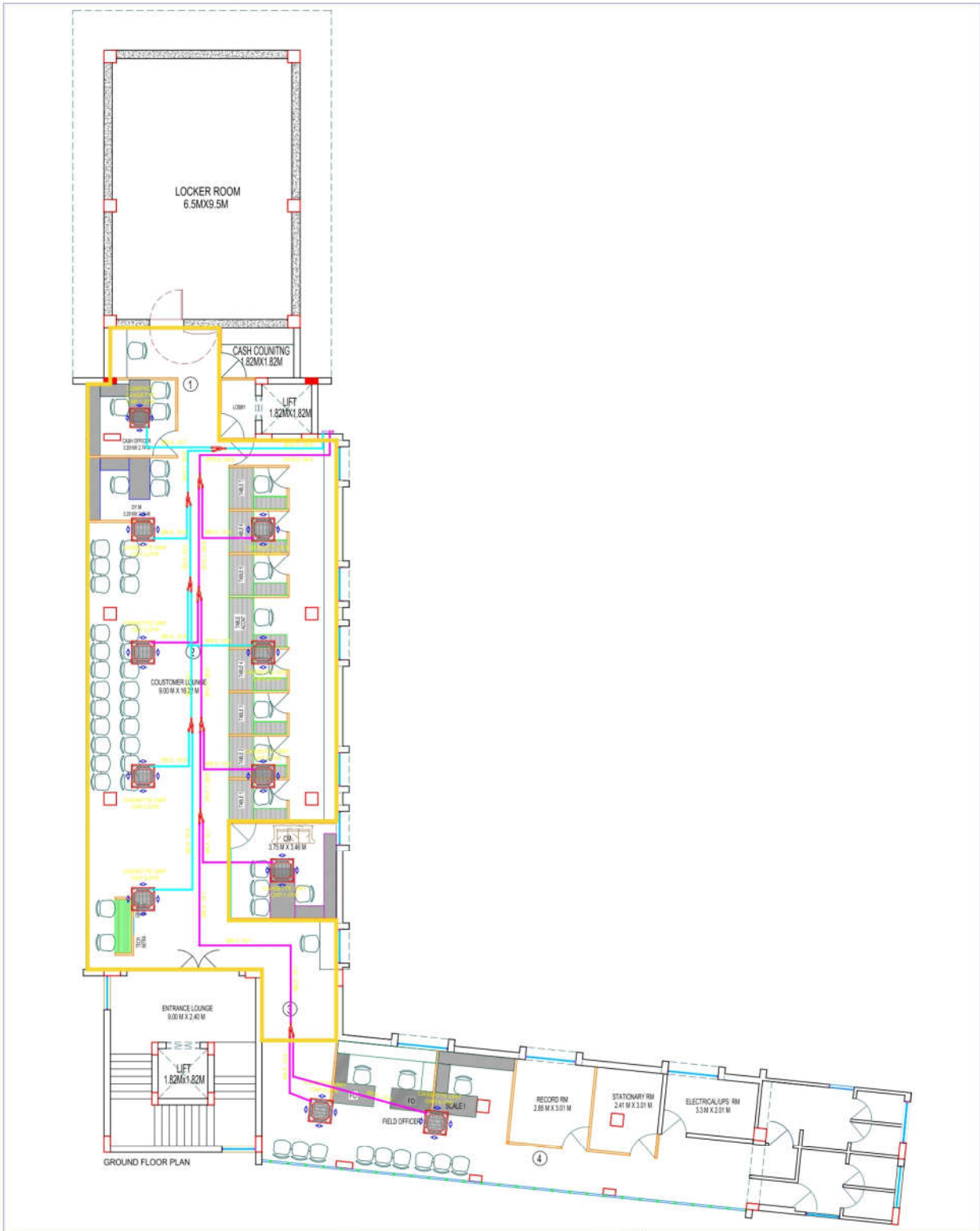
S.no	Item / Description	Unit	Qty	Rate	Amount
<b>I</b>	<b>HI SIDE EQUIPMENT</b>				
	<b>VRV / VRF Out-Door Units</b>				
1.1	Supply, installation, testing and commissioning of Air cooled VRV/VRF outdoor units for the mentioned capacities comprising of multiple Inverted hermetically sealed scroll compressors low noise propeller type aero spiral fan, condenser coil, refrigerant shutoff valves, safety devices & controls , lead free PC boards, suitable for operation on R-410a refrigerant. The unit shall operate on 415 ± 10% Volts, 50 cycles, 3 phase, 4 wire AC supply and the outdoor unit shall have an inbuilt power supplies for any auxiliary power supplies required within the unit. VRV / VRF outdoor units shall meet the following minimum actual capacities at air over condenser temperature of <b>50deg.c</b> . The scope of work includes required M.S supports for the outdoor units with necessary anchor bolts, neoprene pads etc. the scope of work includes lifting of machines at proper location at free of cost.				
a.	Actual Cap : 16 HP	No.	2		
1.2	Supply, installation, testing and commissioning of Round flow four way cassette type of indoor unit. The unit shall be powder coated galvanised steel and shall include prefilter, fan section, coil section, fan section with low noise fan with Multi speed motor, condensate drain pump, Insulation, pipe connections , including necessary control wiring, all necessary controls, valves and fittings, strainer, drier , Fresh air intake and operating on R410a refrigerant gas. The scope includes required <b>Cordless Remotes</b> , supports with necessary Panels, bolts, screws & nuts etc, The capacity of the Units shall be the nearest rating based on manufacturer.				
a.	Cap : 4.0 TR	Nos.	2		
b.	Cap : 3.0 TR	Nos.	4		
c.	Cap : 2.0 TR	Nos.	5		
d.	Cap : 1.5 TR	Nos.	1		
1.3	<b>REFNET Joints</b>				
a	Supply of All REFNET Joints at suction line & Liquid line for Indoor units only	Sets	14		
b	Supply of All REFNET Joints for ODU only	Sets	2		
1.4	<b>Centralised Remote Controller system (CRC)</b>				
a	Supply of Centralised Remote Controller system of VRV/VRF system for all the indoor & outdoor units.				
b	Centralised Remote Controller system	No.	1		
<b>II</b>	<b>REFRIGERANT PIPING</b>				

2.1	Supply, Installation, Testing and Commissioning of Hard copper refrigerant piping between indoor & outdoor units. Both the suction and liquid lines shall be insulated with 19mm thick closed cell insulation for above 12.7mm dia , 13mm thick for pipes below 12.7mm dia. and covered with 7 mil black woven glass cloth (protection against mechanical impact and UV protection) with necessary accessories such as supports, rods, screws and clamps. All piping shall be pressure tested for 1.5 times the working pressure. The scope of work including scape hold for laying of drain and copper pipe etc.,.				
a.	6.4 mm dia.	RMT	20		
b.	9.5mm dia.	RMT	110		
c.	12.7mm dia	RMT	50		
d.	15.9mm dia	RMT	140		
e.	19.1mm dia.	RMT	45		
f.	22.2mm dia	RMT	10		
g.	28.6mm dia	RMT	80		
	<b>Refrigerant Charging</b>				
2.2	Supply & Filling of initial Charge of refrigerant gas - R 410 A	Lot	1		
	<b>PVC Drain Pipe</b>				
2.3	Supply, installation, testing and commissioning of Rigid PVC drain ping with supports, clamps and 6 mm thk. Nitrile rubber insulation as per specification of the following sizes. The scope of work including scape hold for laying of drain and copper pipe etc.,.				
a.	50 mm Dia	RMT	50		
b.	40 mm Dia	RMT	20		
c.	32 mm Dia	RMT	30		
d.	25 mm Dia	RMT	60		
2.4	Supply, installation, testing and commissioning of control cum transmission wiring of 2 core x 1.5 sqmm copper in suitable PVC pipes as per site requirements between indoor units and their remote controllers.	RMT	250		
3	Supply and fixing of CATWALK with MS Angle / C Channels with suitable sections for platform work for Cassette and Split AC Outdoor units with railing of suitable height, Taking support from beam or slab with 2 coats of black enamel paint. Of sizes 2mX1.2mX0.9m as per the site conditions.	NOS	1		
4	Comprehensive <b>ANNUAL MAINTENANCE CONTRACT (CAMC)</b> For the above Air conditioning units after waranty period of One Year for above mentioned capacities which includes all spares, replenishing the refrigerant. CAMC will start after expiry of one year warranty period.				
	Second Year	LS	1		

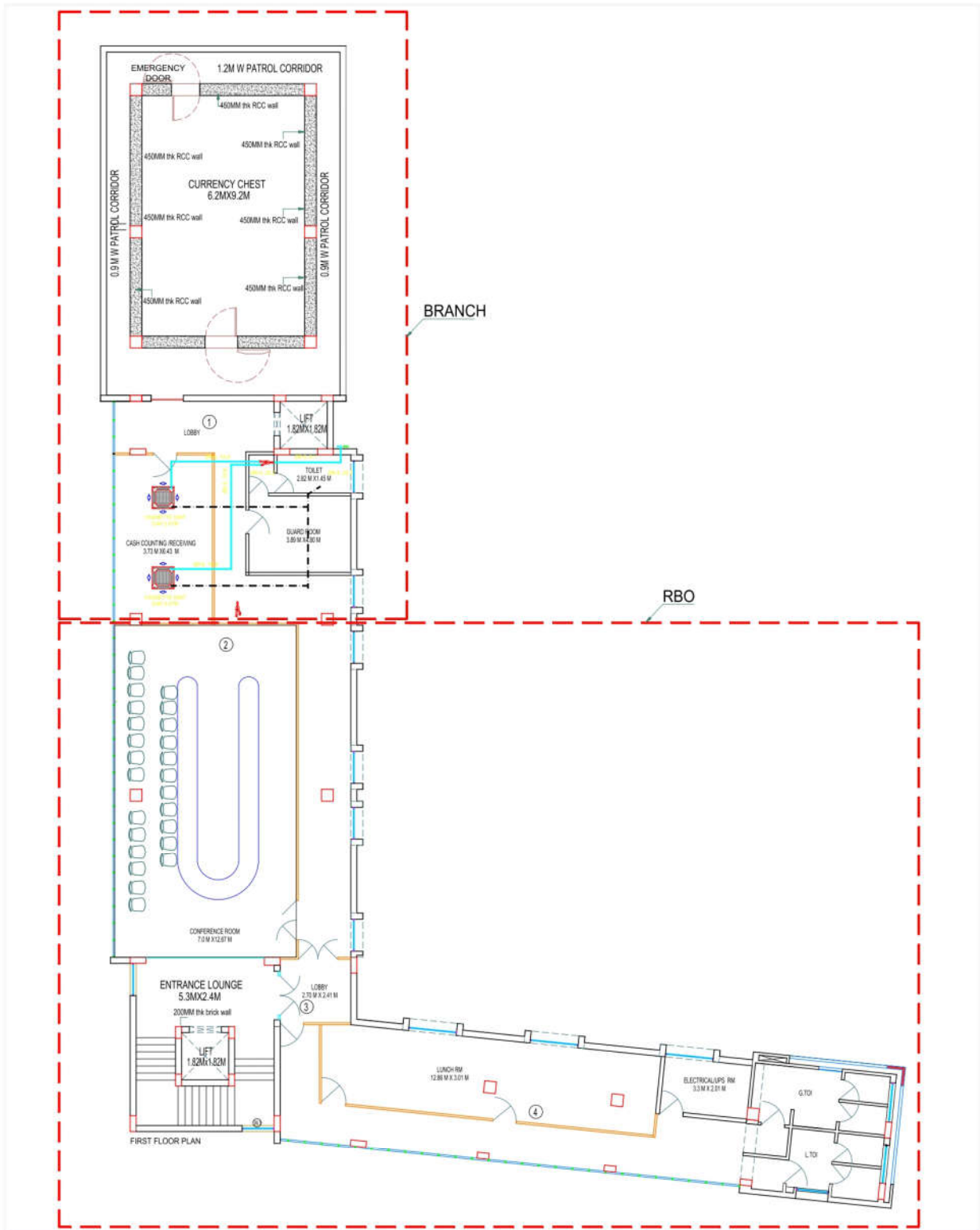
	Third Year	LS	1		
	Fourth Year	LS	1		
	<b>TOTAL RUPEES</b>				
	<b>DISCOUNT IF ANY</b>				
	<b>GRAND TOTAL</b>				

GST paid extra

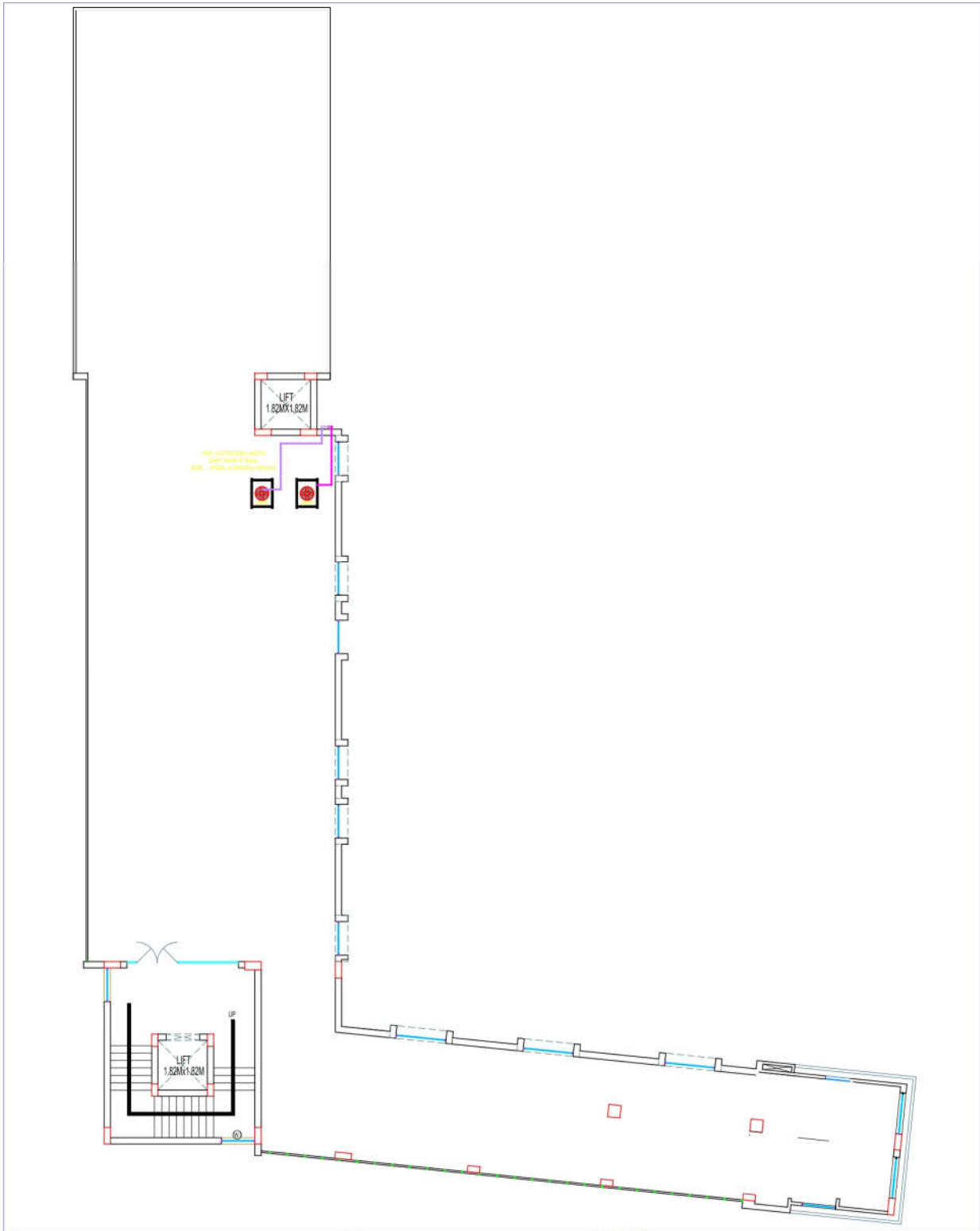




<b>Rev. No.</b> <b>Description</b> <b>Date</b>		<b>Architect:</b>  <b>MEP CONSULTANTS:</b>  <b>DPOWER CONSULTING ENGINEERS</b> Masab Tank, Hyderabad - 508057 dpowerconsultants@gmail.com Mobile.No. +919701001192	<b>Project Title:</b> <b>SBI @ KOTHAGUDEM</b>	
<b>Client:</b> M/s. SBI			<b>Drawing Title:</b> <b>GROUND FLOOR AC LAYOUT</b>	
		<b>DATE:</b> 04-10-19	<b>PROJECT NO:</b> SBI_KGI/01	<b>ISSUED FOR:</b> INFORMATION
		<b>DRAWN:</b> NAVYA	<b>SCALE:</b> NTS	<b>REVISION:</b>
		<b>CHECKED:</b> REDDY	<b>SHEET SIZE:</b> A1	<b>NORTH</b>
		<b>APPROVED:</b> REDDY	<b>BLOCK:</b> -	
		<b>DRAWING NO:</b> DPCE/SBIKGI-01/ELE/LIG/GF-01	<b>REVISION:</b> 0	



<b>Rev. No.</b> <b>Description</b> <b>Date</b>		<b>Architect:</b>  bhikram-s 100 Years, 100 Years, 100 Years Urban Planning, Project Managers	<b>Project Title:</b> <b>SBI @ KOTHAGUDEM</b>
<b>Client:</b> M/s. SBI		<b>MEP CONSULTANTS:</b>  <b>DPOWER CONSULTING ENGINEERS</b> Masab Tank, Hyderabad - 500057 dpowerconsultants@gmail.com Mobile.No. +919701001192	<b>Drawing Title:</b> <b>FIRST FLOOR AC LAYOUT</b>
<b>DATE:</b> 04-10-19		<b>PROJECT NO:</b> SBI_KGI/01	<b>ISSUED FOR:</b> INFORMATION
<b>DRAWN:</b> NAVYA		<b>SCALE:</b> NTS	<b>REVISION:</b>
<b>CHECKED:</b> REDDY		<b>SHEET SIZE:</b> A1	<b>NORTH</b>
<b>APPROVED:</b> REDDY		<b>BLOCK:</b> —	
<b>DRAWING NO:</b> DPCE/SBIKGI-01/ELE/LIG/GF-01		<b>REVISION:</b> 0	



<table border="1"> <thead> <tr> <th>Rev. No.</th> <th>Description</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>			Rev. No.	Description	Date							<p><b>Architect:</b></p>  <p><b>MEP CONSULTANTS:</b></p>  <p><b>DPOWER CONSULTING ENGINEERS</b>          Masab Tank, Hyderabad - 500057          dpowerconsultants@gmail.com          Mobile.No. +919701001192</p>	<p><b>Project Title:</b> SBI @ KOTHAGUDEM</p> <p><b>Drawing Title:</b> TERRACE FLOOR AC LAYOUT</p> <table border="1"> <tr> <td><b>DATE:</b> 04-10-19</td> <td><b>PROJECT NO:</b> SBI_KGI/01</td> <td><b>ISSUED FOR:</b></td> </tr> <tr> <td><b>DRAWN:</b> NAVYA</td> <td><b>SCALE:</b> NTS</td> <td>INFORMATION</td> </tr> <tr> <td><b>CHECKED:</b> REDDY</td> <td><b>SHEET SIZE:</b> A1</td> <td><b>NORTH</b> <b>REVISION:</b></td> </tr> <tr> <td><b>APPROVED:</b> REDDY</td> <td><b>BLOCK:</b> —</td> <td> <b>0</b></td> </tr> <tr> <td><b>DRAWING NO:</b> DPCE/SBIKGI-01/ELE/LIG/GF-01</td> <td> </td> <td> </td> </tr> </table>	<b>DATE:</b> 04-10-19	<b>PROJECT NO:</b> SBI_KGI/01	<b>ISSUED FOR:</b>	<b>DRAWN:</b> NAVYA	<b>SCALE:</b> NTS	INFORMATION	<b>CHECKED:</b> REDDY	<b>SHEET SIZE:</b> A1	<b>NORTH</b> <b>REVISION:</b>	<b>APPROVED:</b> REDDY	<b>BLOCK:</b> —	 <b>0</b>	<b>DRAWING NO:</b> DPCE/SBIKGI-01/ELE/LIG/GF-01		
Rev. No.	Description	Date																										
<b>DATE:</b> 04-10-19	<b>PROJECT NO:</b> SBI_KGI/01	<b>ISSUED FOR:</b>																										
<b>DRAWN:</b> NAVYA	<b>SCALE:</b> NTS	INFORMATION																										
<b>CHECKED:</b> REDDY	<b>SHEET SIZE:</b> A1	<b>NORTH</b> <b>REVISION:</b>																										
<b>APPROVED:</b> REDDY	<b>BLOCK:</b> —	 <b>0</b>																										
<b>DRAWING NO:</b> DPCE/SBIKGI-01/ELE/LIG/GF-01																												
<p><b>Client:</b> M/s. SBI</p>																												